

INTERSTATE WATER SOLUTIONS FOR THE NEW MILLENIUM



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**INTERSTATE WATER SOLUTIONS
FOR THE
NEW MILLENNIUM**

-A PROJECT OF THE INTERSTATE COUNCIL ON WATER POLICY-
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INTERSTATE WATER SOLUTIONS FOR THE NEW MILLENNIUM

-A PROJECT OF THE INTERSTATE COUNCIL ON WATER POLICY¹-

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¹ ICWP appreciates the assistance of Mike Donahue, former President and CEO of the Great Lakes Commission, in researching this report (he is currently Vice-President for Water Resource and Environmental Services with URS). ICWP also appreciates the support for this project from the US Geological Survey, US Army Corps of Engineers, US Environmental Protection Agency and Pennsylvania Department of Environmental Protection. As these agencies have not reviewed or approved the substance of these findings and recommendations or the substance of the ICWP report, they do not necessarily represent views or conclusions of these agencies.



INTERSTATE WATER SOLUTIONS FOR THE NEW MILLENNIUM

EXECUTIVE SUMMARY

During the past 30 years, the water community in the United States has witnessed a remarkable re-discovery of watershed-based planning and management approaches to resource stewardship. This trend is especially evident in the development of multi-jurisdictional organizations that anticipate and resolve water-related challenges across traditional political boundaries and focus the laws, policies, programs and projects of various communities toward more efficient, integrated solutions. Our cities, counties, states, tribes and federal agencies depend increasingly on interstate and watershed organizations as coordinating bodies for watershed-based planning and development initiatives to manage water supply, flood protection, water quality controls, fisheries management, recreational areas and other interdependent priorities.

In short, this rediscovery is driven by a broader recognition and acceptance of the need for integrated water resource management.

The logic of the watershed orientation in the US dates back at least to the recommendations of John Wesley Powell, who asserted in the 1890s that the management of water in the arid regions of the US should be entrusted to the people making a living within the watershed.

In response to our increasing reliance on interstate water organizations, the Interstate Council on Water Policy (ICWP) has undertaken this study of the various interstate water management patterns and practices across the US as the foundation for recommendations intended to amplify the effectiveness of these organizations in the future of water resource management. Objectives included characterization and analysis of organizational forms, the federal role and the geographic scale and nature of interstate water issues in terms of their effect on the structural and operational characteristics of interstate organizations. We developed a set of case studies and conclude with a set of seven findings and recommendations intended to help existing agencies and organizations enhance their effectiveness in meeting 21st Century water management challenges.

This study builds upon past ICWP initiatives, which have included a national survey of river basin organizations (1997), the adoption of an Interstate Partnership Declaration by nine such entities (1999); and the work of an Interstate Governmental Water Resources Standing Committee, formed by ICWP that same year. It also builds on the thoughtful contribution of effort and ideas by many partners in government, the private sector and non-governmental organizations.

This assessment highlights the substantial contribution that interstate water organizations have made in the evolution of water resources planning, policy and management and indicates they are well-suited as service delivery mechanisms for national initiatives, a role that is not fully utilized at present. Our assessment also substantiates a need to strengthen state/federal

partnerships if we want a more cohesive national approach to water resource management while accommodating regional differences in hydrology, law, socioeconomic priorities, *etc.*

Our assessment of the role that federal laws, agencies and funding are serving in the management of interstate waters and the resolution of associated conflicts indicates steady progress in recognizing the existence of interstate issues and acknowledging the primacy of state laws and policies in the allocation of interstate waters. Federal programs and agencies contribute substantial leadership, funding, research and technical capability to interstate programs, complementing the capabilities of state, tribal and local agencies.

Drawing from this assessment, discussion and examples and from the principles articulated in our National Water Policy Charter (see Appendix 1), we offer the following findings as the basis for discussion, development and implementation of action items by members of the ICWP with our partners in the water community. While these findings relate specifically to interstate organizations, they clearly have relevance to intrastate and international organizations and, in general, any entity operating within a watershed where the integration of water resource management should take place across political or other boundaries.

Enhancing the role of interstate organizations will require strategic advocacy and an active presence at the national and regional levels. The ICWP will expand its efforts accordingly and, as part of its normal strategic planning, review its structure, priorities and resource commitments in order to assure that it is well positioned in light of current and emerging opportunities.

The following findings and recommendations anticipate development of an action agenda to improve water resource policy and management processes by the ICWP in partnership with federal officials and association leaders.

Finding 1: Interstate organizations have demonstrated their effectiveness in a variety of important roles, including water resource planning, monitoring, management, and policy development. Nonetheless, much of their potential is underutilized. Their contributions are not always recognized by their member state- or federal agency representatives or by state legislative or congressional leaders. As a result, the extent to which they have been enabled and engaged, and their ability to attract the necessary financial resources, has been compromised. As the federal budget tightens, the capabilities of many federal agencies and programs must adjust accordingly. The proven abilities of interstate organizations to assume substantial responsibility for water resource stewardship assessment, planning and project implementation in an open, inclusive process should provide an attractive option for sustaining a full range of integrated programs and services

Recommendation 1: Highlight and Promote the Effectiveness of Interstate Water Organizations. Better information is needed to illustrate and publicize the specific contributions that interstate organizations are making to more efficient and effective water resource management decisions, and to encourage increased support for and reliance upon them. Among other objectives, these programs should produce a more visible and consistent presence at water meetings and conferences, enhance the national awareness of interstate water organizations (the consistencies and variations in their organization and responsibilities as well as their accomplishments and challenges).

Finding 2: The federal government has played a significant role in the management of interstate waters. This role has had many dimensions over time, ranging from exclusive decision making responsibility to technical assistance and financial support. Federal officials serve substantial roles in many interstate organizations: as a predominant member; as a co-equal partner; or in a

supporting/observer role. Regardless of their role, the federal agencies have important national responsibilities with respect to interstate waters and bring valuable expertise, data and modeling assets, perspective and resources that complement those of the states in the interstate setting. A strong state/federal partnership is necessary to enhance the efficiency and capacity of integrated water resource management efforts in the interstate setting, especially in these years of very lean budgets and reduced agency capabilities.

Recommendation 2: Engage Federal Agencies in Collaborative Planning and Implementation of Interstate Water Management Programs and Projects. Interstate water organizations should expand their efforts to engage appropriate federal officials and agencies effectively in data collection, planning, and implementation efforts. Federal participation in interstate organizations should be directed, in part, at addressing barriers that have historically impeded integrated water resource management. Among others, this includes problems of fragmented authorities and inconsistent standards, inadequate and unreliable data and funding; complex procedures and rigid criteria.

Finding 3: Interstate water organizations are efficient service-delivery mechanisms for federal programs and projects that have regional (i.e., multi-state) dimensions. However, this role has not been institutionalized in federal legislation or recognized in the development and administration of many federal programs. Furthermore, the erosion of federal funding in recent years for interstate water organizations has compromised their ability to sustain essential services.

Recommendation 3: Fully Engage Interstate Water Organizations in Implementing Federal Programs, Initiatives, and Policies. Federal programs, initiatives, and policies should be implemented in a manner that recognizes the distinct challenges on interstate waters and the need for interstate collaboration. They should also be designed to engage and invest in existing interstate organizations to the greatest extent possible and to provide incentives that reward collaborative approaches among states and other jurisdictions.

Finding 4: The River Basin Commissions and Water Resources Council established under the Water Resources Planning Act of 1965 were abandoned in the early 1980s. The problems they were intended to resolve, however, still present a substantial concern. In many regions, successor organizations have evolved to meet the needs –or new organizations have developed to fill the void. A stubborn gap in national policy persists, where federal water programs and policies remain disjointed, fragmented, and sometimes in serious conflict. In addition, there doesn't appear to be an adequate interface at the national level between federal policies and interstate water management needs.

Recommendation 4: Establish a New Federal Advisory Committee for Coordinating Federal Water Programs, Policies, and Laws and to Guide Federal Involvement in Large-Scale Watershed and Interstate Water Management Initiatives. The federal Advisory Committee on Water Information (ACWI) provides a very useful framework, consistent with the Federal Advisory Committee Act (FACA), for engaging stakeholders in a regular review and refinement of water data programs, policies, priorities and operations. A similar advisory committee should be established for the assessment and guidance of programs and policies related to other aspects of water management, particularly those related to large-scale watershed and interstate water resource management concerns, and focus on areas where there is conflicting guidance from federal statutes.

Finding 5: Federal water programs are designed primarily to respond to national priorities, which may or may not be consistent with local and regional needs, opportunities and values. Interstate water organizations provide an effective means for integrating federal and regional priorities, responding to issues at a regional scale, and promoting regional identity and enthusiasm for solutions that are consistent with national policies.

Recommendation 5: Interstate Water Organizations Should Nourish and Promote Regional Approaches for Meeting National Priorities. Federal officials and agencies and the ICWP should encourage interstate organizations to nourish local strategies and projects tailored to local hydrology, needs, opportunities and ecology and should cultivate sufficient flexibility in state and federal programs to allow for adaptation to new methods for assessing needs, establishing priorities, implementing projects and measuring results.

Finding 6: Large scale sustainable use and ecosystem restoration initiatives have been promoted with increasing regularity in recent years, an indication of growing local, state and federal support for integrated water resource management with a watershed perspective. These initiatives require effective collaborative governance. In some instances, failure to recognize and rely on existing interstate organizations has resulted in the creation of new entities, with redundant or confused responsibilities, and the inefficient use of limited public resources.

Recommendation 6: Interstate Water Organizations & ICWP Should Evaluate Emerging Large-Scale Resource Management Initiatives and Seek Full Engagement of Existing Organizations. As large-scale resource management initiatives emerge, they should be reviewed by interstate organizations and the ICWP to assure that existing organizations are engaged to their full potential. Federal officials should be alerted to this need, as well.

Finding 7: As an institutional form, interstate organizations exhibit a broad range of structural and operational characteristics that reflect the needs and circumstances of the watershed and constituent states. Although these organizations provide an extensive range of services, states often limit their authority in an effort to retain more independent control over the resulting rules, programs and projects. In addition, the normal turnover of official representatives in the governing and managing committees reduces the momentum needed in decision-making and implementation of interstate water organizations and leads to a diminished sense of potential as a vibrant forum for collaboration and problem-solving.

Recommendation 7: Enhance Education and Strategic Planning Functions for Committee Members and Key Stakeholders of Interstate Water Organizations. Interstate water organizations should maintain regular education and strategic planning functions for new and continuing members of their executive and management committees and for all interested stakeholders to strengthen their awareness of -and their confidence in -the capacity of the organization. These programs should sustain a stronger awareness of the organization's responsibilities and limitations and their relation to other resource management organizations in their watershed or region.

The ICWP appreciates the assistance of Mike Donahue, formerly President & CEO of the Great Lakes Commission, in his personal capacity in researching and drafting this report (he is currently the Vice-President for Water Resources and Environmental Services with URS).

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INTERSTATE WATER SOLUTIONS FOR THE NEW MILLENNIUM

-A PROJECT OF THE INTERSTATE COUNCIL ON WATER POLICY-

I. INTRODUCTION

For decades, water managers and policy-makers alike have espoused the value of managing water for multiple purposes on a watershed basis. Despite the fact that the comprehensive watershed approach has become the standard management philosophy, little effort has been devoted to understanding its practical implementation challenges. The fact that watersheds frequently span political boundaries and can be defined at various geographic scales complicates the challenge of balancing water supply, flood protection, pollution control, fisheries management, recreational use and other significant demands. In addition, these management challenges frequently involve several scientific disciplines and the distinct management priorities of several government agencies. In brief, there are numerous complications and barriers to managing water in a more integrated fashion, even before we strive to summarize and explain the issues and options to sustain public support and confidence.

Fortunately, there is much to be learned from our history and contemporary experience. Interstate water conflicts and management challenges have given rise to a wide variety of institutional arrangements, ranging from those that are temporary and *ad hoc* to those that are formally structured and authorized by law. In addition, there is enormous variety in geographic scale, types of water issues addressed, and range of parties or agencies involved in these interstate arrangements.

ICWP is ideally positioned to move the practice of water resource planning, policy and management into the new millennium. Central to its mission is its role as a catalyst in the reformulation of national water policy, and as a leader in integrating diverse interests to promote comprehensive approaches to policy making at the state, interstate and federal levels.

A. STUDY GOALS AND OBJECTIVES

The purpose of this project has been to document and evaluate the various interstate water management approaches and to recommend options for bringing better information and more effective management strategies to bear on resource decisions in the future.² Objectives include:

- Identify the various institutional mechanisms available for addressing interstate water management, and determine their strength and weaknesses.
- Document the historical and current role of the U.S. federal government in interstate water issues, and identify the various statutory and administrative approaches.
- Examine the geographic scale and extent of interstate water issues, and the ways that they affect the structural and operational characteristics of institutional mechanisms and management approaches.
- Using a case study approach, examine contemporary regional water management approaches and issues to determine “lessons learned” for broader application.
- Develop recommendations for future approaches to interstate water management as follows:

² The scope of work for the project derives from “Interstate Water Solutions for the New Millennium,” the proposal developed by the Board of Directors, Interstate Council on Water Policy, March 2004.

- 1) the appropriate future role of federal agencies and their relationship to current/ future interstate institutions; and
- 2) common themes and guiding principles for effective interstate water management.

B. STUDY IMPETUS

RECENT NATIONAL AND REGIONAL DEVELOPMENTS. Recent years have witnessed a “re-discovery” of watershed-based planning and management approaches to resource stewardship based on a growing awareness of the need for integrated water resource management. This re-discovery has been accompanied by a renewed interest in the multi-jurisdictional institutional arrangements needed to transcend geo-political boundaries and focus laws, policies, programs and projects on a hydrologic basis. Increasingly, traditional political jurisdictions (e.g., states, counties, federal agencies) are looking to established institutional arrangements as coordinative bodies and delivery mechanisms for watershed-based initiatives. In instances where interstate or watershed organizations do not exist (or are otherwise considered ineffective), attention is also being directed to organizational design and development efforts that will yield a new or revised institution best suited to the needs at hand.

Evidence of these trends is readily found in developments at the federal level over the past several years. A December 3, 2002 memorandum from the U.S. EPA Assistant Administrator for Water (G. Tracy Mehan III) outlined the Administration’s “Renewed Commitment to Watershed Management.”³ The memo describes the watershed, or “place-based” approach as one of the most important environmental guiding principles for U.S. EPA and the Administration. Soon thereafter, the agency’s new pollutant trading policy was released (January 13, 2003), clearly recognizing the need to involve interstate water resource organizations in policy implementation.⁴ In fact, the stated purpose of the policy is to “encourage states, interstate agencies and tribes to develop and implement water quality trading programs for nutrients, sediments and other pollutants where opportunities exist to achieve water quality improvements at reduced costs.”

During the same time frame, the U.S. Army Corps of Engineers developed a Civil Works Program Strategic Plan for FY2003- FY 2008.⁵ This document stresses the growing importance of the comprehensive watershed approach to managing the nation’s water resources. In discussing the Corps’ vision of the watershed approach as a means to achieve integrated water resources management, the draft states “the foundation principles inherent to Corps planning-cost efficiency, environmental protection, and public participation- are consistent with a watershed approach.” The document also presents the federal agency obligation to “foster dialogue” about means to support state and local governments, but emphasizes that “the complexity of contemporary water management requires a commitment on the part of those involved in water resources management across all levels of government to find consensus regarding the development, management and stewardship of America’s water resources.” Complementing this initiative was a November 2004 memorandum (U.S. EPA and Asst. Secretary of the Army for Civil Works) regarding watershed-based approaches to planning and management activities.

The U.S. Council on Ocean Policy, a legislatively mandated body charged with providing a comprehensive review and assessment of the nation’s ocean and freshwater policies and

³ G. Tracy Mehan III. “Renewed Commitment to Watershed Management” Policy Memorandum released by the Assistant Administrator for Water, U.S. Environmental Protection Agency, December 3, 2002.

⁴ Pollutant Trading Policy, released by the U.S. Environmental Protection Agency, January 13, 2003.

⁵ Draft Civil Works Strategic Plan for FY2003- 2008 released by U.S. Army Corps of Engineers, March 2003

programs, issued its report in March 2004.⁶ Consistent with the tenor of the U.S. EPA and U.S. Army Corps of Engineers statements noted above, the Commission recognized the need for a regional (i.e., watershed-based) approach to resource stewardship. Its sweeping recommendations placed interstate agencies and other multi-jurisdictional bodies (both existing and to be established) in a pivotal coordinative, planning and service delivery role. Similarly, outcome of the National Water Policy Dialogue (refer to Appendix 1), sponsored by the American Water Resources Association in Arizona in October 2005, further reinforced the need for a concerted effort to embrace interstate approaches to watershed management.

Complementing these agency-specific endorsements of multi-jurisdictional governance arrangements is a pronounced trend toward large scale, ecosystem-based restoration programs that transcend individual agencies (at any level of government) and geo-political boundaries. Examples, among many others, include the Everglades Restoration Plan, the Chesapeake Bay Program, the Coastal Louisiana initiative; the Gulf of Maine initiative and the Great Lakes Regional Collaboration. Such efforts have captured the imagination (and, increasingly, the funding support) of Congress. They have invariably been accompanied by concerted institutional analyses, and associated institutional building or revision efforts that recognize the complex, multi-jurisdictional management requirements of the restoration effort.

PRIORITY INTERESTS OF THE INTERSTATE COUNCIL ON WATER POLICY. The Interstate Council on Water Policy (ICWP) is a national organization of state and regional water resource management agencies that provides a forum for information exchange and technology transfer, and a mechanism to work with federal agencies on issues of shared responsibility.⁷ In particular, ICWP focuses on water quality and quantity issues, and the dynamic interface between state and federal roles.

ICWP has provided a voice for the states on issues of national water policy since its establishment in 1959. In the late 1960s, ICWP successfully fought for the Water Resources Planning Act, which provided the basis for improved state water planning programs. During the 1970s, ICWP served as the Standing State Advisory Committee to the U.S. Water Resources Council established under that Act. In the late 1980s, ICWP influenced the development of the 1986 Water Resources Development Act that redefined cost-sharing for federal water projects. In the following decade, ICWP continued its leadership by spearheading the development of a National Water Policy Charter and promoting a national dialogue on water policy. Associated with this leadership was promotion of a watershed-based approach that transcended an historical focus on geo-political boundaries.

ICWP has sharpened its focus on interstate water policy and management issues over the last ten years. A driving factor was a national survey of river basin interests conducted in 1997 in collaboration with the Great Lakes Commission.⁸ Survey results were later published in a report suggesting that multi-jurisdictional river basin organizations can- and should- play a key role in the future of water resources policy and management, particularly given the continuing trend toward watershed-based approaches that transcend geo-political boundaries. One outcome of this survey was the signing of an Interstate Partnership Declaration by nine interstate

⁶ U.S. Commission on Ocean Policy, 2004. An Ocean Blueprint for the 21st Century. Released September 20, 2004.

⁷ Bylaws and organizational literature, Interstate Council on Water Policy (www.icwp.org).

⁸ Survey of Interstate Organizations, as reported by Donahue in presentation titled, "Toward a National Association of River Basin Organizations: Findings and Recommendations Following a Nationwide Survey," Annual Conference of the Interstate Council on Water Policy, San Diego, California, September 18, 1997. Survey conducted by the Great Lakes Commission on behalf of the Interstate Council on Water Policy.

organizations in 1999, with a tenth joining the following year.⁹ Among others, the declaration provided for the establishment of an Interstate Governmental Water Resources Standing Committee that provided these entities with a continuing forum for information sharing, policy development and advocacy. Charter members included the Great Lakes Commission, Delaware River Basin Commission, Interstate Commission on the Potomac River Basin, Interstate Environmental Commission (New York, New Jersey, Connecticut), New England Interstate Water Pollution Control Commission, Ohio River Basin Commission, Ohio River Valley Water Sanitation Commission, Susquehanna River Basin Commission, Upper Mississippi River Basin Association, and the Missouri River Basin Association.

