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The State Role in Western Watershed Initiatives

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**THE STATE ROLE
IN WESTERN
WATERSHED INITIATIVES**

**NATURAL RESOURCES LAW CENTER
University of Colorado School of Law**

1998

Research Report (RR-18)

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This report was prepared through the joint efforts of several Center researchers and consultants. Consultant Frank Gregg and Center attorney Teresa Rice performed the majority of original research, including most of the interviews listed in Section V, beginning on page 98. Salient ideas drawn from this research were condensed into working drafts by Gregg and Rice in the spring and summer of 1996. From summer of 1996 to spring of 1998, this material was significantly revised and updated by Center researchers Douglas Kenney and Kathryn Mutz, with Kenney focusing on the discussion of “context,” while Mutz concentrated on documenting the current form of state efforts. Several student researchers also worked on this project, primarily reviewing and completing citations and revising footnoted materials. These included Cecely Castillo, Nicole DeFever, Sarah Galley, David Gillilan, Kristyl Mathews, Sean McAllister and Kristan Pritz. Many other individuals, listed in Section V. B2 (beginning on page 89) also provided valuable support to this project. Throughout this period, the project was overseen by Center Director Elizabeth (Betsy) Rieke.

Funding for this project was generously provided by the Ford Foundation, which has encouraged the work of several scholars and research centers focusing on the western watershed movement. In this rapidly growing and diverse body of literature, western watershed initiatives are emerging as a highly desirable alternative to traditional mechanisms of natural resources management and problem-solving. It is the primary function of this report to describe how state governments in the West are attempting to institutionalize the goals of the watershed movement. The Center is greatly indebted to the Ford Foundation and to the several researchers involved over the history of this project.

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EXECUTIVE SUMMARY

The management of water resources in the American West raises a number of unique and complex challenges. Among these are the difficulty of coordinating diverse public and private interests and promoting water resources governance from a regional and integrated perspective. One of the most striking and innovative characteristics of water management in the 1990s is a renewed interest in local, generally sub-state watersheds as the preferred administrative unit. Also significant is the ad hoc formation of a large number of watershed initiatives to address water management issues through collaborative processes. Many western states are recognizing the potential of these groups to successfully address a host of water-related problems. This paper reviews the historical and ideological context for state involvement in watershed management, describes current state approaches to supporting the formation or continuation of local watershed groups, and provides general recommendations to policy-makers and watershed groups for future actions.

As shown in Section I, the current structure of western water management is a result of experimentation and gradual change from the settlement of the frontier in the late 1800s through modern times. Although the idea of resource management on a watershed level was first suggested over a century ago, the boundaries of political jurisdictions were instead set up in a checkerboard pattern around land ownership, bearing very little resemblance to natural hydrologic regions. Other important legacies of 19th century western settlement and governance include the lack of coordination between land and water management institutions and the failure to accommodate public interest concerns in resource allocation decisions. Whether these elements of western water management are seen in retrospect as historical mistakes or necessary prerequisites for economic development, they are often at the root of problems modern watershed initiatives try to address.

Traditionally, the primary state role in western water management has been water allocation under the prior appropriation system. In response to rapidly changing demands, however, the scope of western states' water management has expanded to include broad issues of watershed restoration, instream flow protection, water-use efficiency, and drought management. Broad governmental trends at the federal level have also prompted an expanded state role in water management. For example, the Clean Water Act encourages the states and federal government to combine expertise and funding to address regional water problems.

As the states position themselves to exert an increasingly strong leadership role in what promises to remain a highly intergovernmental policy area, they are faced with several significant challenges. One of these challenges is that the values and goals shaping water management have evolved over the past quarter century at a pace which has exceeded the capacity of institutional change. Incorporating the values of the New West into institutions designed for traditional western economies and lifestyles in an efficient and equitable manner is a real challenge, which is exacerbated by calls for greater local involvement in resource management decision-making. While greater local control over resource management may yield such advantages as increased accountability between resource managers and affected stakeholders, as well as a more creative, flexible, and efficient approach to natural resource management, such processes may be difficult to implement and may inadequately satisfy national resource management standards.

In light of these complex challenges, the modern watershed movement constitutes a broad and ambitious experiment in natural resource governance. Watershed

initiatives are forcing a reexamination of several fundamental components of resource management, including: who should be involved in making management decisions; at what geographic locations should the decisions (and decision-making processes) be based; and which evaluation criteria should be used to determine appropriate water uses and management philosophies? While broad governance issues such as these are at the core of the watershed movement, most individual watershed initiatives are much more pragmatic, concerned with finding and implementing solutions to localized problems. In fact, one of the strengths of watershed initiatives is their ability to focus their activities directly at the most pressing natural resource problems of particular watersheds, often operating outside of normal governmental processes and free from the constraints of inflexible mandates or program requirements. Substantive issues frequently addressed by watershed groups include water quality, habitat protection (including endangered species concerns), and general issues of environmental degradation..

The majority of watershed groups have a broad, balanced membership composed of representatives from federal, state, and local government agencies, local landowners, and various other stakeholders. Additionally, those watershed groups featuring a predominance of members from a particular sector or special interest frequently establish advisory or technical committees to ensure regular input from other sources. Concerns over inadequate representation do exist, however, especially from national environmental groups who fear some watershed initiatives are dominated by local commodity interests or parties too eager to compromise environmental standards. These concerns, whether accurate or not, are largely alleviated by the fact that watershed initiatives rarely possess independent management authority, instead relying on the coordinated application of powers held by participating entities. The form of decision-making utilized by watershed initiatives varies largely with membership characteristics, although cooperative arrangements such as consensus or super-majority are common. Several additional qualities of watershed initiatives are described in Section II.

Most activities of watershed initiatives are directed towards raising the level of understanding about the watershed. Other activities include interagency coordination of expertise and resources, conflict resolution, and on-the-ground restoration projects. Improving communication and the quality of the decision-making environment are often listed by participants as primary successes of these efforts, whether this occurs as a by-product of other activities or as an end in itself. Ultimately, all watershed initiatives should be judged by environmental, on-the-ground performance criteria; however, in the interim, the improvement of working relationships is a worthwhile accomplishment portending future successes. Qualities that appear to be conducive to success include effective leadership, participation by locally respected individuals, an appropriate focus, adequate resources, and a credible and efficient decision-making process.

The most frequently limiting resource of watershed initiatives is funding for both on-the-ground projects and group administrative tasks. Most watershed initiatives are highly dependent on federal grants, congressional appropriations, or state agency assistance. Many watershed initiatives find that governmental support, especially federal support, is essential and often available, but comes at the expense of restrictions that complicate efforts to efficiently plan and conduct restoration projects. Other sources of funding include membership contributions, private foundations and companies, and conference and publication fees. Donations of in-kind services, such as office space, equipment, and staff time, are also frequently essential to sustaining a watershed

initiative. Reliance on in-kind services may help to enhance other goals such as maintaining local control and building group cooperation and trust.

State watershed approaches differ widely and are rapidly evolving. Some states have adopted formal mechanisms and comprehensive water management policies while other use a more ad hoc approach. Section III describes state legislative and agency strategies for encouraging and supporting watershed initiatives in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

States are frequent and valued participants in many watershed initiatives, bringing an increasing level of technical expertise, management authority, and occasionally financial resources to a variety of water-management issues. When designing comprehensive policies for water management, however, states should acknowledge that 1) not every watershed initiative is effective or worthy of state support, 2) a program that works well in one state may not necessarily be successful in another state, given each state's unique physical and institutional qualities, and 3) the rigidity and uniformity frequently associated with governmental activities could hinder the progress of watershed initiatives, which normally operate outside of government channels.

With these observations in mind, Section IV provides seven general policy recommendations for designing new state programs or improving existing state programs to encourage and support watershed initiatives:

Recommendation # 1: Legislative and administrative reforms should be pursued to bring an integrated geographic focus to all facets of state natural resources planning and management.

Recommendation # 2: State agencies with water-related responsibilities should be vested with mandates and bureaucratic incentives that encourage their participation in, and support of, watershed initiatives.

Recommendation # 3: Mechanisms that encourage or facilitate improved channels of communication and coordination among (and within) the various state agencies that interact with watershed initiatives should be provided through legislation or administrative policy.

Recommendation # 4: As part of their overall watershed management approach, states should consider providing a legislative and/or administrative framework to encourage, in a broad way, the formation of watershed initiatives.

Recommendation # 5: State funding programs for watershed efforts should be established where possible, and should be broad enough to include support for organizational, administrative, educational, and on-the-ground activities of selected initiatives.