The aforementioned survey, declaration and committee initiatives collectively shaped the basis for this study and its associated recommendations. These recommendations constitute an action agenda to improve water resource policy and management processes through enhanced use of current and potential capabilities of interstate institutional arrangements.

C. Methodology

The project methodology supports the study goal: to document and evaluate the various interstate watershed management approaches in the interest of developing recommended options for the future. The project builds upon the aforementioned ICWP survey and a body of literature concerning past, present and prospective future approaches to watershed-based management. Complementing this research was an outreach effort that yielded practitioner-prepared case studies documenting instances where interstate and other multi-jurisdictional efforts were successfully employed to implement a watershed-based approach to resource management.

Three key questions guided the analysis and case studies:

- What are the various institutional mechanisms for addressing interstate water management that have existed in the past and are currently being employed in the United States and what are their respective strengths and weaknesses?
- What is the current and historic role of the federal government in interstate water issues and institutions?
- What common elements for effective regional water management have been seen across the country and to what degree can those elements be incorporated into future interstate situations?

The ICWP membership, acting through a Project Steering Committee, developed the scope of work for the study and solicited federal funding support for its conduct.¹⁰ The committee retained the services of a consultant to conduct the research, edit case study contributions, generate the first draft of this report and propose a set of recommendations.¹¹ The draft report and recommendations have been reviewed by the Steering Committee and the ICWP membership, revised by the Steering Committee and finalized by the ICWP Board of Directors

⁹ *Declaration of Partnership* authored by the Interstate Council on Water Policy, signed by officials from nine interstate organizations and released publicly in October 1999 at joint meeting of the Interstate Council on Water Policy and Great Lakes Commission in Pittsburgh, PA.,

¹⁰ Financial support provided by the US Geological Survey, US Army Corp of Engineers and US Environmental Protection Agency.

¹¹ Expert services in preparation of this report were provided by Michael J. Donahue, Ph.D., acting in a personal and professional capacity. Donahue is corporate Vice President for Water Resources and Environmental Services, URS Corporation, and former President and Chief Executive Officer of the Great Lakes Commission. Donahue also holds adjunct professorships at the University of Michigan and Michigan State University.

for presentation to the larger community of water resources leaders as the basis for discussion and enhancement of the contributions that interstate water organizations can make toward well-informed, collaborative stewardship of water resources across the US.

II. BACKGROUND

A. WATERSHED-BASED APPROACHES TO RESOURCE MANAGEMENT- A RATIONALE

As discussed in some detail in a later section, multi-jurisdictional, watershed-based approaches to resource management have been a focal point for institutional experimentation in North America for literally more than two hundred years.¹² While the level of application and acceptance of such arrangements has varied widely over that time, they have proved to be invaluable tools for transcending the inherent limitations of resource management by geo-political boundary.

Past experience has shown that the design and operation of multi-jurisdictional institutions requires a significant investment of time, energy and political capital. Traditional institutions (i.e., those based on geo-political boundaries) are typically protective of their sovereignty and established authorities, and tend to resist any institutional innovation that threatens to compromise such. Thus, it is not surprising that most multi-jurisdictional institutions have their origins in some form of real or perceived crisis of sufficient magnitude to overcome inherent barriers.

Advocates of multi-jurisdictional resource management point to a number of characteristics that, individually and collectively, offer a compelling rationale for such institutional arrangements. Principal among them are the following:

- **Strength in numbers/ enhanced voice:** Multi-jurisdictional institutional arrangements, such as interstate commissions (among many other forms), provide individual members with an opportunity to speak and act with a single, harmonized voice. Such unity can significantly enhance political impact; provide an effective platform for “collective bargaining/ negotiating” with other entities (e.g., federal agencies); and garner increased public and political visibility for issues of shared concern. Of particular appeal is the way that multi-jurisdictional institutions “level the playing field” and allow member jurisdictions to act and interact on a co-equal basis.
- **Monitoring and surveillance:** Ecosystem assessment programs provide the science-based data and information critical to program design, implementation and evaluation. Such programs can be prohibitively expensive for a single jurisdiction and, further, to maximize their value, they need to be implemented on a watershed basis. Multi-jurisdictional institutions have often been used as an efficient and cost effective vehicle for funding and operating integrated programs throughout the watershed of interest.
- **Pooling/ accessing resources and expertise:** Multi-jurisdictional institutional arrangements allow individual members to leverage limited resources to dramatically increase capability in areas such as assessment, research, program design and implementation, and policy development, among others. Vesting these functions in a jointly supported institution for a defined watershed obviates the need for parallel efforts in the individual jurisdictions. In

¹² Michael J. Donahue, 1987. Institutional Arrangements for Great Lakes Management: Past Practices and Future Alternatives. Ann Arbor, MI: Michigan Sea Grant College Program, MICHU-SG-87-200E. 394 p.

addition, such institutions generally attract the involvement and financial support of (non-member) cooperating entities, further leveraging member contributions to institutional operations.

- **Ecosystem- based management:** Now widely accepted as a fundamental operating principle, the ecosystem approach to resource management recognizes the interrelatedness of ecosystem components and an associated need for a comprehensive, integrated and multi-media management strategy. The success of such an approach requires that the management unit be hydrologically based (i.e., watershed) and not constrained by the artificial confines of geo-political boundaries.
- **Regional priority setting:** Establishing priorities for resource management is a necessity, given that the nature and extent of management needs within a watershed typically exceeds the resources available to address them. Individual institutions operating within such a watershed find that inefficiency and unwarranted redundancy can be avoided through a single priority setting process. Further, experience has shown that the compilation and advocacy of a single, multi-jurisdictional list of priorities is far more effective than the development of, and competition between multiple lists of (often conflicting) priorities compiled by individual jurisdictions.
- **Communication, collaboration and technology transfer:** Collegiality is one of the most compelling incentives for individual jurisdictions to participate in a multi-jurisdictional forum. Information exchange with like minded professionals enhances efficiency, fosters partnership, and encourages the type of innovation and creative thinking needed to advance the practice of watershed- based resource management.
- **Uniformity, consistency and program effectiveness:** History is replete with examples of resource management initiatives whose results were negated or otherwise compromised due to inconsistencies in how multiple jurisdictions within a single watershed addressed a shared issue (e.g., pollution sources, fishing limits, invasive species prevention and control). Ensuring some degree of uniformity from one jurisdiction to the next has been a primary motivation for the establishment and operation of many multi-jurisdictional institutions over the years.
- **Protecting jurisdictional interests:** Despite the broad acceptance of multi-jurisdictional institutions (at least at the conceptual level), traditional levels of government remain highly protective of their sovereignty, and generally hesitant to vest even a modest portion of it in a third party. Thus, jurisdictions can be compelled to participate in a multi-jurisdictional institution as a means to “keep an eye on” neighboring jurisdictions and other parties that may have goals contrary to their own. In the course of evaluating the pros and cons of various alternatives, etc, each participant gets a chance to understand and demonstrate respect for the needs and contributions of other communities. This can provide an invaluable opportunity to earn a measure of trust and credibility that is very difficult to achieve otherwise.

B. THE EVOLUTION OF MULTI-JURISDICTIONAL, WATERSHED-BASED MANAGEMENT

Speculating upon, and preparing for the future of water resources management in the new millennium is an exercise in futility if we choose to ignore the past.¹³ Much can be learned from the evolution of multi-jurisdictional, watershed-based management approaches in North

¹³ Donahue (see note 11.)

America; an evolution characterized by a long and storied history of institutional experimentation. “Lessons learned” from these experiences- both successes and failures- can help shape and refine institutional innovations to address current, emerging and even presently unanticipated needs.

This grand “experiment” literally began before the ink was dry on the U.S. Articles of Confederation, which established the limits of state sovereignty and outlined federal/ state relations in our fledgling nation. Our founding fathers quickly discovered three realities of the new frontier: 1) waterways were a vital transportation route; 2) access to abundant quantities of high quality water was a prerequisite to settling the interior of the new nation; and 3) geo-political boundaries were more of a hindrance than a help in developing and managing the nation’s water resources.¹⁴ In fact, the first interstate commission was established in 1784 when leaders in two of the original colonies- Maryland and Virginia- quickly realized that development of the Potomac River for navigation purposes could not be accomplished unilaterally. The resultant Bi-State Commission was subsequently formed and chaired by George Washington himself.

The logic of the watershed orientation in the US dates back at least to the observations and recommendations of John Wesley Powell, who asserted in 1890 that the management of water in the arid regions of the US should be entrusted to the people making a living within the watershed.¹⁵ This less-centralized system is also similar to the federalism that James Madison argued for in the Federalist Papers and was embraced in the US Constitution.¹⁶ As “laboratories” for political innovation, in the terminology of the founding fathers, interstate organizations provide pragmatic and effective decisions following a “bottom-up” approach, when they align local, state and regional institutions in governing and developing public support while allowing flexibility to accommodate varied political, cultural and hydrological circumstances. Madison argued that effective governance requires assigning the functions of government to the institutions that have the leverage and accountability.

The evolution of multi-jurisdictional, watershed-based management in North America can be conveniently described by characterizing the significant features of **five eras** spanning 200+ years of experimentation.¹⁷

¹⁴ Martha Derthick, 1974. *Between State and Nation: Regional Organizations of the United States*. The Brookings Institution, Washington, D.C.

¹⁵ Powell argued that the irrigable lands within arid regions of the US should be divided into semi-autonomous hydrographic districts, structured around local water sources. Communities sharing a common water source were to be entrusted with the responsibility of its conservation and use:

“In a group of mountains a river has its source. A dozen or a score of creeks unite to form the trunk. The creeks higher up divide into brooks. All these streams combined form the drainage system of a hydrological basin... Such a district of country is a commonwealth by itself... Every man is interested in the conservation and management of the water supply, for all the waters are needed within the district. The men who control the farming below must also control the upper regions where the waters are gathered from the heavens and stored in the reservoirs... Not a spring of a creek can be touched without affecting the interests of every man who cultivates the soil in the region. All the waters are common property until they reach the main canal, where they are to be distributed among the people. How these waters are to be caught and the common source of the wealth utilized by the individual settlers interested therein is a problem for the men of the district to solve, and for them alone.” *Institutions of the Arid Lands*, by John Wesley Powell; originally published in *Century Illustrated Monthly Magazine* for May, 1890, vol. 40, pp. 111-116. Reprinted in and quoted from *Selected Prose of John Wesley Powell*, George Crossette, editor, David R Godine publisher, Boston, 1970.

¹⁶ See Federalist papers numbered 37, 39, 45 and 46, which are addressed in *The Debate on the Constitution*, B. Bailyn, editor (Library of America, New York, 1993)

¹⁷ Adapted from Michael J. Donahue, “The Evolution of Regional Water Resources Management: Five Eras and Their Implications,” presentation sponsored by the School of Natural Resources The Ohio State University, Columbus, Ohio, October 1992.

The first might be considered the **Resource Development Era**, which includes our early history through the middle of the 19th century. The Bi-State Commission chaired by General Washington was the first in a series of interstate arrangements typically established on an *ad hoc*, issue-specific basis. These water resource management initiatives were generally development oriented, with waterborne transportation as a major emphasis. Virtually all were the outcome of management decisions designed to broaden the limitations of the physical system.

Single objective, structural development with little attention to environmental considerations was the order of the day during this era. However, the seeds of a more comprehensive, regional approach to resource management were planted during this era, as evidenced in the 1808 Gallatin Report, a national planning strategy prepared by Albert Gallatin at the request of the federal government¹⁸. While this strategy focused primarily on transportation concerns, it is regarded as the first national effort at strategic planning with a regional focus.

The pressures and consequences of a rapidly expanding nation led to a second era of water resources management. The **latter half of the 19th century** might be referred to as the **Transition Era**. *Ad hoc*, issue-specific commissions gradually gave way to more permanent commissions with multi-dimensional water resource development responsibilities. The Mississippi River Commission, established in 1879, is considered to be the first federal commission with a multi-objective focus: navigation improvements, bank stabilization and flood control. The federal Rivers and Harbors Act, which established that commission, was amended numerous times to create other regional institutions, such as the Missouri River Commission (1884) and the California Debris Commission (1893).

The majority of this era was characterized by a growing infrastructure of legislatively authorized institutions with a dominant federal influence; either a single or modest set of objectives; and an orientation toward structural alteration of the hydro-geographic system. This focus, however, began to shift subtly as resource management challenges became increasingly complex, as the environmental consequences of development became apparent, and as visionaries of the day began to influence the policy process. In 1874, naturalist George Marsh introduced the notion of watershed-based management. Four years later, a land use planner by the name of John Powell proposed a radical change to water resources management; an approach that embraced drainage basins as the primary management unit and linked water and land allocations. While application of the watershed approach- even on a limited scale- was decades away, the foundation for hydrologically-based approaches to water resource management was established.

A third era in water resources management, which we will refer to as the **Federal Leadership Era**, includes the **first half of the twentieth century**. In many respects, it is the most complex and fascinating era to date. It was characterized by landmark federal legislation, and explosion of federally established and federally dominated water management institutions, an acceptance of multi-objective, comprehensive planning, and heated debate on the role of regional, multi-jurisdictional governance in the U.S. system of federalism.

Before 1900, the US Congress had already invested heavily in America's roads, river navigation, harbors, canals, and railroads had all received major subsidies. A tradition of subsidizing the settlement of arid western lands was well established when the Congress passed the Desert Land

¹⁸ Albert Gallatin was Secretary of the Treasury between 1801 and 1818. In May, 1808 he delivered a report on "Public Roads and Canals" to Congress which listed specific internal improvements. Among the strategic improvements that Gallatin recommended were roads and canals connecting the north and the south, roads allowing access from the northern US to the Great Lakes, and roads connecting the eastern and western areas of the country. Gallatin provided an enduring justification for federal involvement in the nation's strategic infrastructure, insisting that the resulting economic benefits produced "annual additional income to the nation."

Act in 1877 and the Carey Act in 1894, which were intended to encourage private irrigation projects in the West. Beginning in 1888, Congress appropriated money to the USGS to study irrigation potential in the West and, while that irrigation study was underway, in 1890 and 1891, Congress passed legislation reserving rights-of-way for reservoirs, canals, and ditches on lands then in the public domain. However, westerners wanted more: they wanted direct federal investment in irrigation projects. Interest in federal development of irrigation projects increased as a result of the Depressions of 1873, 1883, and 1893, which dried up private investment in irrigation and other projects.

As the 20th Century began, these precedents and pressures converged to create the political, economic, and technological setting for the “reclamation” movement, which demonstrated its strength when pro-irrigation policies were adopted in both Democratic and Republican election platforms in 1900. In 1901, “reclamation” gained a powerful supporter in President Theodore Roosevelt.

To Roosevelt and others of that time, “reclamation” (i.e., irrigation) would promote “homemaking” (i.e., settlement of the western region) on subsistence family farms in line with the agrarian Jeffersonian ideal. After some political bargaining over rivers and harbors legislation, the Reclamation Act passed both Houses of the Congress and was signed by President Roosevelt in June 1902. The Reclamation Act¹⁹ provided both a mechanism for direct federal promotion of water development and a pledge to defer to the authorities of the states:

“Nothing in this act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water ... or any vested right acquired thereunder, and the Secretary of the Interior... shall proceed in conformity with such laws...”

President Roosevelt appointed an Inland Waterways Commission (IWC) in 1907 to prepare a comprehensive plan for improving and controlling river systems and declared in his letter appointment that each system, “from its headwaters in the forest to its mouth on the coast, is a unit and should be treated as such.” A year later, the IWC offered three principles that are now fundamental to water management philosophy:

- comprehensive planning as a precursor to water resources development;
- intergovernmental and public/private sector cooperation in development activities; and
- an institutional structure that formalized cooperation among principal federal agencies²⁰.

¹⁹ Public Law 57-161, June 17, 1902

²⁰ In his 1913 autobiography, Roosevelt wrote:

“The Conservation movement was a direct outgrowth of the forest movement. It was nothing more than the application to our other natural resources of the principles which had been worked out in connection with the forests. Without the basis of public sentiment which had been built up for the protection of the forests, and without the example of public foresight in the protection of this, one of the great natural resources, the Conservation movement would have been impossible. The first formal step was the creation of the Inland Waterways Commission, appointed on March 14, 1907. In my letter appointing the Commission, I called attention to the value of our streams as great natural resources, and to the need for a progressive plan for their development and control, and said: ‘It is not possible to properly frame so large a plan as this for the control of our rivers without taking account of the orderly development of other natural resources. Therefore I ask that the Inland Waterways Commission shall consider the relations of the streams to the use of all the great permanent natural resources and their conservation for the making and maintenance of prosperous homes.’

Over a year later, writing on the report of the Commission, I said: ‘The preliminary Report of the Inland Waterways Commission was excellent in every way. It outlines a general plan of waterway improvement which when adopted will give assurance that the improvements will yield practical results in the way of

A National Waterways Commission was also established upon the recommendation of the IWC, advising Congress in the areas of navigation, ports and terminals, flood control and hydropower, among others. Roosevelt also established a National Conservation Commission in 1909, with endorsement from the states that embraced comprehensive planning, although its focus went beyond water resources.

In the ensuing decades, this marriage of comprehensive planning with regional, multi-jurisdictional governance progressed quickly, with noteworthy examples ranging from the international to sub-state levels. The International Boundary Waters Treaty of 1909 between the US and Canada established the International Joint Commission with investigative and quasi-judicial functions across a broad range of objectives. At about the same time, the Mayor of Chicago spearheaded the formation of an interstate commission to address pollution problems in southern Lake Michigan and a similar group was formed to address Lake Erie water quality problems. Six years later (1914), the Miami Conservancy District was formed in Ohio, moving beyond its primary flood control mandate to provide comprehensive planning and management services.

At the national level, many pieces of flood control and public works legislation were adopted with provisions that made development activities contingent upon the assessment of impacts on a watershed basis. These featured many new requirements that challenged the traditional hierarchy characterized by multiple agencies with substantial but separate authorities. In 1917, Senator Newlands of Nevada engineered passage of a bill with the goal of comprehensive planning for all the nation's waterways; this included not only navigation but, in his words, "every useful purpose" of the resource. His legislation also proposed intergovernmental coordination of a vertical as well as horizontal nature, assigning different levels of government distinct tasks. The initiative never came to fruition, due to disagreements in Congress on membership arrangements, but the fact that such a bill passed was indicative of the progressive thinking in regards to water resources planning and management.

The 1920s and 30s saw the federal government embrace and dominate the practice of comprehensive basin planning through various pieces of legislation. The Federal River Act of 1920, the Colorado River Compact in 1922, the Rivers and Harbors Act of 1927, and the Flood Control Act of 1938, among others, offer evidence of such dominance. The second of these was particularly significant because it included language authorizing the U.S. Army Corps of Engineers to undertake systematic surveys of each major river valley in the interest of flood control, navigation, and power and irrigation development. This signaled the federal government's first major venture into regional planning on a national scale. The ensuing "308" reports, so named for the relevant section of the legislation, have been described by one author as "the most comprehensive planning for water resources development that has ever been attempted."

increased navigation and water transportation. In every essential feature the plan recommended by the Commission is new. In the principle of coordinating all uses of the waters and treating each waterway system as a unit; in the principle of correlating water traffic with rail and other land traffic; in the principle of expert initiation of projects in accordance with commercial foresight and the needs of a growing country; and in the principle of cooperation between the States and the Federal Government in the administration and use of waterways, etc.; the general plan proposed by the Commission is new, and at the same time sane and simple. The plan deserves unqualified support. I regret that it has not yet been adopted by Congress, but I am confident that ultimately it will be adopted." Theodore Roosevelt: An Autobiography. 1913; Chapter XI, The Resources of the Nation

The “alphabet agencies” of the New Deal years reflected the federal dominance as well, as evidenced by the establishment of entities such as the Civil Works Administration, Works Progress Administration, Civilian Conservation Corps and Public Works Administration. The latter entity involved a National Planning Board that made federal funds available to states for planning purposes, provided that the states created statutory planning agencies. During this era, the Tennessee Valley Authority (TVA) Act of 1933 was also passed, creating what remains the single most powerful and autonomous multi-state planning and development agency in the nation. The TVA, an outgrowth of the “308” report on the Tennessee River basin, was as much a social change initiative as it was a water resource management initiative, and its establishment and evolution over the years has had an impact far beyond the river basin boundaries.

By 1934, New Deal activities nationally had become a serious concern to Congress, and a resolution was passed specifically to address the need for a better coordinated approach to resource management and related activities. In response, President Roosevelt appointed a Committee on Water Flow to develop a series of coordinated water projects for Congressional consideration. Another outcome of the committee’s work was formation of the National Resources Planning Board, charged with developing a better coordinated program for national public works planning; this body was operational until 1943.

In 1936, Congress ratified a compact between New York and New Jersey to establish the Interstate Environmental Commission (known as the Interstate Sanitation Commission until October 2000); Connecticut joined the IEC in 1941 based on recognition that it was sufficiently affected by the same water quality concerns and needed to implement efficient solutions. In 1947, the New England Water Pollution Control Commission was established by an act of Congress with jurisdiction over the interstate waters of New England and New York.

Concurrent with these planning activities were other developments that signaled the evolution of the nation’s approach to water resources planning and management. In 1936, in response to devastating floods in the New England and Mississippi Valley regions, Congress authorized massive amounts of funds for flood control- but with strings attached. Responsibility was centralized within the Corps of Engineers and cost share requirements with affected states were established. Two years later, with passage of the 1938 Flood Control Act, the federal role was further expanded, with the federal government assuming all costs of reservoir construction for flood control- including lands, easements and rights of way.

Interstate concern over water supply allocation early in the century, as development in some western states proceeded faster than in others and it appeared that the Prior Appropriation Doctrine might be applied across state lines to the disadvantage of those states that were starting later and developing slower. The US Supreme Court decided the case of *Wyoming vs Colorado* in 1922, the same year representatives of the seven Colorado River Basin states met in Santa Fe to endorse the Colorado River Compact²¹. Many more interstate-federal compacts allocating

²¹ The seven Colorado River Basin states are Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. However, California and Arizona argued for years over how to calculate Arizona’s share of the waters of the lower Colorado River and the Arizona legislature delayed its ratification of the Compact until 1944 and then sued California in 1952 over its interpretation. The US Supreme Court decided the issue in 1964, apportioning the lower basin share among California, Arizona and Nevada. Concern over the interstate allocation and its management has intensified over the years, as it becomes increasingly apparent that there isn’t as much water in the Colorado River system as was presumed by the drafters, signers and ratifiers of the Compact. Furthermore, the US officials negotiating a 1944 treaty with Mexico, which promised to deliver 1.5 million acre-feet of Colorado River water for use south of the international border annually, neglected to reconcile that allocation with the provisions of the 1922 Compact and subsequent management .

interstate waters on the basis of negotiated terms and conditions were adopted in the 1940s and '50s.

In 1928, the Boulder Canyon Act ratified the Colorado River Compact and authorized construction of Hoover Dam, which was a key element in implementation of the compact, and the All-American Canal System. During the Depression, Congress authorized almost 40 reclamation projects promoting water supply and hydropower infrastructure development and providing public works jobs. Among these projects were the beginnings of the Central Valley Project in California, the Colorado-Big Thompson Project in Colorado, and the Columbia Basin Project in Washington.

The development and ratification of numerous interstate compacts over the years, apportioning the flow of interstate waters among the states, of several international treaties governing the sharing of streams by the United States with Mexico or Canada, and numerous court decisions made Reclamation's efforts to comply with state or territorial water law even more complex.

In 1943, the Corps of Engineers established a successor agency to the National Resources Planning Board in the form of the Federal Inter-agency River Basins Committee (FIARBC). A multi-agency federal organization, the FIARBC was tasked to establish a series of regional committees to "serve as centers for communication among federal agencies concerning their respective plans." Six such entities were eventually established between 1945 and 1950, and were comprised of federal and state representatives. The FIARBC gave way to an Interagency Committee on Water Resources during the 1950s and was subsequently replaced by the U.S. Water Resources Council in 1965.

The nation's willingness to embrace this emerging notion of regionalism and the attendant proliferation of various forms of regional governance was cause for alarm in some sectors. The federal Bureau of the Budget, for example, feared that such institutions would compromise the tradition of federalism and place a growing burden on the federal budget. The agency described such institutions in disparaging terms, such as "excrescences on the constitutional system"; "unusual cases, deviant new growth in the government landscape"; and "a constitutional anomaly to be treated with caution." Such arrangements, however, were here to stay, and the balance of the Federal Leadership Era was characterized by continued institutional experimentation designed to enhance communication and coordination among the increasing number of federal agencies and other public entities involved in water resources management.

A fourth era in water resources management might be termed the **River Basin Era**. Extending from 1950 through the mid-1980s, it was characterized by unprecedented institution building at the river basin level; an assertion of state stewardship responsibility; emerging federal/ state partnerships; and a decided emphasis on environmental protection and resource management, as opposed to development.

President Truman's Water Resources Policy Commission (1950) called for dramatic change in national water policy, recommending that Congress establish separate river basin commissions for each of the major basins. This recommendation was never acted upon by Congress. However, in 1955, President Eisenhower's Advisory Committee on Water Resources Policy (comprised of the Secretaries of Agriculture, Defense and Interior) recommended a similar arrangement and, four years later, authorizing legislation was introduced in Congress. The need for such an arrangement was subsequently reiterated by a Senate Select Committee on National Water Resources in 1961.

There were, however, vocal detractors of this continuing evolution toward basin governance that echoed some of the concerns articulated by the federal Bureau of the Budget in the 1930s. For

example, Representative Harris Elsworth of Oregon spoke against the establishment of a Columbia Valley Administration that would, in his words, “bind most of the five states in the Pacific Northwest in the chains of a regional agency.” Representative Ben Jensen of Iowa described the proposed national system of regional management authorities as “the recommendation and hope of the Communist Party of America.” Even the National Wildlife Federation, via resolution, stated its opposition to the creation of any such authorities as being “unjustified, unnecessary and a dangerous departure from our American form of government.”

These concerns notwithstanding, the River Basin Era gave us the Water Resources Planning Act of 1965 and, with it, the U.S. Water Resources Council, a series of federal/ state river basin commissions (Title II commissions), and a program providing financial assistance to states for comprehensive river basin planning. Institution building prior to passage of that Act was intense as well and, among many others, this era saw the establishment of the Great Lakes Fishery Commission (1954), Great Lakes Commission (1955), Delaware River Basin Commission (1961) and the Susquehanna River Basin Commission (1971).

The dismantling in 1981 of Water Resources Planning Act institutions, via Executive Order of the president, signaled the beginning of the end of the River Basin Era. Soon thereafter, numerous states in regions throughout the nation took it upon themselves to “resurrect” the Title II commissions (minus the federal participation) to maintain basic planning and coordination services. The Missouri River Basin Association is an example.

A fifth, and current, era in water resources management might be termed the **Ecosystem Partnership Era**. Its origin is found in the early/ mid 1950s, and its hallmark is the widespread adoption of ecosystem-based management principles and movement from a top down, command and control, government dominated approach to a bottom up, partnership-based, inclusive approach.

Evolution to this current era was not the product of an orderly, calculated strategy. Rather, it was the outcome of multiple- and not necessarily mutual compatible- developments. The “new federalism” philosophy of the Reagan Administration resulted in the downsizing and “reinvention” of the federal government, a move undoubtedly influenced by budgetary concerns and fiscal constraints. The impact on water resources management was profound; the aforementioned termination of the U.S. Water Resources Council was illustrative of the Administration’s view of water resources issues as matters primarily of state and interstate concern. Over time, a “kinder and gentler” federal government emerged, tempering its regulatory emphasis with voluntary compliance and a decided emphasis on partnering with other levels of government. Coinciding with this evolution was a new found ethic of self-determination, stewardship and collaboration among states within various river and lake basins around the country.

Multi-jurisdictional water resource management institutions with a basin orientation have enjoyed a renaissance in the Ecosystem Partnership Era, complemented by a flurry of basin-oriented institution building at all levels of government from the local watershed to bi-national levels. A particularly pronounced development has been the re-emergence of large scale, ecosystem based planning reminiscent of the Federal Leadership Era, but with a much more prominent role for the states. Evidence of this is found in a multiplicity of restoration-related initiatives that focus, among others, on the Chesapeake Bay, Everglades, Coastal Louisiana, Gulf of Maine, Gulf of Mexico and the Great Lakes. On a broader level, the 2004 report of the U.S. Commission on Ocean Policy (and a subsequent Executive Order) firmly endorsed a basin-oriented approach to management of the nation’s marine and freshwater resources, and recognized the emergence of state stewardship as a defining characteristic.

The emergence of the Ecosystem Partnership Era is not without its challenges for interstate organizations. Significant federal government “downsizing” in the mid-1990s, for example, included the loss of federal budget line items for support of many interstate organizations (e.g., Susquehanna, Delaware and Potomac commissions), as well as reductions in funding availability for a range of regional water resource planning and management programs. This has prompted public entities at the state, local and regional levels to pursue new types of partnerships and creative funding arrangements to accommodate loss of federal funds.

Characteristics of the Ecosystem Partnership Era reflect an evolution of thought and practice that has spanned more than 200 years. Over this time, a grand and continuing institutional experiment in water resources planning and management has seen the following:

- “Top down” mandates have given way to “bottom up” initiatives
- A vertical management hierarchy has given way to a horizontal approach
- A command and control, regulatory emphasis has been tempered by a partnership-oriented, voluntary compliance orientation
- Funding formulas exclusively or primarily dominated by federal appropriations have been replaced by cost share arrangements and other creative funding mechanisms
- A predisposition to building a legal and institutional infrastructure has been replaced by an emphasis on fine-tuning the existing infrastructure
- Designation of geo-political boundaries as the basis for planning and management efforts has given way to a basin-oriented approach
- The single objective, single media approaches of the past are now multi-objective and multi-media in nature
- An environmental ethic has been broadened to embrace the notion of “sustainability” and the attendant integration of environmental, economic, social and cultural considerations
- Non-governmental stakeholders, once the recipients of policy decisions, are increasingly partners in the development and implementation of those decisions

Singly and collectively, these and related characteristics of the Ecosystem Partnership Era suggest a tremendous opportunity for established regional, multi-jurisdictional institutional organizations to realize their full potential in the restoration, protection and sustainable use of water resources.

C. THE ROLE OF INTERSTATE ORGANIZATIONS

As noted above, the role of interstate organizations has evolved considerably over the years. Water supply crises and disagreements, complex point- and non-point source pollution problems, ecological restoration, public health threats, and protection of commercially significant resources are among the growing number of cross-boundary challenges that suggest a growing role for interstate organizations with significant third party authority. At their most basic level, these institutions provide another opportunity to overcome the parochialism and boundaries that can inhibit traditional agencies whose responsibilities are defined by geo-political boundaries and a “stovepipe” approach to the assignment of resource management issues. Whether national policies or priorities are clear or ill-defined for a given issue, watershed and interstate organizations typically follow a collaborative, ecosystem approach that infuses local values and innovative methods, along with additional sources of funding²².

²² As an example of the innovative efforts to advance water resource management, the WV Water Gaging Council solicits private companies within the state to make donations to fund its gaging programs. The Council reviews petitions for installing new and upgrading existing gages in the state and determines the priority for which gages

Beyond the “typical” characteristics of interstate organizations listed above, a variety of widely divergent forms, functions and authorities have evolved to meet specific needs. The interstate and watershed organizations in existence today range from low budget, *ad hoc* arrangements without regulatory authority, to treaty- or legislative-based commissions with large staffs, significant funding, and a range of planning, regulatory and financing authorities.

With notable exceptions, including those that are typically brought on by a pronounced water management crisis, many interstate organizations exercise “soft management functions” such as information sharing, coordination, research, data collection, information management, technology transfer, policy development and analysis. This reflects a historical tendency of state and federal agencies to retain their “hard authorities” and to invest “third party” entities with significant authority only when the more traditional and politically conservative approaches prove inadequate. Where it is possible to agree on the investment of adequate legal authority in an interstate organization, the benefits are substantial. Two notable examples are the Delaware River Basin Commission and Susquehanna River Basin Commission, each of which is vested with full regulatory authority and, by their operation, facilitates a joint exercise of the sovereign powers of their constituent states; others include the Ohio River Valley Water Sanitation Commission and Interstate Environmental Commission. Where the agencies are reluctant, for whatever reason, to invest the necessary authority, less formal organizations may nonetheless yield substantial influence by gaining public and political support for programmatic solutions and engaging a peer review process for enhancing education and accountability.

D. WATERSHED- BASED MANAGEMENT AT A CROSSROADS: AN OPPORTUNITY FOR INTERSTATE ORGANIZATIONS

As we enter the new millennium, we find that watershed-based institutions- particularly at the interstate level- have become a solid feature in the national landscape of water resource governance. Water resources planning and management in the US has matured considerably, and the comprehensive, “watershed” approach to problems and opportunities now enjoys near-universal acceptance, at least at the conceptual level. Interstate agencies have flourished over the past 50 years, yielding a multitude of success stories that demonstrate their contributions in terms of efficiency, effectiveness and, ultimately, improvement to the protection and use of this precious resource. Their leadership, facilitation and support in assessment, planning, coordination, policy development, advocacy and project implementation is often so smooth that their efforts may be taken for granted.

The future, however, is filled with challenges. In recent years, increasing fiscal austerity at the federal and state levels has translated into funding limitations (or reductions) for interstate organizations that are largely dependent upon such funds for their operations. Continuing reluctance to invest interstate organizations with substantial authority limits the potential of these organizations, particularly when potential solutions may alter established resource management paradigms or jurisdiction. Stakeholders are more diverse and better informed, and their expectations for governance are high. The cost of “reactive management,” responding to disaster after-the-fact (instead of anticipating and avoiding damage and disruption, and then allowing communities to reestablish in the wrong places or with inappropriate designs or technologies, is difficult to stop, although we have ample evidence that the cost is exorbitant. Simply put, many of the “old models” for water resources management struggle too hard and we need to open the path to innovation and collaboration.

most critically need addressed and allocates private funds donated to the Council for that purpose.
<http://www.wri.nrcce.wvu.edu/programs/wvwc/>

The question at this time is not whether interstate organizations as an institutional form will withstand these and related challenges- they most assuredly will. Rather, the question is whether they will reach a plateau in their evolution, or move beyond the challenges of the day to assume leadership as innovators in water resources planning and management.

The complexity and consequence of today's water resources challenges suggest that interstate organizations *can* thrive in the future, provided that the water community leadership is active in cultivating, applying and promoting their potential. The need for creative, collaborative initiative is very strong. The issues are increasingly complex, the pressures on land use and water development in many areas are approaching limits of sustainable management, while the scientific data and analysis are more sophisticated and the political arguments are often heated and difficult to focus. Interstate organizations have the ability to build on past successes and demonstrate the type of institutional innovation needed to serve the needs of our communities in the midst of 21st Century challenges.

III. MULTI-JURISDICTIONAL APPROACHES TO WATERSHED-BASED MANAGEMENT

A. AN OVERVIEW OF INSTITUTIONAL FORMS

Any systematic effort to develop and employ innovations in institutional design for water resources management requires a multi-faceted approach. A solid understanding of institutional evolution allows one to extract "lessons learned" for prospective future application. An analysis of current planning and management challenges- and the means by which present institutions are addressing them-helps identify the nature of unmet needs and the extent to which "building blocks" for institutional change are available. Finally, a look ahead to emerging water resource management needs- and those just over the horizon- offers an opportunity to design institutions that learn; that can adapt to evolving problems and opportunities, and can accommodate and address those that simply cannot be predicted.

History offers us three realities of institutional performance with regard to water resources management at the multi-jurisdictional level. First, institutions play a critically important (yet seldom appreciated) role in the overall policy and management process. At any level of governance, institutions do far more than simply implement policy established by elected officials. They can play a pivotal role in its development, interpretation and advocacy; how it is perceived by affected communities; and when, how and if it is implemented. Hence, a far greater understanding of the rationale for, and role of, multi-jurisdictional institutions is critical to the future of the resource.

Second, history reveals a longstanding yet poorly articulated sense of dissatisfaction with water resource management institutions. It is generally recognized that institutional advancements over the aforementioned eras have been significant, and that the accumulated set of planning and management principles (particularly as they relate to multi-jurisdictional, watershed-based approaches) has contributed in an equally significant way. Equally recognized, however, is the fact that institutional innovation and change can lag far behind the needs of the resource, holding back (rather than facilitating) the application of rapidly emerging science and technology. Schon (1971) describes such institutions as "memorials to old problems" where the "organizational equivalent of biological death is missing. In sum, institutional design and application continues to be a grand, centuries-old experiment and, consequently, the governmental landscape is littered with various forms and approaches to water resources management: some abandoned others operational, yet largely ineffective, and still others that hold great promise. Distinguishing

between them- and learning from these “experiments”- is fundamental to the future of the discipline.

Third, it is abundantly clear that institution-building for water resource management is as much an art as it is a science. While lessons learned from past experience are exceedingly valuable, there exists no single prototype- or formula- that can be universally applied to any given watershed and its associated management needs. Rather, the focus must be placed upon heuristic tools- rules of thumb- that provide general guidance while recognizing the unique nature of every watershed. Derthick’s observation in the mid- 1970s remains true today: “When it comes to regional organizations, what works at all and what works best remain unsettled, but these questions are much more open to answers from observations than ever before.”

Simply stated, much can be gained from a thorough analysis of institutional experimentation and from the associated successes, failures and innovations associated with various forms of regional, multi-jurisdictional governance. To assist in identifying promising characteristics of institutions for the new millennium, a descriptive inventory of fifteen distinct institutional forms was developed, representing the array of predominant forms that have been employed in North America over the last century. A summary analysis is presented below, organized around four broad categories of institutional arrangements. The analysis is followed by presentation of significant findings. The appendix provides additional detail on each of the fifteen forms, including description, brief historical perspective, selected strengths and weaknesses, and an assessment of its prospective contribution to institution-building for the new millennium.²³

The first category consists of **multi-jurisdictional compacts, treaties, conventions and agreements**. Such arrangements are highly formal, legal constructs that are based in law or official action by the respective jurisdictions. These are among the most powerful institutional arrangements for multi-jurisdictional management, often supported by implementing agencies with binding decision making authority or, at the minimum, highly influential quasi-judicial, advisory and/ or recommendatory functions. Within this category are found **interstate, federal-state, and state-foreign power compacts**. The first two are among the more common forms of institutional arrangements for multi-jurisdictional water resources management in operation today. Among many others, examples include the Great Lakes Commission, Susquehanna and Delaware River Basin Commissions, the Interstate Commission on the Potomac River, and the Ohio River Valley Water Sanitation Commission (ORSANCO). The third institutional form has seen limited application in areas outside of water management, but has potential applicability along the international boundaries (i.e., Canada, Mexico) of the United States with respect to water quantity and quality management issues. **Treaty-based arrangements** (e.g., US-Canada International Boundary Waters Treaty of 1909) are similar in that they enjoy a solid legal basis founded in formal, binding action at the highest level between party nations. Bi-national **conventions and agreements** enjoy a significant though lesser stature. They are not subject to the rigors of the treaty-making process but, nonetheless, represent the formal commitments of two nations. US-Canada examples include the 1954 Convention on Great Lakes Fisheries and the Great Lakes Water Quality Agreement, first signed in 1972.