Recommendation # 6: States should establish general criteria and standards that watershed initiatives must meet in order to obtain the participation of state agencies, to compete for state funding, and to achieve state recognition.

Recommendation # 7: Reforms that transfer the authority, responsibility, or accountability for resource management to watershed initiatives should not be pursued.

INTRODUCTION

The management of water resources raises a host of complex challenges. As nature's premier solvent, water links a host of otherwise distinct interests and activities, demanding coordinated regional planning and action. One of the most striking characteristics of 1990s water management in the American West has been the renewed emphasis given to local, generally sub-state, watersheds as the preferred geographic unit for resource management. A staggering variety of "watershed initiatives" have recently come into existence. A "watershed initiative" is any collective effort aimed at improving the status or management of water resources (and often other natural resources) within a geographic area primarily defined by the contours of a localized catchment basin.¹ As both a technical and social experiment in improved resource management, the western watershed movement is drawing the attention of a wide variety of scholars and policy-makers, anxious to identify and build upon promising trends while avoiding the numerous pitfalls that traditionally plague efforts at integrated regional resource management.

In this report, the modern watershed management movement in the West is reviewed, focusing on the role that state governments play in watershed initiatives. In Section I, this modern phenomenon is placed within a broad historical and ideological context in order to better evaluate the origins and significance of these modern efforts. This material is followed in Section II by a review of the general characteristics and qualities of modern watershed groups. Section III takes a focused look at the approaches state governments are currently utilizing to promote management on a watershed basis and the role they play in the establishment and functioning of watershed initiatives. This material is used to draw and support the general conclusions and recommendations presented in Section IV.

While the opinions expressed in this report are those of the Natural Resources Law Center, except where otherwise noted, the major ideas presented herein follow the dominant themes gleaned through personal interviews conducted by Center personnel and consultants with parties directly involved with watershed initiatives across the western United States. As documented in the bibliography (Section V), the Center has drawn on opinions generously offered by hundreds of individuals representing federal, state, and local governments, academic institutions, interest groups, concerned citizens, watershed coordinators, and other interested stakeholders on the "front lines" of the watershed movement. A heavy reliance on personal interviews is a necessary facet of watershed initiatives research, as the western watershed movement is primarily a sparsely documented, bottom-up, and loosely coordinated collection of ad hoc, site-specific

¹ Most of the initiatives are groups, also called councils, committees or associations, featuring participation from various levels of government and the private sector. Other western watershed initiatives are intergovernmental associations or simply periodic "events" or "forums" with no defined group of agencies or individuals meeting between scheduled events. The terms "watershed initiative" and "watershed group" are often used interchangeably even though the term "initiative" implies a broader spectrum of efforts.

Introduction

initiatives. In this report, the major themes of the interviewees have been supplemented whenever possible with information drawn from the available literature. While these published sources are cited as appropriate in the text, no effort has been made to link most opinions with specific interviewees since this report features the commonly expressed ideas, rather than those articulated by a single interviewee.²

² Descriptions and reviews of specific western watershed initiative case studies can be found elsewhere in Center research (NRLC, 1996; Kenney, 1997), and in serials such as the *Chronicle of Community* newsletter of the Northern Lights Institute (Missoula, Montana) and the *Watershed Events* publication of the U.S. Environmental Protection Agency. Case study information can also be found in Yaffee et al. (1996) and on the Internet at sites such as Purdue's *National Watershed Network* <<http://www.ctic.purdue.edu/Watershed/WatershedOptions.html>> and EPA's *Surf Your Watershed* <<http://www.epa.gov/surf/>>. An excellent "how to" guide for watershed partnerships is provided by Clark (1997).