The second category consists of **multi-jurisdictional councils and commissions** where a range of state and federal agencies organize themselves on a largely co-equal basis to address shared issues and opportunities within a defined watershed or region. Federal and state law, interagency memoranda of agreement and legislative resolutions are among the mechanisms for establishing these entities. Communication, coordination and collaboration- either on a topic-specific or more general basis- is generally the impetus for formation. This institutional form recognizes the

²³ Adapted from Donahue (see note 11.)

complexity of multi-jurisdictional governance, and the overlapping and sometimes competing authorities between and among units of government at all levels. It also recognizes the need to transcend the traditional focus on geo-political boundaries, and harmonize efforts on a hydrologic, or watershed basis. The collaborative nature of water management in the federal system is seen in such arrangements as **interstate councils and commissions, state-federal commissions, and basin interagency committees**. The Western States Water Council and Council of Great Lakes Governors are examples of interstate arrangements, as are the various multi-state associations (e.g., Missouri Basin States Association, New England Governors Conference) that emerged following the demise of the Title II (federal Water Resources Planning Act) institutions. The same notion of communication, coordination and collaborations- as well as harmonizing national policy- is found at the **international level** through institutions such as the Commission on Environmental Cooperation (US-Canada-Mexico), the International Boundary and Water Commission (US-Mexico), and the International Joint Commission and Great Lakes Fishery Commission (US-Mexico). At the single state level, **intrastate special districts** provide a mechanism for state and local governments to address issues within shared watersheds, where inter-jurisdictional complexity can rival that found in interstate and international settings.

The historically significant leadership role of the federal government is represented in the third category of institutional arrangements, which is characterized by **federally-led multi-jurisdictional arrangements**. The **federal regional council** form has been in common usage since the early decades of the 20th century, instituted primarily as a mechanism to coordinate the actions of multiple federal agencies in a defined region. Ranging from short-lived, issue-specific bodies to long-standing entities with a national focus, such councils have been established through mechanisms as diverse as federal legislation and informal interagency agreements. The federal regional agency, an institutional form uniquely characterized by the Tennessee Valley Authority, is indicative of a “command and control” approach to regional governance whereby the Congress vests a single entity with comprehensive authorities on a multi-state, basin-oriented basis. Also characteristic of the historic federal leadership function is the **single federal administrator** institutional form, whereby a single individual is empowered by Congress to exercise binding authority over water management decisions. Examples include vesting the Secretary of the Interior with water allocation authority under provisions of the Colorado River Compact, and the U.S. Supreme Court appointment of a Special Master to oversee the Lake Michigan Diversion at Chicago.

The fourth category of institutional forms consists of **entities that operate in a quasi or non-governmental setting**, outside of the typical arrangements that feature a central role for state and federal agencies. The **international court** is one such mechanism, an entity of “last resort” to which water management disputes between two or more nations are referred. While such a function is provided for through the aforementioned International Boundary Waters Treaty, it has never been invoked; the International Court of Justice remains the most relevant example of this institutional form. The **federally chartered/ private corporation**, best characterized by quasi-governmental entities in the United States and Canada (e.g., St. Lawrence Seaway Development Corporation, St. Lawrence Seaway Management Agency) has seen limited employment, and typically in a narrowly focused area of resource management. Finally, **non-governmental arrangements**, ranging from academic institutes to special interest advocacy groups, have taken on an increasingly broad array of multi-jurisdictional functions, including planning, research, policy analysis, coordination and outreach, among others.

B. LESSONS LEARNED AND APPLICABILITY TO INTERSTATE ORGANIZATIONS

More than two centuries of institutional experimentation have yielded a multitude of lessons that have shaped the evolution of interstate governance. As “learning organizations”, they have benefited from the individual and collective successes and struggles of their predecessors. And, while the “experiment” continues to this day, their success is beyond question. Interstate organizations have progressed from simple forms and highly contentious beginnings to sophisticated entities that are woven into the very fabric of governance.

As current interstate organizations are refined and new ones developed, “lessons learned” from past experiences can be valuable. Specifically, four broad areas of advice are particularly relevant for officials considering the establishment or refinement of an interstate organization for water resources management.

- The “transaction costs” associated with establishing (or significantly refining) an interstate organization can be high, but the payoff can far exceed the initial investment. Institutional inertia can be a significant deterrent to the formation of an interstate organization, explaining why most are established in response to real or perceived crises, rather than in the interest of anticipating and avoiding such crises. Challenges include generating the requisite unanimity among prospective member states regarding legal, structural and operational characteristics; securing legislative support at the state level (and federal level if a compact is involved); establishing and pursuing shared priorities; and establishing a “niche” and power base within the larger institutional ecosystem. History has demonstrated, however, that the expenditure of time, labor and political capital will ultimately yield significant, measurable benefits for the resource and the member jurisdictions involved. Thus, officials exploring the establishment/ refinement of such an institution must have realistic expectations and an understanding of the long- term nature of both the investment and resultant dividends.
- Establishing interstate organizations that “learn” is essential to ensure that authorities and functions remain relevant over time. Donald Schon once described government institutions as “memorials to old problems” in which the “institutional equivalent of biological death is missing.”²⁴ His reference speaks to the realities of institution building, where the tendency is to look only at the problem or crisis prompting the action, rather than at the longer term relevance of the institution to problems and crises that are well beyond the horizon. State officials designated as the “architects” of an interstate organization are well advised to look several decades beyond the current crisis, and set in place organizational authorities, structures and operations that are sufficiently broad and resilient to ensure organizational relevance for an extended period. This is a particularly significant lesson, given that the governance landscape is cluttered with agencies and organizations that remain intact yet have compromised capabilities vis-à-vis current issues and needs. Fortunately, when collaborative problem solving is effective, especially in organizations that engage the broader community of interests within a watershed, it tends to attract related challenges, even though they might fall outside the original mission of the organization. Adaptive flexibility is essential.
- Exploiting the full potential of existing interstate organizations should precede any effort to establish a new institution. Political leaders and, to a lesser extent, policy officials have historically had a tendency to look past the potential of existing institutions when exploring options to address a newly emerging issue. This tendency is due to both the perceived

²⁴ Schon, Donald. 1971. Beyond the Stable State: Public and Private Learning in a Changing Society. New York: Random House.

political appeal in announcing a new organization, and also a failure to fully understand the current (and prospective) authority of the existing organization. Given the time requirements of organizational development (e.g., the many years typically involved in establishing an interstate compact), a critical first step is to characterize current organizations and their current and prospective authorities and capabilities. Given the mature state of governance arrangements in North America, it is highly likely that any given region or watershed will have multiple interstate organizations with some degree of water resources management authority. Very often, the potential for collaborative problem solving and accomplishment of existing organizations is considerably greater than their current expectation or authority.

- Institution- building exercises must be tailored to the unique circumstances at hand (e.g., resource issues, political considerations, jurisdictional preferences); there is no generic model- or set of models- that can be universally applied. While institutional forms for water resources management can be broadly categorized for descriptive purposes, no two organizations share identical structural and operational characteristics. Officials charged with institutional design or refinement can certainly benefit from similar experiences in other regions, but need to recognize that “form must follow function.” The nature of the resource management issue or problem must be fully characterized before any prospective institutional response is formulated.

IV. THE FEDERAL ROLE IN INTERSTATE WATER MANAGEMENT

A. HISTORICAL AND CURRENT FEDERAL INTEREST

The federal government has played a subtle, yet pervasive role in the evolution of interstate approaches to water resources planning and management.²⁵ This role has its genesis in the earliest efforts to organize geo-political jurisdictions around hydrologic boundaries, and has increased in significance over time. In fact, the great majority of the fifteen generic institutional forms for water resource management identified earlier have been profoundly influenced by a federal government presence.

The nature of the federal role has numerous dimensions. In some instances, the role is an overt one, involving full membership, chairmanship or veto power over policy decisions. In others, the role is support oriented, with a federal official serving as advisor, observer, technical resource, and collaborator or implementation facilitator. Often, the federal government has often provided the initial motivation and momentum for the formation of interstate organizations.

The role of the federal government in interstate water resource management has evolved substantially over the years, as evidenced by the five eras described earlier. Through the middle decades of the 20th Century, it held a strong-to-dominant role at the regional level, typically the lead entity in interstate initiatives for water resources restoration, protection and development activity. This role moderated in subsequent years, as states developed stronger expertise, asserted a more independent stewardship role, accepted greater responsibility for funding and federal/ state partnerships and collaborative arrangements emerged. The complex, ongoing negotiation and litigation of water supply, pollution control and other water resource management parameters for the Apalachicola, Chattahoochee and Flint (“ACF”) River system in

²⁵ Douglas Kenney and Betsey Rieke, (1997). Resource Management at the Watershed Level: An Assessment of the Changing Federal Role in the Emerging Era of Community-Based Watershed Management, Western Water Policy Review Advisory Commission. Springfield, VA: National Technical Information Service

Georgia, Alabama and Florida provides a prime indication that the federal role remains strong, particularly in areas where existing/ potential water use disputes among states calls for a independent assessment, arbitration and decision making functions. Generally, the federal influence has been more pervasive in the west states, but the protection of water quality and conservation of endangered species have directly involved the federal agencies in regulatory, policy and development decisions across all 50 states in the past 30 years. One set of relationships, however, is constant: fundamental state reliance on the federal government for scientific information, technical assistance and funding.

From an operational perspective, the federal government provides both positive and negative incentives that help advance the design and operation of interstate organizations for water resources management. On the positive side, such incentives include financial support, organizational support, technical assistance, and provision of authorities that provide nonfederal (and non-governmental) entities with a basis for implementation activity. Negative incentives are predominantly associated with federal regulatory authority (e.g., elements of the federal Clean Water Act and Endangered Species Act). In the interest of avoiding conflicts and potential litigation, states often find that partnering with federal agencies can open up lines of communication and prevent or resolve problems that might otherwise arise.

While the historical role of the federal government vis-à-vis interstate organizations is generally quite positive, some barriers must be addressed if the full potential of these organizations is to be realized. These barriers tend to be based more on issues of policy and procedure than on legislation. One significant concern is a matter of perception; the general mistrust that states have historically held for the federal government. This tension, which exists on many other inter-agency levels as well, can be a deterrent in establishing and enabling interstate/watershed organizations. Where such organizations already exist, these reservations limited their ability to fully exercise its functions. Care must be taken to ensure that the federal government does not assume an overly prominent role within the organization; a careful balance must be struck with the states with regard to decision making influence, agenda setting, financial support, and level of activity, among others. Additionally, financial matters are often cited as a challenge when considering the nature of federal agency participation in interstate organizations. Such matters include concerns over lack of adequate federal funding, laborious procedures for accessing federal funds, cost share issues between state agencies and the federal government, and challenges in interagency transfer of funds. Shared and contributed funding always seems to bring expectations and complications, between individuals and businesses as well as agencies, but the persistent themes of shared governance and cooperative conservation require our dedication to expanding relations with respect to interstate waters. These issues are not insurmountable, but they complicate and limit the effectiveness and productivity of the federal/state relationship.

It is important to remember that, in many instances, the impetus for formation of an interstate organization was the real or perceived inefficiency of the federal government as it discharged its water resource management responsibilities. Fragmentation of laws, authorities and institutions (state and federal) has long been a problem in the effective identification and resolution of water issues, as have differing philosophies and methods for resource management. This has, of course, begun to change in recent decades, as many federal agencies have embraced a watershed-based approach to resources management and recognized the advantages and popularity of collaborative, multi-agency procedures. As the federal budget tightens, the capabilities of many federal agencies and programs must adjust accordingly. The proven abilities of interstate organizations to assume substantial responsibility for water resource stewardship assessment,

planning and project implementation in an open, inclusive process should provide an attractive option for sustaining a full range of integrated programs and services.

B. KEY CONSIDERATIONS FOR THE FUTURE ROLE OF INTERSTATE ORGANIZATIONS

An active federal role in the operation of interstate water resource management agencies remains a vitally important determinant of overall success. With some notable exceptions, interstate organizations often depend on the federal government for legislative authorities, research and technical assistance, data and information acquisition and management, funding support, and collaboration opportunities. While states are well advised to work collectively toward a more significant role in these areas, the federal government is likely to play a major- and some times predominant- role in interstate water resources management.

A selection of key considerations for the future of interstate organizations can be gleaned from an analysis of the past and present role of the federal government. For example:

- Interstate organizations must retain flexibility in structure and operation. The federal role should be one of supporting, assisting and partnering, but should not unduly constrain the states' collective ability to pursue and achieve their goals.
- The full potential of existing interstate organizations should be recognized and exploited before any effort is made to establish a new organization. The historic tendency to "create something new" rather than engaging (and revising, as needed) existing relationships and organizations is inefficient.
- Interstate organizations should advocate and fully employ federal legislative and regulatory authorities consistent with their overall mission. They should not always assume or duplicate such authorities to ensure success; often, they are most effective by providing a forum and bringing the relevant information and relationships together that enable agencies with those authorities to exercise them in a more efficient and effective manner.
- The federal government should maintain its role in conflict resolution, particularly when conflicts arise among the states. In such instances, the federal government is often the best situated to understand the historical, procedural, political, cultural, planning and other differences and provide a "third party" perspective.
- Federal participation in interstate organizations should be directed, in part, at addressing federal barriers that have historically impeded integrated water resource management. Among others, this includes problems of fragmented federal law; lack of adequate and reliable data and funding; complex procedures and rigid criteria.
- The historic federal role in science-based decision support has been essential and should be enhanced, recognizing the states' fundamental reliance on federal agencies for collecting and analyzing data, dispensing technical knowledge and developing management tools and standards for the application of that information.

V. FACTORS INFLUENCING INSTITUTIONAL DESIGN AND OPERATION

As noted previously, institutional arrangements for interstate water resources management vary dramatically in terms of their legal standing, authorities, functions, funding, membership, structure and related considerations. The basis for such variance is founded in a series of factors that collectively influence institutional design and operation and, in so doing, ensure that each institution is unique. Presented below is a descriptive summary of selected factors and their institutional implications, based upon historical analysis and current observations of interstate organizations.

- GEOGRAPHIC SIZE OF WATERSHED: The geographic boundaries of interstate organizations can vary tremendously, ranging from less than a hundred square miles to well over a million. Generally speaking, budgetary and other resource realities (i.e., constraints) prompt organizations functioning in larger watersheds to be highly selective in prioritizing issues and in determining the way in which those issues are addressed. While some organizations in such settings can have significant regulatory/ management authorities in certain areas (e.g., water allocation, water quality standards), the majority of functions tend to be at the broader policy analysis, planning, information sharing and advocacy levels. Organizations operating within smaller watersheds are also subject to resource constraints but, generally speaking, are often better positioned to address a larger array of issues in considerable detail.
- HYDROLOGIC CHARACTERISTICS: The hydrologic characteristics of watersheds can also vary tremendously in terms of water/land ratio; water volume/ availability; drainage and flow patterns; groundwater/ surface water relationships; and the mix of water bodies within the watershed (e.g., lakes, rivers, streams, wetlands). These differences can have pronounced organizational implications. For example, a watershed with a large land to surface water ratio is likely to have a concerted focus on education/ outreach efforts for non-point source pollution control, while a watershed with a large surface water to land ratio may have a greater emphasis on point source pollution issues and associated “end-of-the-pipe” regulatory considerations. Also, jurisdictions coping with water scarcity issues within a shared watershed have historically supported interstate organizations with regulatory authority for water allocation, while jurisdictions blessed with abundant water supplies seem less inclined to invest such organizations with allocation authority²⁶.
- JURISDICTIONAL COMPLEXITY: The number and types of governmental units (and non governmental interests) involved in planning and management activities within a given watershed can have profound impacts on both organizational design and operation. Even organizations whose membership is limited to state officials typically have formal or informal (non-voting) roles that involve local, regional, federal and (occasionally) international agencies and organizations. Additionally, user groups, citizen organizations and other interested parties have a vested interest in, and active influence on, interstate planning and management decisions. Generally speaking, interstate organizations with large (and diverse) numbers of jurisdictional members will have a major- and sometimes predominant- focus on consensus-building exercises and a tendency to develop broader policy statements that reflect necessary compromise among the membership.

²⁶ The Susquehanna River Basin Commission and Delaware River Basin Commission are two distinct exceptions; both have broad regulatory responsibilities despite the size of the annual water discharge of their respective systems.

- LEVEL OF CONGRUITY BETWEEN HYDROLOGIC AND GEO-POLITICAL BOUNDARIES: Historically, water bodies have been employed as convenient lines of demarcation to separate political jurisdictions rather than as shared resources that unite those jurisdictions. The lack of congruity between these two types of boundaries can have significant organizational implications from both a structural and operational standpoint. In any given watershed, for example, one jurisdiction may be fully within the hydrologic boundaries, while another may have a very limited (yet important) physical presence in that watershed. Further, the interests and needs of a “landlocked” jurisdiction far removed from the watershed’s predominant water body can differ significantly from a neighboring jurisdiction with a substantial riparian presence on that water body. Differing motivations and interests of the various jurisdictions will require special accommodations and compromises in organizational design and operation.
- SOCIO-ECONOMIC AND CULTURAL CONSIDERATIONS: The motivations and characteristics of various jurisdictions within a given watershed can dictate the structural and operational attributes of the organizations they are party to. A strong maritime transportation, commercial fishing or manufacturing heritage, for example, can significantly influence how that jurisdiction approaches watershed issues and opportunities, and how it relates to neighboring jurisdictions that may have other socio-economic and cultural attributes. Many interstate organizations, particularly those without regulatory authority, tend to focus primarily on areas of ready consensus with only limited attention to the more divisive issues.
- NATURE OF ISSUES AND THEIR INTERRELATIONSHIPS: Significant variance from one watershed to the next can be found with respect to the complexity of issues, the level of contention, and the respective interests, priorities and motivations of the jurisdictions involved. In some instances, pronounced differences are a motivating factor in institutional design and operation, and can prompt member jurisdictions to vest significant regulatory authority in a third party, membership- based organization. In other instances, jurisdictions studiously avoid the contentious issues, instead employing the organization to focus exclusively on areas of ready agreement. A further (and equally significant) consideration relates to the “institutional ecosystem” within which any given interstate organization must operate. Current institutional arrangements, legal regimes and policy frameworks collectively shape this environment and help determine the “niche” that a new (or refined) organization will attempt to fill.
- LEADERSHIP CHARACTERISTICS: A major, yet often overlooked, determinant of institutional design and operation is the degree of leadership provided by the jurisdictions involved in an interstate organization. Those with limited resources and authorities can command significant stature and influence through strong and visionary leadership. Conversely, the effectiveness of organizations endowed with considerable resources and management authority can be seriously compromised in the absence of competent leadership. In brief, enabling legislation and organizational charts are indicators of organizational potential, but do not guarantee organizational effectiveness.

In sum, the confluence of many factors determines the nature of organizational design and operation within any given watershed. These factors are dynamic, and suggest the need for “learning organizations” that can adapt, over time, to evolving interests and needs. Institutions that are designed only to address the crisis of the moment may achieve short term success, but prove to be singularly ineffective in anticipating and addressing the needs of the future.

VI. CASE STUDIES TO SHAPE FUTURE OPPORTUNITIES FOR INTERSTATE ORGANIZATIONS

We have collected and included nine case studies of interstate approaches to water resource management to serve two valuable functions:

- document the historic contributions of interstate organizations and, more importantly,
- illustrate a set of patterns that might be applied to future problems and opportunities.

Presented below is a brief summary of nine case studies. They are representative of the full range of services and accomplishments that are much more feasible with a collaborative forum and regular meetings to explore and resolve issues across that cross state or local boundaries. Their presentation is followed by a brief summary of common characteristics that illustrate the successful patterns and the “value added” by interstate organizations when addressing complex multi-jurisdictional problems and opportunities.

BEAR RIVER INTERSTATE WATER ACCOUNTING MODEL:²⁷ Established in 1958 through legislative action in Idaho, Wyoming and Utah, the Bear River Compact is designed to remove causes of present and future controversy over the distribution and use of the waters of the Bear River. Should any such controversy arise, the Bear River Commission is empowered to declare a water emergency and distribute waters on the basis of priority use, regardless of state boundaries.

After failed attempts to agree on a single accounting model to establish a fair allocation, the three states decided to collaborate on adjusting separate accounting models to ensure that they would produce similar results, which required that each model include the water rights in the other states. The new interstate models are now used routinely to distribute water, avoiding the threat of a water emergency declaration.

Key players in reaching agreement on this cooperative approach included state water management agency directors and governor-appointed commissioners from each state, as well as representatives of the federal government. A representative chairs the Commission meetings. The Bear River Commission was instrumental in providing a forum for collaboration and a source technical information and expertise, all of which were needed for model development, and facilitated the negotiation process. As model development and other issues are resolved, they are memorialized following Commission-approved procedures.

An official from the Idaho Department of Water Resources notes that a predominant challenge in the process was the need to recognize and accommodate concerns over state sovereignty, and remain focused on providing a forum for cooperation and discussion. This successful experience on the Bear River has prompted Idaho officials to consider a similar approach if they are unable to reach agreement with their Washington State counterparts on model development for the Rathdrum Aquifer.

NEW MASTER MANUAL FOR THE MISSOURI RIVER:²⁸ The Master Manual for the Missouri River, indicating the operating priorities and trigger conditions for water storage, release, etc., was first developed by the Corps of Engineers in 1960. In the years following its revision in 1978, the relative importance of and public support for the various uses authorized by Congress seemed to change significantly.

²⁷ Adapted from case study submitted by Hal Anderson, Administrator, Idaho Department of Water Resources

²⁸ Adapted from case study submitted by Garland Erbele, Chief Engineer, South Dakota Department of Environment and Natural Resources

A case in point was the 1944 Flood Control Act, which authorized construction of Missouri River dams for flood control, hydropower, navigation, recreation, water supply, irrigation, and fish and wildlife. Navigation and irrigation were originally expected to be the dominant uses, but recreational use of the system's reservoirs has far surpassed expectation. Conflicts arose in times of drought, and the higher priority given to navigation in the original Master Manual generated increasing frustration because it caused the upper basin reservoirs to be drained in response to navigation needs. In the process, severe impacts accrued to the substantial recreation industry. At the same time, the federal Endangered Species Act required the Corps of Engineers to consider the habitat needs of three protected species on the river, resulting in frequent and more complex conflicts with "normal" reservoir operations.

Responsibility for updating the manual is held by the Corps. However, they asked the Missouri River Basin Association to assist them in negotiating a new manual with the basin states. The Missouri River Basin Association was formed in the late 1980s and comprised of governor's appointees from each of the basin states. The Association, along with the Missouri River Natural Resource Committee, has played a pivotal role in bringing a science-based approach to the deliberations and negotiating a new framework for operation of the mainstem reservoirs. As a result, an updated Master Manual was released in early 2004.

The federal government played a key role in the Master Manual update. The Corps of Engineers has primary responsibility for operation of Missouri River dams, and the US Fish and Wildlife Service was extensively involved by virtue of its responsibility for implementation of the Endangered Species Act.

A Commissioner from South Dakota emphasizes that all major stakeholders need to be included, that those with decision making authority need to be active and alert. She also underscores the importance of not allowing differences to become personal and keeping politics out of the process to the extent possible and, finally, recognize that the Endangered Species Act can "trump all other cards," upsetting many other arrangements.

COLORADO RIVER ENDANGERED SPECIES COMPLIANCE:²⁹ This interstate program was established in 1988 to resolve potential conflicts between water supply management and endangered species protection in the Colorado, Wyoming, and Utah portions of the Upper Colorado River Basin. Participants in the Program include the states of Colorado, Wyoming, and Utah, federal agencies (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, Western Area Power Administration, and National Park Service), water users, power users, and environmental organizations.

Four Colorado River Basin fish species (Colorado pikeminnow, bonytail chub, humpback chub, and razorback sucker) are listed as endangered under the federal Endangered Species Act (ESA). In 1983, U.S. Fish and Wildlife Service (FWS) issued a draft report that called for no further water depletions from the Upper Colorado River Basin. It indicated that projects could proceed with depletions, but only if their depletion impacts would be replaced on a one-for-one basis. Curtailment of future water depletions (for existing and new supplies) would prevent communities and businesses throughout the area from being able to develop the water supplies allocated for their uses under interstate compacts ratified by Congress.

Negotiations to resolve these conflicts were initiated in 1984 by the states, federal agencies, water development interests, and environmental organizations and, in 1987, the basic tenets of the Program were agreed upon: 1) the objective is to "recover" the four endangered fish species

²⁹ Adapted from information provided by John Shields, Interstate Streams Engineer for the Wyoming State Engineer's Office, and Tom Pitts, WATER CONSULT Engineering & Planning Consultants

in the Upper Colorado River Basin; 2) a broad array of actions will be undertaken by the Program to recover the fish; 3) funding will be provided for recovery actions under equitable and mutually agreeable funding arrangements among the parties involved in the Program; 4) actions taken by the Program will be considered by FWS as the “reasonable and prudent alternatives” (ESA terminology for adequate mitigation) for depletion impacts of existing and new projects, and all impacts of existing (pre-1988) projects; and 5) water for endangered fish will be acquired and protected in accordance with state water law and interstate compacts.

The Program was established by a Cooperative Agreement signed by the Secretary of Interior, three state governors and other officials in January 1988. It is implemented by a governing committee that includes the signatory agencies and states, as well as representatives of the water and environmental communities, and operates by unanimous consensus. Planning, evaluation and management responsibilities are handled by a management committee and three technical committees. The recovery effort has developed around five basic elements designed to restore habitat conditions and fish populations in the wild that will be sufficient to sustain the reestablish the of the species.

Species status is improving as a result of Program actions. Two species that were practically extirpated are being restored while another now meets FWS downlisting criteria. However, drought conditions in 2002 may have impaired recovery of several populations.

As of September 2005, the FWS has consulted on permits for 846 water projects depleting 1.95 million acre-feet of water per year³⁰. In every case, the FWS is required to determine whether sufficient progress has been made by the Recovery Program and that its actions can provide ESA compliance (reasonable and prudent alternatives and measures) for these projects. No lawsuits have been filed contesting those determinations, but this gives the federal agencies an essential interest and a strong voice in the success of planning and implementation decisions. The states also bring responsibility for land use, fisheries (including aquaculture) and water resource management and involvement of the water development and environmental community leaders results in additional public credibility and support for regulation, funding, and other decisions.

To enhance the regulatory reliability and implementation prospects of this Program, the participating states, agencies and NGOs proposed federal authorization of the Program. Cost sharing arrangements were negotiated among federal officials, the states, power users, and water users and embodied in the federal authorizing legislation.

As a result of the 1988 agreement and 17 years of collaboration, the overall investment in research, habitat restoration and flow management and other Program activities exceeds \$150M through FY-2005 from hydropower revenues, federal appropriations and from the three states. The Program estimates that 51% of these funds have been invested in habitat restoration and another 24% have been invested in instream flow studies and protection.

DELAWARE RIVER WATERSHED PLAN:³¹ As directed by the “Resolution on the Protection of the Delaware River Basin,” which was endorsed in 1999 by the Governors of all four basin states (Delaware, New Jersey, New York, and Pennsylvania), the Delaware River Basin Commission (DRBC) led the effort to develop a water resources plan for the basin (basin plan) which was publicly released in September 2004.

³⁰ An acre-foot of water is approximately 326,000 gallons; 1.95million acre-feet/year is approximately 635.7 trillion gallons/year.

³¹ Adapted from case study submitted by Robert Tudor, Deputy Executive Director, Delaware River Basin Commission

The Commission was established by an interstate compact in 1961 and is the only agency in the Delaware River Watershed with a mandate to conduct proactive, basinwide water resources planning to ensure a safe and sufficient water supply for human and ecological needs. It also exercises regulatory authority over new and existing water supplies and is very active in the assessment, protection and restoration of water quality in the shared waters.

The basin plan is a goal-oriented commitment with a 30-year horizon that will serve as a guide for all stakeholders -- government and non-governmental alike -- whose actions affect water resources in the 13,539-square-mile basin. Nearly 15 million people rely on the waters of the basin for drinking and industrial use. A Watershed Advisory Council, comprised of members representing a broad spectrum of basin interests ranging from business and industry to environmental advocacy groups, landowners and municipal officials, worked for three years with DRBC staff, the commission's standing advisory committees, and *ad hoc* committees in a facilitated, consensus-building process to develop and agree on the comprehensive plan. Several public meetings were held throughout the basin during the process to gather input and broaden awareness of the plan beyond the valued group of active stakeholders.

The resulting plan emphasizes integration and collaboration, and is not prescriptive or regulatory; it includes five desired results:

- An adequate and reliable supply of suitable quality water to sustain human and ecological needs through 2030;
- Managing the system of waterway corridors to reduce flood losses, improve recreational experiences, and protect, conserve, and restore riparian and aquatic ecosystems;
- Integration of water resource management considerations with land use planning and growth management while recognizing the social and economic needs of communities;
- Stronger partnerships for the management of water resources among all levels of government, the private sector, and individuals sharing an interest in sustainable water resources management; and
- Providing opportunities to enhance appreciation and commitment to the protection, improvement, and restoration of the basin's water resources.

“Today we celebrate a visionary plan that reflects the investment of countless hours of discussion and creativity among many individuals from throughout the Delaware River Basin who responded to our governors’ 1999 challenge,” the DRBC Executive Director announced September 13, 2004, marking the approval of the basin plan. “However, much work lies ahead, as we now strive to develop strategies and take action to realize the goals laid out in that plan over the next 30 years.” The commission’s financial struggles resulting from the loss of federal funding to support its annual budget may limit its ability to move ahead with the implementation of some important elements of the basin plan action items.

SOUTHEASTERN PENNSYLVANIA GROUND WATER PROTECTION:³² The structure and powers of the Delaware River Basin Commission (DRBC) give it the ability to carry out programs that would be difficult, if not impossible, for the four basin states or the federal government to accomplish on their own. An example is the management of the Ground Water Protected Area of Southeastern Pennsylvania (GWPA).

³² Adapted from case study submitted by Robert Tudor, Deputy Executive Director, Delaware River Basin Commission

The GWPA was established by the DRBC in 1980 at the request of Pennsylvania, which lacked the regulatory authority to carry out the program, after it became evident that development was adversely affecting ground water levels in the area. The Commission has adopted a regulatory package that establishes numerical ground water withdrawal limits for 76 watersheds that are partially or fully within the Protected Area. The goal is to prevent depletion of ground water and protect the interests and rights of lawful users, and to balance and reconcile alternative and conflicting uses of the limited supply within the region.

Lowered water tables in the Protected Area have reduced flows in some streams and dried up others. This reduction in base flows affects downstream water uses, aquatic life, and the capacity of waterways in the region to assimilate pollutants. The review trigger for ground water withdrawals in the Protected Area is 10,000 gallons per day (compared with 100,000 gpd in the rest of the basin). The protected area is subject to a two-tiered system of water withdrawal limits under the DRBC requirements. The first tier serves as a warning that a subbasin is "potentially stressed." In potentially stressed subbasins, applicants for new or expanded ground water withdrawal permits are now required to implement one or more programs to mitigate adverse impacts of additional ground water withdrawals. Acceptable programs include: conjunctive use of ground and surface water, expanded water conservation programs, comprehensive planning at the watershed level, programs to control ground water infiltration and artificial recharge and spray irrigation.

The second tier serves as the maximum withdrawal limit. Under the regulations, ground water withdrawals cannot exceed that limit. In April 2002, the DRBC issued guidelines for the preparation of integrated resource plans by municipalities under the GWPA regulations. Integrated resource planning is a comprehensive approach to water resource management that evaluates water resources availability and demands on a watershed level. The process encourages planning to meet multiple objectives and evaluate competing uses of water resources.

GREAT LAKES SOIL EROSION & SEDIMENT CONTROL.³³ Awareness of the linkage between land use and water quality prompted the eight Great Lakes states, along with several federal agencies to develop a unique, basin-specific program to control non-point source pollution from urban and agricultural sources. The Great Lakes Commission, an interstate compact agency, was vested with program design and management responsibilities.

Non-point source pollution is a major source of degraded water quality in the Great Lakes basin. Sedimentation plays a major role in the addition of nutrients and toxic chemicals to the Great Lakes system. Beyond water quality degradation, soil erosion and sedimentation reduce agricultural productivity, degrade fish and wildlife habitat, limit water-based recreation and damage water treatment and water supply infrastructure.

The genesis of this program was a 1987 report of the Great Lakes Commission that documented the serious nature of the problem, analyzed and interpreted soil erosion and sedimentation data and presented a series of findings and recommendations that were subsequently endorsed by the Commission. Among those recommendations was a call to establish a state/federal Great Lakes Basin Program to promote comprehensive, basin-specific erosion and sedimentation control efforts. A state/federal task force overseeing the study also recommended linking the program with the Clean Water Act's Section 319 non-point source pollution control program and relevant Farm Bill provisions to ensure coordination with US EPA and USDA/Natural Resources Conservation Service. The Commission members endorsed the recommendations the following year, and the Great Lakes Basin Program became a reality in 1990 when Congress appropriated

³³ Adapted from case study submitted by Thomas R. Crane, Interim Executive Director, Great Lakes Commission

start-up funds for demonstration projects, technical assistance programs, and information/education activities. Since that time, the Great Lakes Basin Program has supported over 200 projects throughout the eight states, and substantial benefits to water quality have been documented.

The Great Lakes Commission's ability to bring all prospective partners (i.e., state, federal and regional agencies, relevant non-governmental interests) into the decision process was essential to successful program start-up. In addition, the Commission had significant research, policy, planning and facilitation expertise to draw upon, as well a reputation for results-oriented work. This collaborative process was later formalized through a partnership agreement with EPA, USDA/NRCS and the Corps of Engineers. A regional task force, comprised of representatives of these three federal agencies and the eight Great Lakes states, was established to oversee program development and administration, including the selection of projects associated with an annual request for proposals.

The federal role in this initiative has been a particularly critical one, given the need to coordinate with and complement related federal programs, engage federal expertise and secure federal funding each year.

Barriers and challenges to the success of the Great Lakes Basin Program have financial, programmatic and scientific dimensions. The absence of reliable long-term funding has been an issue. The program relies upon annual Congressional appropriations and, while they have been growing over time, future funding levels are unpredictable and complicate efforts to build capacity and resolve programmatic issues that include monitoring, project evaluation and comprehensive planning. Difficulties addressing multi-state watersheds are also complicated by the fact that many projects should be implemented across state lines while funds are often appropriated for use on a state-specific basis. Finally, the lack of scientific data on the sources and amounts of sediment entering the Great Lakes and their tributaries makes it difficult to identify baseline conditions and target limited resources to critical areas.

The Commission's staff leadership identifies a number of "lessons learned" that can be applied in other interstate settings. A transparent and inclusive process is essential during the program development phase, and prospective project partners must be brought into the process early. Once established, the lines of communication must be maintained and nurtured, particularly with respect to officials that have decision-making authority. Communicating a unified message to funding agencies, legislatures and Congress on an ongoing basis is also essential and, over time, implementation capacity must be built and maintained to ensure that program goals are met.

OKLAHOMA- ARKANSAS PHOSPHORUS CRITERION:³⁴ The need to mediate differences in state philosophies and methods for setting and implementing water quality criterion for interstate waters was a challenge presented to the Arkansas- Oklahoma Arkansas River Compact Commission where five of Oklahoma's six designated Scenic Rivers share watersheds with the State of Arkansas.

In recent years, monitoring programs in both states have shown an increase in various pollutants including phosphorus, suspended sediments and bacteria and a variety of actions have been taken by both states to address these problems. For example, in response to eutrophication problems in Tenkiller Lake, the Compact Commission established a phosphorus reduction goal of 40%. Another example is the legislation enacted in both states to help reduce nutrient and sediment loading to the Illinois River and its contributing streams.

³⁴ Adapted from case study submitted by Mike Mathis, Chief of Planning and Management Division and Derek Smithee, Chief of Water Quality Programs Division, Oklahoma Water Resources Board

In 2002, the Oklahoma Water Resources Board (OWRB) promulgated a total phosphorus criterion of 0.037 mg/L in Scenic Rivers, with full compliance mandated by 2012. The following year, the Arkansas General Assembly enacted legislation that requires registration and nutrient plans for farms in certain watersheds, and also designates the Illinois River Watershed as a “nutrient surplus area.” Oklahoma’s numerical standard in for phosphorus has raised significant concerns in Arkansas, given that five of those Scenic Rivers extend upstream, across the stateline, into Arkansas. Industries, public officials and many citizens became anxious that this standard would limit growth in Arkansas and place an unfair burden on its farmers. In December 2003, the Environmental Protection Agency formally approved the numerical criterion as part of Oklahoma’s Water Quality Standards despite concerns that the criterion was economically and technologically unattainable.

Prior to the EPA approval, environmental officials from Oklahoma and Arkansas entered into a “Statement of Joint Principles and Action” committing both states to work together to coordinate watershed monitoring and develop joint watershed plans (including voluntary and mandatory measures) to reduce phosphorus substantially and achieve other water quality goals in the Scenic River watersheds by 2012. A centerpiece of the agreement was the development of a coordinated monitoring program in partnership with the Arkansas- Oklahoma Arkansas River Compact Commission.

Officials from the OWRB observe that the Compact Commission played a key role in the process by fostering mediation, interaction and consensus building among all parties. With responsibilities for both water quality and water apportionment decisions and a record of effective arbitration on interstate conflicts, the Compact Commission was a logical choice for this responsibility. A Scenic River Monitoring Technical Workgroup was established by the Compact Commission for the purpose of assisting in implementation of the phosphorus criterion; determining if water quality is improving throughout the Scenic River watersheds; determining if the goal of a 40% reduction in total phosphorus is occurring; and supporting implementation of a watershed plan.

Membership and organizational structure are strengths of the Compact Commission. A federally-appointed representative serves as chair and, along with three signatory members from each state, is responsible for administering the compact. Standing committees focus on engineering, budget, environment and natural resources, and legal matters. Provisions require that two of the commissioners be the executive directors of the Oklahoma Water Resources Boars and the Arkansas Soil and Water Conservation Commission, the agencies responsible for promulgation of water quality standards in their states.

The federal role has been a critical one. In addition to chairing the commission, the federal government is involved in data collection and monitoring (USGS) and in ensuring compliance with the Clean Water Act (EPA). The EPA had a pivotal role in facilitating discussions, influencing negotiations and fostering agreements between the two states based on its Clean Water Act responsibilities.

In addressing the matter of barriers and challenges to interstate initiatives, an official with the OWRB notes that interstate compacts are critical in resolving conflicts that might otherwise be referred to the Supreme Court. He also notes that, beyond the authority of the compact, an array of political, economic and environmental challenges are involved. Stakeholders must be kept informed and provided an opportunity to understand and participate in the decision-making process. An additional challenge relates to funding, particularly when agreements call for specific actions (e.g., intensive stream aging, water quality sampling and technical analysis).