I. THE INSTITUTIONAL CONTEXT OF THE WATERSHED MOVEMENT

The efficient development and management of water resources often requires great technical skills and the coordinated action of a large number of planners, laborers, and resource managers. From the ancient “fluvial” societies of Mesopotamia, Egypt, and China, to modern cities of the American West such as Phoenix—built upon the elaborate canal systems constructed centuries earlier by the Hohokam Indians—efforts to coordinate the development and management of shared water resources has been a powerful force promoting technological and social innovation.³ Whether based on centralized (and often despotic) control or more democratic and collaborative processes for achieving coordinated action, one of the most common elements found throughout these pioneering efforts in resource management and social organization is recognition of the need to approach water resources governance and management from a regional perspective, as water’s inherent mobility makes it a “fugitive” resource. The ideal geographic scale for water development and management is normally closely tied to the contours of “drainage basins”: regions defined by topography and water flow rather than by the lines of political jurisdiction or land ownership. Small basins, or watersheds, join together to form increasingly larger and more complex systems of sub-basins and river basins, producing a conceptually simple but practically complex “nesting” of regions at which efficient water management can be logically focused.⁴ Despite these differences in geographic scale, large river basins and local watersheds raise similar “institutional issues” of intergovernmental fragmentation and interagency competition, presenting an array of challenges in resource governance, administration, and management (Kenney, 1997).⁵

The current emphasis given to watershed-based management in the American West is the latest incarnation in an ongoing and undoubtedly endless struggle to better reconcile the structure of water management institutions with the qualities of the fugitive resource. A wide variety of regional water management strategies have already been utilized in American history, with activities at the small watershed scale typically being overshadowed by the conceptually similar but more technologically and politically ambitious efforts at the scale of interstate river basins. The design of modern watershed

³ The relationship between regional water resources development and management and the evolution of human societies is explored by Wittfogel (1955) using the terminology of “hydraulic societies.” Worster (1985), Gottlieb (1988), and Hundley Jr. (1992), among others, offer different perspectives of this concept in their analyses of the modern West.

⁴ The United States features approximately 2,200 small watersheds, averaging 900,000 acres in size, which combine to form 160 principal river basins and 18 major drainage areas (NRCS, 1996).

⁵ In this report, the terms “institution” and “institutional arrangements” are used to describe agreements, regulations, practices, customs, and other formal and informal rules that determine how, and by whom, water resources are controlled in a particular manner and geographic area. Institutions should not be confused with “organizations,” a term used to describe agencies or similar bodies that are key elements of western water institutions.

efforts has been influenced by these earlier successes and failures, with elements of past experimentation brought together in a manner reflective of current social and governmental norms, values, and objectives.

Many of the most relevant historical and ideological components of western water management are reviewed in the following pages, as these past decisions and experiments establish the baseline from which modern institutional reforms are now occurring. An appreciation of this background is useful not only in explaining the nature of the current watershed movement, but also in identifying those policies and actions that might be most useful in guiding future efforts.

A. The Legacy of 19th Century Thinking

Many of the challenges faced by modern resource managers are the legacy of 19th century thinking from the “frontier” West. Among the most problematic (and related) legacies of this earlier era are the lack of coordination between land and water management institutions and the failure to accommodate “public interest” concerns in resource allocation decisions (Pisani, 1992; Bates et al., 1993). One major source of these problems has been the initial failure of policy-makers to appreciate the regional nature of the West’s natural resources. While the watersheds and river basins of the West zig-zag across landscapes in a complex but well-defined fashion, the region’s legal and political institutions were often founded upon rectangular state and county boundaries, producing a pattern of land management that bears little resemblance to natural hydrologic regions. Homestead programs and other federal land disposal policies—found in legislation such as the Preemption Act of 1841, the Homestead Act of 1862, the Desert Land Act of 1877, the Timber and Stone Act of 1878, and the General Allotment Act (or Dawes Act) of 1887—helped to instill the small watersheds and large river basins of the West with a “multijurisdictional” quality, a feature later exacerbated by the evolution of federal and state natural resource agencies and programs along substantive, not geographic, lines (Pisani, 1992; Clarke and McCool, 1985).

The western prior appropriation system of water allocation, another 19th century legacy originating in the mining communities, further divorced land and water institutions by rejecting the English common law tradition that the rights to use (but not deplete) water belonged only to riparian landowners for use on riparian lands. While prior appropriation has allowed even the most arid regions of the West to be opened to agricultural and industrial development, the price has been fragmented land and water institutions, and perhaps more importantly, the subordination of public interests in water to private control (Hundley, Jr., 1992; Feldman, 1991). These institutional deficiencies have been exacerbated by water law provisions that have historically defined “beneficial use” in narrow terms emphasizing consumptive and economic uses, thereby subordinating the public and often non-market values of water resources. Whether viewed as historical mistakes or necessary prerequisites of economic development, these are core elements of western water institutions, and are frequently at the root of modern water conflicts.