When the requisite funds are not readily available from the states, federal funding becomes especially important.

GREAT LAKES WATER MANAGEMENT:³⁵ Ensuring the sustainable use and protection of the waters of the bi-national Great Lakes Basin is the focus of an ongoing US/Canadian initiative coordinated by the Council of Great Lakes Governors. The Council's Water Management Working Group, comprised of appointees of the eight state governors and two provincial premiers, was charged with developing a legal and management regime, known as Annex 2001, to ensure consistency in water management policies and practices.

Annex 2001 is essentially an addendum to the 1985 Great Lakes Charter, a non-binding, good faith agreement among the Great Lakes states and provinces to manage large in-basin consumptive uses and out-of-basin diversions. In 1986, the federal Water Resources Development Act included a provision requiring approval from all eight Great Lakes governors for any out-of-basin diversion proposal, but did not address in-basin consumptive uses or specify any standards to guide management policies. Further, it did not apply to the Canadian provinces, and its relevance to groundwater as well as surface water was subject to interpretation by the states.

The Council of Great Lakes Governors is the lead entity on this initiative. The Council is a partnership of the governors of the eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin), with the premiers of Ontario and Quebec as associate members. The Council serves in a coordination, policy research and development, and regional advocacy capacity on issues of interest to its membership. Several federal agency representatives are involved in the Annex 2001 initiative in an observer/ advisory capacity.

Further impetus for an interstate/provincial focus on the issue arose in 1998, when the Nova Group (a small Ontario firm) received a provincial permit to withdraw water from Lake Superior with the intent of transporting it by tanker to Asia. Although the permit was ultimately revoked, it raised alarm in both the US and Canada about the prospect of bulk water exports and emphasized the value of an interstate/international agreement. This prompted development of Annex 2001 to the Great Lakes Charter, a framework for establishing a set of binding agreements among the Great Lakes states and provinces, and a series of principles to guide review of any future water export proposals. The governors and premiers also called for the ongoing involvement of the public as the agreements were developed and the standard implemented.

The Water Management Working Group has been involved in drafting the implementation documents since 2001 with input from a diverse stakeholder group representing various regional and national organizations with interest in the issue. Draft documents were released for public review in July 2004. Officials representing the governors and premiers are working together to revise the draft documents based upon comments received, and are continuing to consult with Great Lakes tribes and First Nations. Once enacted, the agreements will provide a consistent, substantive framework for the states and provinces to use in enacting all necessary implementing legislation and regulations.

This initiative is a continuing one. The draft agreements are not yet signed, and approval by the state and provincial legislatures is required, as is consent of the U.S. Congress.

³⁵ Adapted from case study submitted by Michele Hoffer, Special Assistant to the Director, Ohio Department of Natural Resources

An Ohio official affiliated with the Water Management Working Group offered several observations from this case study: 1) Engaging all affected stakeholders in an initiative at the earliest point increases the likelihood that all issues will be adequately addressed and public support can be gained early in the process; 2) Significant time is required for complex negotiations, which makes it essential to retain the flexibility to extend deadlines; 3) Participation by interested stakeholders can divert or delay the process substantially; consider organizing their representatives in an advisory committee; 4) Understand the perspective of each jurisdiction (e.g., on regulations, public opinion, political will, unmet needs) as a basis for successful negotiations; and 5) Provide for legal review on an ongoing basis. Major challenges that must be addressed to ensure success include 1) reconciling the differing perspectives of the various jurisdictions, and 2) securing the funds necessary to develop and implement any given multi-jurisdictional initiative.

OHIO RIVER WET WEATHER STANDARDS:³⁶ The Ohio River Valley Water Sanitation Commission (ORSANCO) was confronted with the need to develop regulatory water quality goals for the Ohio River, which is shared by six states and is characterized in many areas by combined sewer overflows from many communities³⁷. Long term control plans are being developed but, even after their implementation, it is unlikely that the river will meet traditional bathing criteria. A water quality restoration policy that balances protection of public health with technical and economic achievability on a watershed-scale was essential to establish the interstate consistency and attract state and federal funding needed by many communities.

To address the issue, a working group comprised of representatives of the Ohio Environmental Protection Agency, US Environmental Protection Agency and wastewater utility representatives was established to develop a policy. Public workshops were then scheduled to discuss the dimensions of the issue, need and policy options. ORSANCO was charged with managing the work group and conducting the public workshops. Eventually, it will adopt wet weather –based bacterial objectives that can influence subsequent state and EPA policies. ORSANCO is well suited for these tasks, having served for 55 years as the mechanism for interstate/interagency cooperation on water pollution control issues of the Ohio River. It also brings the diverse interests of the river users and general public into the process.

Key players in this initiative include the directors of the water quality control divisions of state agencies, EPA offices in the region, and senior utility officials. Current barriers and challenges that must be addressed to ensure success include the need to have adequate authority, formality and organizational arrangements (i.e., appointees). In ORSANCO’s case the organization is well positioned: it has regulatory authority, a basis in state and federal law, and a regular process in which decisions are made in open meetings by the governors’ appointees.

POTOMAC WATER SUPPLY COORDINATION:³⁸ Cooperative water supply management in the Washington, D.C. metropolitan area got its start in the early 1960s, when demand

³⁶ Adapted from case study submitted by Alan Vicory, Executive Director, Ohio River Valley Water Sanitation Commission

³⁷ Not all states have “combined sewer overflow” situations, so a word of explanation is probably in order. In many communities, the stormwater collection system gathers runoff from around homes and businesses and diverts it into the sanitary sewer collection and treatment system. When storm events add more runoff than the treatment plant(s) can process, untreated sewage (diluted, to some varying extent) is discharged directly to the receiving stream, river, lake, etc. These combined, untreated discharges have been permitted in the past and have proven very difficult and expensive to eliminate in many situations.

³⁸ Adapted from case study submitted by Joe Hoffman, Executive Director, Interstate Commission on the Potomac River Basin

projections first indicated a need for water supplies in excess of that normally available from the Potomac River.

During the drought of 1966, flow in the Potomac was lower than the projected future demand and it was evident that unrestricted water use would essentially dry up the river. Continuing population growth, economic development and droughts in the 1960's and 1970's added to the motivation to develop new supplies.

In 1963, the Corps of Engineers initiated a comprehensive study of the Potomac River basin to identify solutions to the anticipated shortfall and lead to a proposal to construct 16 large, multi-purpose reservoirs in the Potomac River Basin. This solution, however, met unexpected public resistance which deterred efforts to win federal authorization and funding. Of the 16 projects proposed, only Jennings Randolph Lake was constructed, and it wasn't completed until 1981.

In addition to the proposed reservoirs, other structural solutions were examined, including interbasin transfers, and a pilot estuarine treatment plant with an emergency estuarine pumping station was constructed.

Concurrently, the Corps conducted a study in which the operation and capability of the three major DC Metro Area water utilities (the Fairfax County Water Authority, or FCWA, the Washington Suburban Sanitary Commission, or WSSC, and the Corps' Washington Aqueduct Division, or WAD) were considered as a single, regional demand center, indicating substantial advantage in the coordinated management of the supplies already available. This evaluation demonstrated that coordinated management of the same water resources produced substantial gains in reliability of the water resource at lower cost and led to the adoption of the Water Supply Coordination Agreement in 1982.

The Water Supply Coordination Agreement was developed among FCWA, WSSC, WAD, and the Interstate Commission on the Potomac River Basin. The ICPRB Section for Cooperative Water Supply Operations on the Potomac (CO-OP) was designated in the Agreement to be responsible for coordination of water resources during times of low flow. The management objectives embodied in the agreement and practiced by CO-OP involve keeping the off-Potomac reservoir resources balanced while meeting environmental requirements and municipal water supply demands.

The coordinated operation of facilities and management of resources enables the utilities to meet demand projections through the year 2025, even under a repeat of the drought of record, because of synergistic gains in total yield realized through cooperative strategies and quicker exchange of information. Each of the three utilities gives up a small measure of autonomy in order to gain the substantial benefits of reduced capital costs through coordinated cooperative operations of their individually and jointly owned resources.

As an independent inter-jurisdictional organization, the ICPRB provides an effective forum for exploration and agreement on cooperative, multi-state functions that would otherwise be difficult to develop. The independence of its staff, combined with the shared responsibility for funding and guidance in regular meetings among the appointed Commissioners from each of the three states (MD, PA and WV), the District of Columbia and the federal government, sustains a persistent, factual framework where identified concerns can be understood and resolved.

As an example, faced with the possibility of withdrawing all the flow of the river, the Maryland Department of Natural Resources conducted the Potomac River Environmental Flow-By Study (1981) and the parties to the Potomac River Low Flow Allocation Agreement (1978) committed themselves to the study's recommendations for the maintenance of instream flows to meet minimum aquatic habitat requirements.

The management of the cooperative water resource systems' operations is overseen by a committee of the water utilities. The water utilities provide the funding for these activities at the Interstate Commission on the Potomac River Basin.

The current source areas for the three major Washington metropolitan area water suppliers includes wholesale customers, which purchase treated water from Fairfax County Water Authority (FCWA) and the Washington Aqueduct (e.g., Washington, D.C. Water and Sewer Authority purchases water from the Washington Aqueduct and supplies residents of Washington, D.C. with water).

LESSONS FROM THE CASE STUDIES: Despite the variation in authority, issues and geography, these case studies demonstrate some significant similarities with regard to their pattern of success and the “value added” for water resource management across state (and other) political boundaries:

- Anticipate and prevent inter-jurisdictional disputes by maintaining open lines of communication.
- Promote consistency in the development and application of multi-jurisdictional models and criteria, laws and regulations, and programs and procedures.
- Provide a reliable mechanism for decision makers to understand and collaborate on issues that cross jurisdictional boundaries..
- Pool resources and share expertise that exceeds the capability/resources of any single jurisdiction.
- Extend and sustain coordination among state and federal agencies. Avoid or resolve disputes due to inconsistencies in laws, policies, programs or priorities.
- Enhance implementation effectiveness through more integrated programs at a basin-wide or multi-state level (e.g., monitoring, information, education).
- Maintain a clear sense of purpose and momentum, an adequate and reliable funding base, and sufficient legal authority so that participating jurisdictions are willing to invest their time, talent, political support and funding.

VII FINDINGS & RECOMMENDATIONS ASSOCIATED WITH INTERSTATE WATER MANAGEMENT

Interstate water organizations focus and facilitate complex decisions and the delivery of services in accordance with disparate state and federal laws and policies in a way that is responsive to local and regional needs and priorities. These organizations and capabilities should be cultivated if we expect to meet growing needs with limited resources.

Drawing from the preceding recollection, assessment, discussion and examples and from the principles articulated in our National Water Policy Charter (see Appendix 1), we offer the following findings as the basis for discussion and the development, refinement or implementation of action items by members of the Interstate Council on Water Policy with our partners in the water community. While these findings relate specifically to interstate organizations, it is important to note that they also have relevance to intrastate and international organizations and, in fact, any entity operating within a watershed where the integration of water resource management should take place across local, state, tribal or other boundaries.

The following findings are derived from this report and are intended to summarize the basis for the associated recommendations. Together, our findings and recommendations anticipate development of an action agenda to improve water resource policy and management processes in partnership with federal officials and association leaders.

Finding 1: Interstate organizations have demonstrated their effectiveness in a variety of important roles, including water resource planning, monitoring, management, and policy development. Nonetheless, much of their potential is underutilized. Their contributions are not always recognized by their member state- or federal agency representatives or by state legislative or congressional leaders. As a result, the extent to which they have been enabled and engaged, and their ability to attract the necessary financial resources, has been compromised. As the federal budget tightens, the capabilities of many federal agencies and programs must adjust accordingly. The proven abilities of interstate organizations to assume substantial responsibility for water resource stewardship assessment, planning and project implementation in an open, inclusive process should provide an attractive option for sustaining a full range of integrated programs and services

Recommendation 1: Highlight and Promote the Effectiveness of Interstate Water Organizations. Better information is needed to illustrate and publicize the specific contributions that interstate organizations are making to more efficient and effective water resource management decisions, and to encourage increased support for and reliance upon them. Among other objectives, these programs should produce a more visible and consistent presence at water meetings and conferences, enhance the national awareness of interstate water organizations (the consistencies and variations in their organization and responsibilities as well as their accomplishments and challenges).

Finding 2: The federal government has played a significant role in the management of interstate waters. This role has had many dimensions over time, ranging from exclusive decision making responsibility to technical assistance and financial support. Federal officials serve substantial roles in many interstate organizations: as a predominant member; as a co-equal partner; or in a supporting/observer role. Regardless of their role, the federal agencies have important national responsibilities with respect to interstate waters and bring valuable expertise, data and modeling assets, perspective and resources that complement those of the states in the interstate setting. A

strong state/federal partnership is necessary to enhance the efficiency and capacity of integrated water resource management efforts in the interstate setting, especially in these years of very lean budgets and reduced agency capabilities.

Recommendation 2: Engage Federal Agencies in Collaborative Planning and Implementation of Interstate Water Management Programs and Projects. Interstate water organizations should expand their efforts to engage appropriate federal officials and agencies effectively in data collection, planning, and implementation efforts. Federal participation in interstate organizations should be directed, in part, at addressing barriers that have historically impeded integrated water resource management. Among others, this includes problems of fragmented authorities and inconsistent standards, inadequate and unreliable data and funding; complex procedures and rigid criteria.

Finding 3: Interstate water organizations are efficient service-delivery mechanisms for federal programs and projects that have regional (i.e., multi-state) dimensions. However, this role has not been institutionalized in federal legislation or recognized in the development and administration of many federal programs. Furthermore, the erosion of federal funding in recent years for interstate water organizations has compromised their ability to sustain essential services.

Recommendation 3: Fully Engage Interstate Water Organizations in Implementing Federal Programs, Initiatives, and Policies. Federal programs, initiatives, and policies should be implemented in a manner that recognizes the distinct challenges on interstate waters and the need for interstate collaboration. They should also be designed to engage and invest in existing interstate organizations to the greatest extent possible and to provide incentives that reward collaborative approaches among states and other jurisdictions.

Finding 4: The River Basin Commissions and Water Resources Council established under the Water Resources Planning Act of 1965 were abandoned in the early 1980s. The problems they were intended to resolve, however, still present a substantial concern. In many regions, successor organizations have evolved to meet the needs –or new organizations have developed to fill the void. A stubborn gap in national policy persists, where federal water programs and policies remain disjointed, fragmented, and sometimes in serious conflict. In addition, there doesn't appear to be an adequate interface at the national level between federal policies and interstate water management needs.

Recommendation 4: Establish a New Federal Advisory Committee for Coordinating Federal Water Programs, Policies, and Laws and to Guide Federal Involvement in Large-Scale Watershed and Interstate Water Management Initiatives. The federal Advisory Committee on Water Information (ACWI) provides a very useful framework, consistent with the Federal Advisory Committee Act (FACA), for engaging stakeholders in a regular review and refinement of water data programs, policies, priorities and operations. A similar advisory committee should be established for the assessment and guidance of programs and policies related to other aspects of water management, particularly those related to large-scale watershed and interstate water resource management concerns, and focus on areas where there is conflicting guidance from federal statutes.

Finding 5: Federal water programs are designed primarily to respond to national priorities, which may or may not be consistent with local and regional needs, opportunities and values. Interstate water organizations provide an effective means for integrating federal and regional

priorities, responding to issues at a regional scale, and promoting regional identity and enthusiasm for solutions that are consistent with national policies.

Recommendation 5: Interstate Water Organizations Should Nourish and Promote Regional Approaches for Meeting National Priorities. Federal officials and agencies and the ICWP should encourage interstate organizations to nourish local strategies and projects tailored to local hydrology, needs, opportunities and ecology and should cultivate sufficient flexibility in state and federal programs to allow for adaptation to new methods for assessing needs, establishing priorities, implementing projects and measuring results.

Finding 6: Large scale sustainable use and ecosystem restoration initiatives have been promoted with increasing regularity in recent years, an indication of growing local, state and federal support for integrated water resource management with a watershed perspective. These initiatives require effective collaborative governance. In some instances, failure to recognize and rely on existing interstate organizations has resulted in the creation of new entities, with redundant or confused responsibilities, and the inefficient use of limited public resources.

Recommendation 6: Interstate Water Organizations & ICWP Should Evaluate Emerging Large-Scale Resource Management Initiatives and Seek Full Engagement of Existing Organizations. As large-scale resource management initiatives emerge, they should be reviewed by interstate organizations and the ICWP to assure that existing organizations are engaged to their full potential. Federal officials should be alerted to this need, as well.

Finding 7: As an institutional form, interstate organizations exhibit a broad range of structural and operational characteristics that reflect the needs and circumstances of the watershed and constituent states. Although these organizations provide an extensive range of services, states often limit their authority in an effort to retain more independent control over the resulting rules, programs and projects. In addition, the normal turnover of official representatives in the governing and managing committees reduces the momentum needed in decision-making and implementation of interstate water organizations and leads to a diminished sense of potential as a vibrant forum for collaboration and problem-solving.

Recommendation 7: Enhance Education and Strategic Planning Functions for Committee Members and Key Stakeholders of Interstate Water Organizations. Interstate water organizations should maintain regular education and strategic planning functions for new and continuing members of their executive and management committees and for all interested stakeholders to strengthen their awareness of -and their confidence in -the capacity of the organization. These programs should sustain a stronger awareness of the organization's responsibilities and limitations and their relation to other resource management organizations in their watershed or region.

These findings and recommendations anticipate development of an action agenda to improve water resource policy and management processes by the ICWP in collaboration with federal officials and other water community leaders.

APPENDIX 1:

ICWP NATIONAL WATER POLICY CHARTER

The following principles were articulated and adopted in our National Water Policy Charter and serve as the foundation for our undertaking this report and pursuing its recommendations with our partners in federal and state agencies, interstate organizations and in other water organizations. The full text is available at <http://www.icwp.org/legpol/NewCharter.pdf>.

GUIDING PRINCIPLES

- Manage water for long-term goals, recognizing both human needs and the health of water-dependent ecosystems.
- Manage ground and surface water as an integrated system, by hydrologic units, including both quality and quantity and considering all phases of the water cycle.
- Realign government roles and responsibilities for water management, shifting responsibility and authority from the federal government to states, regional agencies, and local government where appropriate.
- Improve government performance, reorganizing, consolidating, and integrating government water programs to increase their effectiveness and responsiveness to the public.
- Set water management priorities based on relative risk, considering costs and benefits of management actions.
- Recognize and include all affected interests in water policy making.
- Emphasize water management program results, not the bureaucratic process.
- Use economic and other incentives, wherever feasible, to achieve water management objectives.
- Increase awareness and improve the quality of public dialogue on water issues.

AWRA 2ND NATIONAL WATER RESOURCES POLICY DIALOGUE

We also give special recognition to the following guidance recommended by the American Water Resources Association, as a result of the Second National Water Resources Policy Dialogue they organized, which is expressed in their March 28, 2005 letter to President George W. Bush:

“SIGNIFICANT CHALLENGES”

- The Nation’s water issues need to be addressed in an integrated manner, focusing not on single projects but on programs and watershed and basin level issues. The successful cooperative and holistic efforts evidenced in evolving programs to restore the Everglades, manage the California Bay Delta, and protect Coastal Louisiana, need to be replicated across the country.
- There is need to reconcile the myriad laws, executive orders and Congressional guidance that have created a disjointed, ad-hoc national water policy and to clearly define our 21st Century goals. Many important laws were passed early in the last century when national objectives and physical conditions were far different than they are today. Many of these laws are in conflict, placing executing Federal, State, and tribal agencies in tenuous and sometimes adversarial situations. Reexamination of these laws would eliminate contradiction and confusion and lead to far more effective water policies and policy implementation.
- Recognizing the fiscal realities facing the Nation, there is need to more effectively coordinate the actions of Federal, State, tribal, and local governments in dealing with water. Collaboration instead of competition will provide better and more fiscally efficient use of scarce resources and will assist in overcoming decision gridlock on key water programs.
- The Nation is blessed with access to superb scientific capabilities and cutting edge information technologies that can support water related decision making. These capabilities and technologies need to be clearly focused on supporting water policy decision makers as they carry out their challenging responsibilities.

APPENDIX 2:

PREFERRED STRUCTURAL AND OPERATIONAL CHARACTERISTICS FOR INTERSTATE ORGANIZATIONS

Presented below is a descriptive listing- or checklist- of the types of institutional characteristics that will enhance the likelihood of success for interstate organizations. This includes structural characteristics (i.e., those that relate to the organization's legal basis, resources, authorities and membership/staffing arrangements) and operational characteristics (i.e., those that relate to the question of how the organization pursues its mandate and performs its functions.) Drawn from the literature, case study analyses and institutional observations, this checklist offers guidance in the design, revision and/or evaluation of any interstate organization for water management.

STRUCTURAL CHARACTERISTICS

1) Mandate and Legal Basis

- a) The organization's enabling legislation/bylaws must clearly state goals and objectives that are fully supported by, and consistent with the perspectives of the member jurisdictions. They should be sufficiently specific to be meaningful, yet flexible enough in interpretation to accommodate new challenges and remain relevant over time.
- b) Goals and objectives should differentiate the organization from other public bodies with similar interests, and clearly define the organization's unique niche in the "institutional ecosystem."
- c) Where possible, goals and objectives should be stated in terms that lend themselves to evaluation, and allow the membership (and other interested parties) to gage progress over time.
- d) A strong legal foundation should be pursued in the interest of providing the organization with the formality, authority and longevity needed to perform its functions. Options include the use of legislation, treaty, compact, articles of incorporation or other legally recognized means.

2) Geographic Scope

- a) The geographic scope of the organization's authority should be hydrologically based, and encompass the water and related land resources of a clearly defined watershed, or basin.
- b) Given that membership typically includes public officials with statewide responsibilities, interstate organizations addressing a specific watershed must be sensitive to the impact that resource management issues in other areas of the state may have on their own geographic area of interest.

3) Membership

- a. Membership arrangements must be consistent with the organization's authority and, at the minimum, ensure equitable representation by all states within the basin. Full federal membership should be provided if organizational authorities include areas where there is a strong/predominant federal interest.
- b. In those instances where organizational membership is appointed, public hearings and a legislative confirmation system should be considered to ensure that broad input from the policy and stakeholder communities is received during the selection/ confirmation process.
- c. Representation from the citizen, private sector and sub-state/provincial levels should be secured by providing direct access to state and federal members through formal observer roles, advisory committees and other means.
- d. Each member's representative should bring sufficient authority and expertise into the deliberation process to warrant the confidence of other members and to enable the decision making process to move efficiently.

4) Breadth of Authority

- a. Interstate organizations must be fully accountable to their membership and responsive to its consensus decisions. However, in addition to responding to member state directives, they should have the authority to identify new and emerging issues and offer recommendations to the membership on appropriate actions.
- b) Member states must be willing to cede some degree of sovereignty to an interstate organization if that organization can perform associated functions more efficiently and effectively than individual states within the basin.
- c) Interstate organizations should be vested with a comprehensive range of authorities, recognizing that effective watershed-based resource management requires an “ecosystem approach” with environmental and economic dimensions.

5) Funding Arrangements

- a) Compulsory dues payments for member jurisdictions (i.e., states and federal agencies, as appropriate) should provide the primary basis for financing organizational operations, and be established in a manner that allows periodic adjustment over time to ensue adequate resources to address evolving needs and priorities. Dues should be augmented, but not replaced by acquisition of public/ private grants, donations and contracts, as appropriate, for established organizational priorities.
- b) Full participation and voting privileges should be contingent upon a given member jurisdiction’s full and timely financial contribution to institutional operations.

6) Staffing Arrangements

- a) Staffing levels should be conservative in recognition of budgetary realities, but sufficient to address mandated functions. This includes multidisciplinary capabilities to ensure competence in all areas of the organizations authority and function.
- b) Member jurisdictions must commit the staff needed to ensure full and meaningful participation in all aspects of the interstate organization’s work. This should also include the use of member jurisdiction staff for temporary assignments to the interstate organization, both to satisfy organizational needs and to enhance member jurisdiction understanding/ appreciation of the role of the interstate organization.
- c) Organizational structure should focus on staff development and retention, given the importance of retaining a stable, quality staff with an understanding of member jurisdiction needs and perspectives.

7) Management Function

In the interest of ensuring a comprehensive, “ecosystem approach” to the problems and opportunities within the basin, the interstate organization must have the authority to maintain and pursue a suite of functional capabilities that include, but are not necessarily limited to, the following:

- a) Centralized data collection, storage and analysis.
- b) In-house research and research coordination capability to address/ analyze emerging issues.
- c) An extension service capacity to advise, educate or otherwise inform member jurisdictions and constituents of emerging issues.
- d) Regulation and enforcement functions in those areas where centralized, basin-wide administration is more efficient and effective than individual jurisdictional approaches. At the minimum, a role in recommending environmental quality/ resource standards for uniform adoption is appropriate.
- e) A forum for dispute avoidance and, where necessary, arbitration/ conflict resolution.

- f) Comprehensive, basin-wide planning for the restoration, protection and sustainable use of the resource base.
 - g) In-house monitoring and assessment capability, or a role in coordinating such among relevant basin jurisdictions.
 - h) Coordination of policies and programs among member jurisdictions and other relevant public and private sector entities with shared interests and responsibilities.
 - i) A stakeholder participation program to inform, educate and solicit input at all stages of the planning, policy development and management process.
 - j) An advocacy role directed at points of political influence for the purpose of enhancing progress toward stated goals and objectives.
 - k) A consensus building function to secure member jurisdiction agreement on policies, priorities and actions.
 - l) A special studies function to provide the authority and flexibility needed to address and respond to emerging issues of relevance, including recommendations to member jurisdictions on appropriate course of action.
- 8) Resource Focus and Priority Setting
- a) The resource base in its entirety (i.e., water, land and air components of the ecosystem and the interactions among them) should be accommodated within the organization's areas of authority.
 - b) A formal priority setting process should be specified to ensure that organizational resources are targeted in accordance with member jurisdiction interests. Principal focus should be directed at issues with transboundary implications where responses at the individual jurisdictional level are neither efficient nor effective.

OPERATIONAL CHARACTERISTICS

- 1) Role in the "Institutional Ecosystem"
- a) Before consideration is given to revising an existing organization or establishing a new one, a clear demonstration of need must be evident in light of existing organizational capabilities and basin management goals and objectives.
 - b) In establishing a new organization, consideration must be given to other entities with related missions. Unwarranted duplication of effort should be avoided, and linkages established with other organizations, as appropriate, to ensure complementary and mutually supportive programs.
 - c) In order to maintain trust and confidence in their operations, interstate organizations must reflect the "culture" and preferences of member jurisdictions, and be sensitive to the political realities of the basin.
 - d) Operational decisions must be made in light of the larger "institutional ecosystem", with sensitivity to the perspectives of public and private sector stakeholders as well as member jurisdictions.
- 2) Allocation of Resources
- a) The full range of authorities and functions vested in an interstate organization should be exercised, consistent with stated goals and objectives, to the extent that resources permit.
 - b) Organizational flexibility in the allocation (and reallocation) of resources is essential, given that anticipated problems and emerging priorities typically require a rapid response.
 - c) The organization must position itself to look beyond current issues, and dedicate adequate resources to anticipate and respond to newly emergent issues, as well as those that cannot be anticipated at present.

3) Membership/Constituent Relations

- a) Responsiveness to member jurisdictions is the highest priority consideration for interstate organizations, both on a day-to-day and long-term basis.
- b) Given the often tenuous funding arrangements associated with interstate organizations, they must continuously demonstrate their “value added” to member jurisdictions and, where possible, quantify that value.
- c) Interstate organizations must carefully balance dual functions, as they are typically responsible for both carrying out the directives of member jurisdictions, and for advising those jurisdictions on new directions and initiatives. In either case, member jurisdictions must regard the interstate organization as a tool to support their collective efforts.
- d) Strong linkages (both formal and informal) between the staff of an interstate organization and the member jurisdictions they serve should be nurtured and maintained to ensure a collegial working relationship and clear understanding of current priorities and expectations.

4) Stature and Credibility

- a) Openness and objectivity in agenda setting, planning, analysis and policy development is essential in earning and maintaining credibility among member jurisdictions and constituents. This includes a willingness to address difficult and controversial issues, and fully disclose the rationale behind associated decisions.
- b) Publicizing and showcasing success stories to member jurisdictions and the broader community of constituents is important in maintaining a high profile and cultivating support among key decision makers and opinion leaders. Toward that end, a public affairs/media relations strategy should be an integral component of the organization’s overall strategic plan.
- c) In the interest of maintaining stature and credibility across the broadest possible constituency, the organization must be sensitive to problems and opportunities throughout the entire basin, and to both environmental and economic issues.
- d) The stature and credibility of an interstate organization is a function of the level of interest, support and political conviction exhibited by its member jurisdictions. Positive relationships with these members must be nurtured and maintained.

5) Management Philosophy

- a) An “ecosystem approach” to resource planning and management should guide all organizational activities, and reflect a true focus on hydrologic boundaries and the integration of environmental and economic goals in addressing all issues.
- b) Long term planning and management goals should not be sacrificed for short term considerations designed only to enhance the organization’s stature.
- c) Interstate organizations must be wary of “capture” by special interests and avoid any perception that their objectivity has been compromised.
- d) Although interstate organizations are mechanisms for supporting, assisting and responding to the stated needs of member jurisdictions, they must also exercise an appropriate level of initiative in identifying and addressing other new and emerging issues consistent with their mandate.

APPENDIX 3:

PARAMETERS FOR EFFECTIVE INTERSTATE WATER MANAGEMENT

The following list of questions builds upon the discussion of preferred structural and operational characteristics presented in the preceding section. These questions are intended to provide a framework and point of departure for dialogue as interstate organizations for water management are established, revised and/ or evaluated. The objective is to identify and implement measures that may be needed to ensure that all questions can be answered in the affirmative.

1. Does the institutional form provide some degree of longevity and constancy to permit ongoing attention to pertinent issues?
2. Does the structure allow for flexibility in addressing a range of emergent issues over time?
3. Is the range of desired resource management functions (and attendant authorities) adequately incorporated in the structure?
4. Is adequate financing, staffing and overall support sufficiently provided for?
5. Does the form permit equitable, multi-jurisdictional participation among all affected governmental units, as well as stakeholder input?
6. Can the form ensure, or at least encourage active support and participation by member jurisdictions?
7. Does the form have the credibility and standing to serve as the region's "agenda setter"?
8. Is a positive, interactive relationship with other components of the "institutional ecosystem" a consequence of the form?
9. Does the nature of the form permit a relatively smooth entry into the existing "institutional ecosystem"?
10. Is the geographic jurisdiction sufficient to encourage "ecosystem" management?
11. Is the legal authority vested in the institutional form sufficient for the management responsibilities to which it should be entrusted?
12. Is the membership structure sufficient to ensure responsiveness and accountability to members and constituents?
13. Does the form "build in" a base of support to permit its acceptance and influence in regional management?
14. Does the form provide the institution sufficient discretion to respond promptly to crises and identify and address issues before they become crises (i.e., anticipatory and response capability)?

APPENDIX 4: INSTITUTIONAL FORMS FOR MULTI-JURISDICTIONAL WATER RESOURCE MANAGEMENT

CATEGORY ONE: MULTI-JURISDICTIONAL COMPACTS, TREATIES, CONVENTIONS & AGREEMENTS

1. INTERSTATE COMPACT

The interstate compact is among the most common forms of institutional arrangements for multi-jurisdictional water resource management. Compared to other arrangements, it is a formal mechanism: a legally binding instrument among two or more states on issues of shared interest. As identified by Zimmerman and Wendell in their definitive work on the subject, primary compact characteristics are as follows: 1) formal and contractual nature; 2) an agreement exclusively among states; 3) enacted into law in each party state via virtually identical language; 4) often subject to the consent of Congress; 5) enforceable provisions via the Supreme Court; and 6) takes precedence over “ordinary” state statutes. Interstate compacts typically provide for a commission to carry out its provisions. (Zimmerman and Wendell, 1951)

The interstate compact is a highly versatile mechanism and, as noted by Muys, has been applied to a variety of water resource management issues including but not limited to water allocation; pollution control; flood control and planning; and regulatory and project development. (Muys, 1971) Powers and authorities range widely, and include compacts with limited planning, coordination and advisory responsibilities, as well as others with extensive decision making and regulatory authorities.

The formality, authority and versatility of the interstate compact explain its extensive use and application over time: compacts were employed in the earliest days of the nation’s history and remain the instrument of choice in many settings today. Its strengths include its legal grounding; proven record of performance; the capabilities typically associated with an implementing entity (i.e., compact commission); its flexibility to accommodate emerging and evolving issues; its co-equal treatment of all parties (i.e., providing a “level playing field.”); and the collegiality it often cultivates among party states- essential in building trust, establishing cooperative initiatives, and avoiding/ amicably resolving disputes.

Weaknesses associated with this institutional form relate primarily, though not exclusively, to the inherent obstacles and delays associated with compact ratification. The compacting process is laborious and time consuming and, depending upon its focus, can become a highly politicized process that is subject to compromises, delays or outright termination. With notable exceptions, the inherently conservative nature of party states (i.e., hesitancy to surrender a significant degree of sovereignty to a third party) tends to limit compact authorities. Structurally, its exclusion of membership for non-state entities can limit its planning and coordination potential, although various devices (e.g., associate membership or Observer roles) can help mitigate any such problems. Finally, enforceability of compacts tends to be problematic in a practical sense, requiring the use of consensus-building and “peer pressure” techniques, rather than legal recourse, in implementing actions.

2. FEDERAL- STATE COMPACT

The federal- state compact is an institutional device with many of the same characteristics associated with the interstate compact. The primary difference, as the name implies, is some form of formal federal membership, whether it be a non-voting arrangement or a co-equal status with member states that includes voting privileges. Impetus for federal involvement in compact activities can vary, but is typically seen in those instances where there is an overriding federal interest in the relevant geographic area and/ or the topics to be addressed under compact authority. Operationally, the federal government’s role under such a compact is quite similar to the states, except in the area of judicial enforcement, where the federal entity is exempt from the Compact and Contract clauses of the U.S. Constitution. Federal compliance with a compact action is not enforceable by other member states if the U.S. Congress elects

not to cooperate. Also, federal agencies that agree to such a compact may exercise authority to unilaterally terminate their membership, an option not generally available to member states.

The federal- state compact came into broad usage in the early 1950s; the Delaware River Basin Commission (established in 1963) and the Canadian River Compact Commission (established in 1952) are generally regarded as good examples: each involves commissioners with equal authorities, one appointed from each member state and one federal representative appointed by the President. Many similar arrangements followed, and helped influence the federal/state Title II river basin commissions established later under the authority of the Water Resources Planning Act of 1967.

The strengths and weaknesses of the federal- state compact arrangement bear some similarity to those of the interstate compact. Federal agency membership does add an additional dimension to the water resources management process, as it unites the constitutional powers of the two levels of government. Current trends in water resources management, which include state assertion of stewardship authority and continued/ enhanced reliance on federal funding sources and overarching legislation, suggest the need for the kinds of federal/ state partnerships that such an institutional device provides for. This device, however, adds considerable complexity to the compacting process. This process, which is consuming and laborious even when limited to states, is fraught with additional political obstacles when given a national profile and subjected to associated debate.

3. STATE- FOREIGN POWER COMPACT

The state- foreign power compact is a variation of the previous two, and entails a formal alliance between states and their foreign counterparts. This device has garnered much interest over the years, particularly with respect to U.S.- Canada relations, but has seldom been applied due to the unique and fairly narrow application of the device, and the political challenges associated with adoption and implementation.

The U.S. Constitution prohibits any state from entering into a “treaty, alliance or confederation” with a foreign power, but does allow entry into an “agreement or compact.” (Article 1, Section 10). The Canadian equivalent (Constitution Act, 1982) appears also to allow such an arrangement, provided that it does not reach beyond the established authority of the provinces.

Interest in such a device dates back to the early 1930s, prompted by plans for state/ provincial cooperation in developing the hydropower potential of the St. Lawrence River. During the same period, depletion of the Lake Erie fishery prompted discussions concerning a state/provincial compact as well. Two decades later, a similar arrangement was proposed to establish the Great Lakes- St. Lawrence Seaway System. None of the three compacts materialized, due in large part to the U.S. Department of State’s fundamental objections, but the discussions did legitimize the notion, and potential value, of such a device.

The drafting of the Great Lakes Basin Compact in 1955 represents the closest approximation to a state/ provincial compact to date. As enacted by the eight Great Lakes states, the compact explicitly provided for full voting membership by Ontario and Quebec, subject to relevant provincial and federal law. However, in deference to the pronounced objections of the U.S. Departments of State and Justice, federal consent language adopted by Congress excluded such language. This has delayed, but not terminated efforts to establish the Great Lakes Commission as North America’s only example of a state- foreign power compact for water resources management. The Commission’s member states are on record in support of such a transformation, and efforts to that end are proceeding.

The strengths of such an arrangement are substantial. It provides a mechanism for state/ provincial coordination and decision-making in a bi-national setting; it offers a potent legal device with a significant degree of stature and formality; and it brings the attention- and resources- of two nations to bear on shared issues and opportunities. On the other hand, this device would likely garner the active opposition of the two federal governments, given concerns over the potential to supplant or supersede water resource management authority historically entrusted to the federal governments. Enforceability would be an issue as well, along with questions as to how such a compact would related to established arrangements at the federal level, such as the International Boundary Waters Treaty of 1909 and its implementing agency, the International Joint Commission.

4. INTERNATIONAL TREATY/ CONVENTION/ AGREEMENT

Although potential application of this institutional device is clearly limited to a bi-national setting, its many positive characteristics warrant careful examination. One obvious distinction is the formality associated with the device.

The power to make treaties with another nation is the most potent of any arrangement between two or more sovereigns. It is typically delegated expressly to the president or head-of-state and, in the United States, is preemptive of any conflicting state laws.

The international convention is similar in nature, although its legal status is somewhat less than a treaty; it is typically negotiated and signed by federal agency representatives and subsequently ratified by legislative bodies and heads-of-state.

The international agreement is the most frequently employed of these three devices, including any formal document signed by duly authorized federal officials.

Examples of these devices, as pertaining to US water resources management issues, include the Boundary Waters Treaty of 1909; the Colorado River Treaty with Mexico (1948), the Convention on Great Lakes Fisheries (1954); and the Great Lakes Water Quality Agreement, first signed in 1972.

The bi-national nature of these devices is fundamental to their strength. As formal statements of mutual agreement, they have an elevated stature in the external affairs of party nations and, generally speaking, are long-lived. While enforcement is problematic from an operational standpoint, there exists a significant degree of “peer pressure”; an obligation to live up to commitments. Further, they typically provide for an administrative/implementing body to ensure continuing oversight in addressing objectives. Finally, with respect to the aforementioned examples, they tend to be flexible in nature; able to provide for the involvement (at some level) of state/provincial governments and other nonfederal entities; and capable of embracing an ecosystem-based approach to water resource management issues.