A century before the modern watershed management movement began to champion the virtues of regionalism, land/water integration, and participatory decision-making as an appropriate basis for western natural resource institutions, John Wesley

Powell was making a similar argument. Best known as the first white man to fully explore and map the Colorado River (circa 1869 to 1872) and later as the driving force behind the creation of the U.S. Geological Survey in 1879, Powell also deserves recognition as an ideological forefather of the watershed movement (Stegner, 1953). Heavily influenced by the watershed societies of the Hispanic pueblo and Mormon communities of the arid West, Powell's "Grand Plan" called for the emerging political and natural resource institutions of the region to be organized around "hydrographic districts":

Such a district of the country is a commonwealth by itself. The people who live therein are interdependent in all their industries. Every man is interested in the conservation and management of the water supply, for all the waters are needed within the district. ... Thus it is that there is a body of interdependent and unified interests and values, all collected in one hydrographic basin, and all segregated by well-defined boundary lines from the rest of the world. ... This, then, is the proposition I make: that the entire arid region be organized into natural hydrographic districts, each one to be a commonwealth within itself for the purpose of controlling and using the great values which have been pointed out. ... The plan is to establish self-government by hydrographic basins.⁶

Powell's dream of self-governance at the scale of hydrographic districts (i.e., watersheds and river basins) was not well received in Washington. Nor was his plea to new western states to exclude the prior appropriation doctrine from their constitutions. He was also unsuccessful in arguing for local funding and control of western water development activities to the exclusion of the federal government.⁷ Soon after the turn of the century, the federal reclamation program was born with the Reclamation Act—ironically, in the year of Powell's death (1902)—and the West went forward on a different course to build strong cultures and formidable economies.

As the West moved into the 20th century, strong and largely irreversible trends had been established that were moving the West away from the integrated "watershed democracies" envisioned by Powell and only a few others. The delineation of states (and other political jurisdictions such as counties) without respect to the needs of natural resource management, the establishment of natural resource agencies along narrow substantive and functional lines, the allocation of land and water resources between and among divergent governmental jurisdictions and private parties, the establishment of competing decision-making arenas and procedures, and many related processes all proceeded in a way that contributed to increasing "institutional fragmentation" in the river basins and watersheds. That these trends were allowed to take root was not due to ignorance, but reflected the larger national priority of promoting rapid settlement and

⁶ Powell, John Wesley. 1890. "Institutions for Arid Lands." *The Century*, Vol. XL (May to October), pp. 111-116.

⁷ Powell's ideas were more warmly received by scientific and political groups concerned with forest management, soil conservation, and urban planning (Stegner, 1953; Hays, 1959).

large-scale economic development of the West. It was widely believed that achieving these larger goals could be best accomplished by rapidly dividing and transferring resources to private hands, encouraging the development of extractive industries, promoting the development and application of technology through agency specialization and private-sector entrepreneurialism, and subsidizing the initial development of markets and infrastructures needed to promote long-term economic growth (Pisani, 1992; Hundley Jr., 1992). The ideas of Powell, however, never lost relevance, and the following century featured several notable attempts to selectively and incrementally incorporate many of those ideas into western natural resource institutions.

B. Confronting the Challenges of Regionalism and Integration

Throughout the 20th century, the western states have struggled to evolve from open and largely unregulated frontiers to mature and relatively autonomous members of the larger federation of American states. In this ongoing process of institutional maturation, several fundamental issues of governance have been frequently revisited, including the determination of the proper balance between public and private ownership of resources; between federal, state or local decision-making; and between decision-making processes based on “objective” science versus interest group liberalism, litigation, markets, collaboration, or other means. In the context of western water management, these and many related issues have been debated in an environment complicated by issues associated with regionalism and transboundary impacts, changing value structures in water, competing uses of water, water scarcity, changing demographics, technical uncertainty and innovation, disciplinary biases, and the more general problems of intergovernmental fragmentation and interagency competition. When all these factors are considered simultaneously, it becomes easy to appreciate why the management of natural resources in the West remains an area of tremendous conflict, study, and experimentation. Even a cursory review of this history, as provided below, is sufficient to illustrate the magnitude of the challenges presented by regional water management.⁸