Due to the elevated political sensitivities seen in bi-national settings, negotiation of such arrangements tends to be a laborious and time-consuming proposition. Authorities vested in their administrative bodies, with some exceptions, tend to be limited to “soft management” functions, a reflection of a general unwillingness to cede sovereign authority to a third party. Also, while such arrangements are reasonably inclusive from an operational standpoint, they can exhibit a “top down” hierarchical approach to management, and care must be taken to ensure meaningful participation by state/provincial governments, tribal authorities/ First Nations and other more localized public entities.

CATEGORY TWO: MULTI-JURISDICTIONAL COUNCILS & COMMISSIONS

5. INTERSTATE COUNCIL/ COMMISSION

This category is a broad one, comprised of any multi-state entity for cooperative and coordinated management of a shared resource. While technically encompassing interstate compact commissions, this device refers more generally to a variety of less formal arrangements established by means such as federal legislation, consistent multi-state legislation, multi-state resolution or memoranda of agreement. Its application has been observed in an equally diverse array of settings ranging from ad hoc, issue-specific, advisory roles to permanent, multi-state authorities with broad powers. Primary characteristics include an explicit agreement between two or more states; formation of an implementation body; defined procedures to guide decision making; and a level of authority that does not interfere with the federal government’s primacy in domestic and international relations (i.e., powers generally less than those associated with a compact authority.)

The interstate council/commission device has been employed extensively over the years for water resources management, generally in those instances when “soft” management authority (e.g., planning, coordination, policy analysis, advocacy and other non-regulatory, non-binding functions) is desired. Examples, among many others, include the Western States Water Council (1965); Council of Great Lakes Governors(1982); and various “successor” agencies to the Title II river basin commissions established

under the Water Resources Planning Act of 1976 (e.g., Missouri Basin States Association, New England Governors' Conference).

Strengths associated with this device include its flexibility; relative ease of establishment; and demonstrated value in the areas of planning, coordination and regional advocacy. Unlike other arrangements with a stronger legal foundation (e.g., compact), the "gestation" period is significantly shorter and the institutional focus can be readily redirected to address emerging issues. Weaknesses include its states-only membership arrangement and generally limited authorities. Autonomy is also limited, and institutional power is derived solely from the support vested in it by the member states at any given point in time. Thus, breadth of activity and overall effectiveness can vary significantly.

6. FEDERAL- STATE COMMISSION

Also commonly referred to as a river basin commission, this institutional form was popularized in the 1960s and remains a dominant feature in the governance landscape for water resources management. Its distinguishing characteristics include a legally-constituted entity with state and federal government membership; parity among all members; geographic authority generally defined by hydrologic boundaries; an independent staff for administration and implementation; consensus-based decision making; and an orientation toward planning, coordination, research and advisory services.

The basin interagency committees of the 1940s, extraordinarily informal federal-state arrangements, laid the groundwork for this institutional device. The following decade (1955) saw President Eisenhower's Advisory Committee on Water Resource Policy, a cabinet level body, recommend a nationwide system of river basin commissions. Another decade of Congressional study and debate ultimately led to the Water Resources Planning Act of 1967 and the establishment of Title II river basin commissions and the associated U.S. Water Resources Council. Eventually, six such federal- state entities were established (i.e., New England, Great Lakes, Ohio, Upper Mississippi, Missouri, Pacific Northwest) and served a range of critical functions until their ultimate demise in 1981 when federal support was eliminated, and the U.S. Water Resources Council functions terminated, via Executive Order. Today, federal- state commissions remain in operation in a variety of forms, and federal/state partnerships have become a common feature of water resources management.

The federal- state commission device, as employed in the Title II river basin commissions, has a multitude of strengths that include a firm legal basis, co-equal federal and state participation; strong emphasis on planning, policy development, coordination and research; relatively significant organizational resources; and adoption of the watershed as the primary planning and management unit. The primary weakness of this arrangement is one found with other multi-jurisdictional arrangements as well: the historic reticence of member jurisdictions to vest significant management authority in these institutions. They have traditionally been used for baseline coordination and planning functions; states and federal governments have, only on rare occasions, selected to vest them with some level of "third party" management authority.

7. BASIN INTERAGENCY COMMITTEE

With its origins in the 1940s, this institutional form is generally considered to be the first concerted attempt at comprehensive basin planning through multi-jurisdictional (i.e., federal/state) partnership.

An extraordinarily informal arrangement, it typically has no statutory basis, management authority or permanent staff. Its primary value is as a forum for communication and coordination among multiple governmental agencies with planning and management responsibilities in a shared basin. Administrative/ implementation responsibilities are shared among the members.

The Federal Interagency River Basin Committee (FIARBC), formed in 1943 via agreement between seven federal agencies, signaled the emergence of this form. Soon thereafter (1945-1950), a series of six interagency river basin commissions with federal and state representation, were formed. The record of accomplishment associated with this form has varied significantly, with federal and state participation

varying from one institution to the next. The Missouri River Inter-Agency Committee has been identified as one of the more successful arrangements.

The Basin Interagency Committee was a transitional form that provided the foundation for more elaborate, statutory bodies that eventually followed. The FIARBC, for example, gave way to the Inter-agency Committee on Water Resources the following decade and, in 1965, that agency was replaced by the US Water Resources Council. Similarly, the various Basin Interagency Committees established in the 1940s were characterized by many of the baseline communications, coordination and planning functions later embodied in the river basin commissions established under the Water Resources Planning Act of 1965.

The appeal of the Basin Interagency Committee remains today what it was over 60 years ago: an informal, flexible and basin-specific arrangement that can be readily established to ensure co-equal interaction among federal and state agencies in a nonbinding setting. Resource commitments are minimal, and the form can be activated to varying levels as need dictates with significant maintenance costs.

Offsetting these appealing institutional characteristics are the negative aspects associated with informal arrangements of this nature. The absence of a statutory basis prevents the committee from exercising any form of binding planning or management authority, and the voluntary aspect of participation suggests the likelihood of sporadic participation by various parties over time. The non-binding nature of the institution may establish a “friendly” climate for addressing inter-jurisdictional conflicts, but any resultant resolution lacks enforceability.

8. INTRASTATE SPECIAL DISTRICT

This category of institution is a broad one, and refers to any unit of government authorized by a given state to perform some type of resource management function on a watershed basis. Variations of this form are significant and, depending upon the state and associated management needs, intrastate special districts can range from large river basin authorities with broad powers to smaller, issue-specific authorities such as conservancy districts, flood control districts or planning-oriented watershed councils. The primary common characteristics are state authorization and a watershed focus.

This institutional form appears to have emerged in the early decades of the 20th century, and has remained popular to the present time. The Miami Conservancy District in Ohio, established in 1914, is one of the earliest and best known examples of the application of this form, having realized considerable success in comprehensive, watershed based planning and management. Intrastate special districts have flourished in many regions of the country, particularly in the south and southwest. Texas, in particular, has broadly employed the intrastate special district to address a series of issues that include, among many others, infrastructure improvements; navigation; water supply; pollution control; conservation and reclamation; and drainage. In Canada, this institutional form is found in the series of watershed-based conservation authorities that blanket the province of Ontario and exercise a range of planning and management functions.

Despite the single state (provincial) character of this institutional form, its characteristics do have some transferability to the interstate level. Strengths of this form include the watershed focus; a statutory basis; strong local input; an emphasis on comprehensive planning; and (in some cases) significant management authority. Also, in some regions, adjacent institutions of this nature are linked to provide a broader geographic focus and enhanced coordination with similar entities. On the other hand, the intrinsic focus is on single-state issues, and extensive linkages between such institutions (and a new coordinating body as well) would be required to ensure interstate relevance.

9. INTERNATIONAL COMMISSION

This institutional form pertains to any formally constituted public entity vested with authority to address resource management issues shared by, or otherwise impacting two or more sovereign nations. A variety of such arrangements can be found around the world and, principally, in Western Europe. In North

America, leading examples include the (U.S.- Canada) International Joint Commission (formed under the Boundary Waters Treaty of 1909); the Great Lakes Fishery Commission (formed under the 1954 Convention on Great Lakes Fisheries); the (U.S.- Mexico) International Boundary and Waters Commission (formed via treaty); and the North American Commission for Environmental Cooperation, a tri-national (entity (i.e., U.S., Canada, Mexico) formed as a side agreement to the North American Free Trade Agreement signed in 1993. Complementing these arrangements are some two dozen additional institutions (in the Great Lakes region alone) that have some type of bi-national governance dimension. The scope and level of authority of such arrangements varies significantly.

Generally speaking, strengths and weaknesses associated with this institutional form have some similarity to those previously identified for the state/foreign power compact; interstate council/ commission; and federal/ state commission. International commissions tend to have a solid legal basis (i.e., treaty, convention or other formal agreement); generally broad planning and management functions; long term stability; professional staff and significant institutional resources; and mechanisms to involve (to some degree) other public institutions and stakeholder groups in decision making processes. Further, their bi-national/multi-national status also “levels the playing field” for all parties and ensures a co-equal role for each.

International commissions, however, generally tend to concentrate authority within the federal governments of each nation, thereby limiting the role of sub-national entities such as state governments. Decision making processes can be laborious and time consuming given the diplomatic nature of their activities. Further, the authority of such bodies tends to be largely (though not exclusively) limited to “soft” management functions, given the historic reticence of governments to invest some level of their sovereign functions in a third party.

CATEGORY THREE: FEDERALLY-LED MULTI-JURISDICTIONAL ARRANGEMENTS

10. FEDERAL REGIONAL COUNCIL

This category of institutional arrangement includes any council, committee, board or commission established by the federal government and characterized by a strong federal presence. Federal legislation and presidential executive orders are typically used to establish such entities, which have proliferated over the years and remain among the most frequently employed arrangements for multi-jurisdictional water resources management. Primarily advisory and coordinative in nature, federal regional councils tend to focus on a specific policy objective, are tied to and heavily influenced by the policies of the Administration establishing them and, comparatively speaking, tend to be rather short lived. Typically, they either address issues within a single, defined region (geo-political or hydrologic), or have multi-regional responsibilities within a nationwide focus.

The genesis of the federal regional council is found in the earliest days of United States history, but this device was popularized during the President Theodore Roosevelt era, with its federally-driven, river basin oriented planning and management emphasis. The “New Deal” years of the President Franklin Roosevelt administration also saw significant use of this device: the many federally-initiated “alphabet agencies” of the time are evidence of such. This institutional form remains popular today, but the top-down, federally-dominated characteristics of earlier applications have been replaced with a partnership-based emphasis featuring significant state involvement.

The strength of the federal regional council lies in the relative ease by which it is established; its region-specific focus; its ability to coordinate the efforts of often disparate federal agencies; and its effectiveness in elevating regional issues and needs to the national and federal agency levels. Historically, however, federal regional councils have not exhibited comprehensive planning or management functions, and have been primarily (though not exclusively) focused on intergovernmental coordination among federal agencies.

11. FEDERAL REGIONAL AGENCY

The federal regional agency is one of the most interesting institutional arrangements for water resources management, yet among those that have been employed the least. In fact, the Tennessee Valley Authority (TVA) is generally considered to be the only true example of such a form. It is characterized, as the name implies, by a single federal agency with comprehensive (and preemptive) management authority over a defined geographic area. Over the years, the TVA has on numerous occasions been lauded as a model for application elsewhere although never successfully emulated. In fact, bills designed to replicate the TVA in other regions were introduced in Congress every year for almost two decades after the Tennessee Valley Act was passed in 1933.

The TVA is vested with exceptionally broad, “cradle to grave” authorities addressing every aspect of water resources planning. Among others, this includes project financing, construction, operation and regulation in areas such as public and industrial water supply; water treatment; flood control; hydroelectric power; water-based recreation; fish and wildlife; navigation and ports; and, more generally, natural resources-related economic development. This breadth of authority is complemented by an equally extraordinary degree of autonomy and flexibility relative to other federally established entities. The TVA Board of Directors is empowered with sweeping responsibilities that include establishing general policies and programs; establishing and overseeing a staff; reviewing and evaluating progress toward goals; and annually approving all programs and budgets.

The events that culminated in the establishment of the TVA were unique to that time: a severe national economic depression; pronounced poverty in the seven state TVA region; the existence of significant federal properties in the region; a federal agency predisposed to large scale projects; the absence of a federal presence in the region; confusion of the “Hundred Days” in Congress that precluded full review, debate and understanding of the breadth of the legislation and, perhaps, most importantly, the personal interest of President Franklin Roosevelt.

Strengths associated with this institutional form are derived primarily from its strong centralized authority and comprehensive responsibilities. Such powers minimize the need for intergovernmental coordination and allow initiatives to be pursued from the conceptual to implementation stage within a single agency. Furthermore, direct revenue sources from operations, as well as a favored status with the Administration and Congress, help ensure that the resources needed to address agency objectives are available.

On the negative side, this “command and control” approach to resource management does not provide for inclusive, consensus-based decision making, and encourages an undue reliance on the federal government. Further, it severely limits opportunities to employ “checks and balances”, and temper agency decision making with external input. From a more practical standpoint, the prospects of employing this institutional form to future water resource management needs is limited by the political impracticality of pursuing an institution with TVA- like authorities.

12. SINGLE FEDERAL ADMINISTRATOR

As the name implies, this institutional form is the antithesis of the various inclusive, multi-agency, consensus-based arrangements described earlier. Rather, it refers to any arrangement in which a single, federally-appointed official is vested with decision making authority over a specified set of resource management issues within a defined geographic area.

Application of this institutional form has historically been limited, with the best example being found in the Colorado River Basin where, under provisions of the Colorado River Compact, The Secretary of Interior has been delegated broad management authority with respect to apportioning the waters of the Colorado. This arrangement arose out of a 1963 decision by the U.S. Supreme Court that legitimized the Congressional apportionment method of resolving water allocation disputes. A more limited application of this institutional form is found in oversight of the Lake Michigan Diversion at Chicago, a function performed by a Special Master appointed by the U.S. Supreme Court.

The single federal administrator arrangement epitomizes the “top down, command and control” approach to basin governance and therein lays both its strength and weakness. Lines of authority are clear and

definitive, decision making can be expedited, and a single leader provides the focal point for all planning, policymaking and implementation activity. On the negative side, this institutional form tends to be limited to issue-specific concerns (e.g., water allocation) and does not lend itself to the broader planning, management and coordination functions typically associated with basin governance. Intergovernmental collaboration and shared stewardship/ decision making authority is clearly lacking.

CATEGORY FOUR: QUASI AND NON-GOVERNMENTAL INSTITUTIONS

13. INTERNATIONAL COURT

The international court is a formally constituted legal institution vested with authority to adjudicate differences arising between two sovereign nations on any matter of shared interest. It is not a management agency in the conventional sense and exists solely for the purpose of providing disputing parties with recourse for a binding decision.

This institutional form has historically had little appeal in North America, where nations prefer to resolve disputes through diplomatic channels. At the broader international level, however, this form has been used extensively. Various forums and procedures for dispute avoidance and resolution are available through the United Nations and its Environmental Program. Most notably, the International Court of Justice is a well-established mechanism for resolution of resource management and environmental disputes. Specific to North America, quasi-judicial authority is vested in the International Joint Commission via Article X of the International Boundary Waters Treaty of 1909. Under this authority, the two governments can agree to refer to the Commission “any questions or matters of difference” arising between them for a binding decision. Notably, this provision has never been invoked, and both parties have historically pursued non-adjudicative means to resolving disputes.

Provided it has the ability to compel two or more parties to be bound by its decisions, this institutional form has a number of strengths. It is a formally constituted body that operates on an ongoing basis; it provides clear and unquestioned decision making authority; it serves as a locus for expertise/institutional history; and it ensures equitable treatment of all parties that come before it.

A primary limitation inherent in a court-based approach is the focus on dispute resolution as opposed to prevention. Enforceability is also an issue, as such arrangements generally lack effective mechanisms to compel parties to acquiesce to decisions rendered. Further, while court decisions can help shape future policy, this institutional arrangement has no planning or management function; it is reactive in nature.

14. FEDERALLY CHARTERED AND PRIVATE CORPORATIONS

This form is comprised of corporate entities involved in resource development, either a quasi-public arrangement operating under a charter granted by a public agency, or an entirely private entity.

While the federally chartered corporation does not enjoy as much operational latitude as the private corporation, both institutional forms share similar characteristics. Both are seldom- if ever- used for broad resource planning and management functions; they have an emphasis on resource development; have a well- defined (and limited) authority; and operate in close coordination with governmental entities that provide oversight and regulatory functions. Few such entities are found in the water resources/ natural resources arena, but abound in other areas. In the United States, Amtrak, Comsat and the Public Broadcasting Corporation are examples of federally chartered corporations, and in Canada, the Ontario Waste Management Corporation and various provincial hydropower authorities offer examples. In the resource management arena, one of the best U.S. examples is the St. Lawrence Seaway Development Corporation (established in 1958 via presidential executive order). In Canada, its counterpart is the St. Lawrence Seaway Management Agency.

The private corporation has seldom been used for the type of large scale, multi-objective resource management functions typically performed by public agencies. The closest example may be the Wisconsin Valley Improvement Company established by that state in 1907 (under unique circumstances) for flood control and developmental purposes associated with the state’s pulp and paper industry and

various hydropower facilities. Under state authority, the company (to this day) operates a reservoir system; leases reservoir rights; charges tolls for use; finances projects through bonds and company stock; and exercises the power of eminent domain.

This institutional form does have its strengths, such as the profit motive which can help maximize efficiency; the ability to respond more quickly to management needs than governmental bureaucracies typically can; the ability to develop a rapport and positive working relationship with private sector interests; and the potential to consolidate- within a single institution- planning, design, financing construction and operations functions. On the negative side, the profit motive can have an adverse impact on long term resource management needs; the opportunity for broad stakeholder (and public agency) involvement can be limited; and viability of this arrangement is generally suited to a smaller geographic scale (i.e., sub-watershed as opposed to a larger lake or river basin.) Further, certain resource management functions (i.e., coordination, aesthetics, preservation) are often not well-suited for a profit-driven management arrangement.

15. NON-GOVERNMENTAL ORGANIZATIONS

Various functions associated with multi-jurisdictional resource management are increasingly being assumed by nongovernmental bodies, including such entities as academic institutions; foundations; professional associations; nonprofit organizations; citizen groups; business and industry coalitions; and individual “user” groups. Among their diverse range of resource management- related functions is coordination; information, education and outreach; research; legislative and policy analysis; advocacy; advisory services; fundraising; and program/ project management and implementation. The relationship of such entities to public agencies and other nongovernmental organizations varies widely. They can work in partnership; in separate but complementary ways; and/or in active opposition, depending on the nature of the issue and the mission of the organization.

By definition, nongovernmental organizations lack direct responsibility/ authority for public policy decisions. However, they can be a highly influential partner and opinion leader in the public policy process. They are free from the constraints of public institutions and often have greater flexibility to adapt to change. Many have substantial followings and a proven effectiveness in influencing public opinion and governmental action. Others, such as academic institutions that embrace objectivity and impartiality, can serve as effective intermediaries between opposing interests and bring respected expertise and research capability to bear on issues. Foundations, corporations and various associations can also direct substantial resources to management activities, significantly augmenting funds available through public institutions.

It is important to note that not all nongovernmental organizations are oriented toward facilitating the public policy process via independent and impartial coordination, catalytic and consultation functions. Many such organizations are best characterized as special interests, with a predisposition toward influencing the policy process with a specific objective in mind; resource management interests are often issue specific as opposed to “ecosystemic” in nature. Also, accountability is directed toward the organization’s Board of Directors and/ or constituency, as opposed to the public in general. Interests and priorities can change over time, and the viability of such entities (e.g., with regard to influence, impact and resources) can be short-lived. Finally, the “institutional ecosystem” for any given lake or river basin is typically a crowded one for nongovernmental organizations, and competition for funds, profile and projects can be intense. It is often difficult in such an environment for any single organization- or coalition- to establish a broadly supported role in coordinating and advancing resource management functions.