One of the first significant attempts to modify the “frontier mentality” policies of the American West came in the so-called “progressive conservation era” (circa 1890-1920), when the logic of widespread private control of resources was first challenged (Hays, 1959). Influenced in part by the rampant deforestation caused by private timber corporations and the rapid accumulation of western empires by the railroads, the progressive ideology called for reigning in the natural resource corporations by increasing federal ownership and control of western land and water resources, and by transferring management decisions to science-based resource managers in the rapidly growing federal natural resource bureaucracy. Much of this philosophy was consistent with Powell’s apprehensions about the corporate control of resources, but where Powell promoted community control in an environment of collaborative decision-making, the progressive emphasis was on federal bureaucratic control driven by objective science. This resource

⁸ A much more detailed review of the history of regional water management in the United States is provided by Kenney (1997).

management approach quickly became an important feature of western land (especially forest lands) and water institutions, as seen by federal land reservations, the expansion of federal powers over water through constitutional interpretations of the Commerce and Property Clauses and the establishment of the federal natural resource programs (e.g., the reclamation program), (Kenney, 1993; Hays, 1959). While these actions helped to ensure a strong federal presence in all western basins—later enhanced by federal environmental legislation—these trends did not immediately influence the well-established state tradition of allocating water through private rights. Over time, this dual system of federal and state water law has become an increasingly significant source of confusion and conflict in the West.

A related concern was the potentially negative influence of fragmented western water resource institutions on regional economic development. During the progressive conservation era and later, in the depression era (circa 1929 to 1942), regional water development was recognized as a potentially powerful economic development tool in the West and elsewhere. These eras featured dozens of federal studies investigating the importance of water development and management, primarily focusing on the twin elements of multipurpose development and a regional interagency management structure (Kenney, 1997). Among the most influential of the progressive conservation era studies were the reports of the Inland Waterways Commission, while significant depression era reports included those of the President’s Committee on Water Flow, the Mississippi Valley Committee of the Public Works Administration, the National Resources Board and its Water Planning Committee, the National Resources Committee with its Water Resources Committee, and the National Resources Planning Board (Schad, 1964; Teclaff, 1967; Reuss, 1992; Kenney, 1993). Between these two eras, the Corps of Engineers and the Federal Power Commission were charged with investigating the potential for comprehensive development in many basins across the nation,⁹ while the Bureau of Reclamation focused on comprehensive developments in many of the arid and semi-arid regions of the West. Influential new institutional arrangements were also pioneered in this general time period, as interstate water allocation compacts emerged in the 1920s and became commonplace by the 1940s. The nation’s most ambitious experiment with regional water management, the Tennessee Valley Authority, was established in 1933, initiating a period described by the Advisory Commission on Intergovernmental Relations as a “renaissance of regionalism.”¹⁰

While this renaissance was largely focused on large river basins and ambitious development schemes, small watersheds were not completely overlooked. Among the more notable events affecting watershed management was the establishment of the U.S. Soil Conservation Service (SCS), in 1935 in response to the “dust bowl” conditions of the depression era. From 1937 to 1946, the SCS—renamed the Natural Resources

⁹ These investigations were first authorized in 1925 and 1927, and came to be known as the “308 reports” since the rivers to be studied were primarily listed in House Document 308, 69th Congress, 1st Session. Over 200 such investigations have since been completed.

¹⁰ Advisory Commission on Intergovernmental Relations. *Multistate Regionalism* (1972:6).

Conservation Service (NRCS) in 1994—oversaw the establishment of approximately 3,000 soil conservation districts across the United States, using consistent state legislation initially drafted by the agency (Clarke and McCool, 1985; NRCS, 1996). The work of the agency was significantly expanded in 1954 with the establishment of the “small watersheds program,” which currently provides financial aid and technical assistance to local organizations and state governments that enter in cooperative arrangements with NRCS extension agents, usually for the purpose of constructing projects addressing erosion and flood management problems. The program has also made some federal assistance available for agricultural water development and management, fish and wildlife enhancement, and municipal and industrial water supply; however, the cost-sharing agreements were designed to clearly favor flood control projects and other efforts designed to increase the availability of cropland (e.g., stream straightening projects) (Holmes, 1979).¹¹

Another significant and more spontaneous development in the 1950s was the development of “coordinated resource management” (CRM) procedures by SCS employees in Nevada and Oregon. In a CRM process, representatives of federal, state, and local governments voluntarily come together with private landowners and other stakeholders to seek cooperative solutions to natural resource problems of regional concern.¹² The SCS/NRCS and the U.S. Bureau of Land Management have been the most ardent proponents of this approach, which has been used nationally for several decades. Other federal agencies also cooperate when appropriate, in accordance with several interagency memoranda of understanding primarily enacted in the 1970s and 1980s. While this type of problem-solving approach is the norm in modern watershed initiatives, the advent of CRM marked an important shift in decision-making patterns away from isolated agency planning and a strict separation between public and private roles.

Collectively, soil conservation districts and CRM (and similar) planning procedures have provided an excellent model of intergovernmental and consensus-based problem-solving at the local scale, innovations which have been fully embraced in the modern watershed management movement. Less progress has been made on larger regional scales, as most western interstate rivers do not feature ambitious efforts in river basin governance and management.¹³ Several attempts at coordinated river basin

¹¹ These projects have traditionally been limited to small structures in upland watersheds, a specialization that has minimized turf conflicts with the more powerful Corps of Engineers (Clarke and McCool, 1985). These structures are often referred to as “566 projects” since the public law number of the authorizing legislation is P.L. 83-566 (Watershed Protection and Flood Prevention Act of 1954).

¹² CRM is also known as CRMP: coordinated resource management and planning.

¹³ The closest approximation to western river basin governance is the interstate water allocation compacts found in the Arkansas, Bear, Belle Fourche, Big Blue, Canadian, Colorado, Costilla Creek, Klamath, La Plata, Pecos, Red, Republican, Rio Grande, Sabine, Snake, South Platte, Upper Colorado, Upper Niobrara, and Yellowstone River basins. The

management have occurred since World War II. Through much of the 1940s, 1950s, and 1960s, a variety of federal interagency river basin committees functioned across the United States, in theory to bring a greater level of consistency and coordination to federal water development and management activities. Of particular note in the West were so-called “firebrick” committees in the Pacific Southwest, Columbia, and Missouri Basins.¹⁴ These committees did not prove to be effective forums for resolving interagency conflicts, and their relations with state and local governments were described by the National Water Commission as “informal and tenuous.”¹⁵

The frequently poor links between federal and state water managers were among the issues addressed in a variety of post-war investigations, including the reports of the Hoover Commission (1949, 1955), the President’s Water Resources Policy Commission (or “Cooke Commission”) (1950), the President’s Advisory Committee on Water Resources Policy (1956), the Senate Select Committee on National Water Resources (or “Kerr Committee”) (1961), and the National Water Commission (NWC, 1973). The lack of a meaningful state role in river basin governance was also addressed in part by the so-called “Title II” commissions established pursuant to Title II of the Water Resources Planning Act of 1965. Under the auspices of this legislation and the supervision of the Water Resources Council, federal-state Title II commissions were established to address regional water issues in the Pacific-Northwest (i.e., Columbia Basin), Souris-Red-Rainy, Great Lakes, Ohio, New England, and Missouri regions (ACIR, 1972).¹⁶ Despite featuring a relatively equal balancing of federal and state interests, these regional organizations proved to be ineffective tools for planning and conflict resolution due to the rapidly changing demands placed on water managers during the transition from the water development era to the era of resource management (Gregg, 1989b). The Title II commissions, and the Water Resources Council, were terminated by presidential order in 1981 (PEO, 1981).

The only comprehensive river basin organization in the West today is found in the Columbia Basin, where the Northwest Power Planning Council (Council) has been given the difficult task of managing dams primarily built for power production in a manner that responds to the precipitous decline of salmon fisheries in the region, and in

scope of these agreements is normally limited to water allocation, however, and these compacts and compact commissions therefore should not be considered as more than a preliminary step in the development of coordinated regional water management (McCormick, 1994; Kenney, 1996).

¹⁴ These committees were formed pursuant to a 1943 interagency agreement that created the Federal Interagency River Basins Committee (FIARBC, or “firebrick” committee) (NWC, 1973).

¹⁵ NWC (National Water Commission), *Water Policies for the Future*, 1973. Water Information Center, Inc., p. 416.

¹⁶ The Souris-Red-Rainy Commission later became part of an Upper Mississippi Title II Commission.

a way that balances federal, state, and tribal responsibilities (Volkman, 1997). Given the strong regional problem-solving focus of the Council, it is not surprising that the Northwest is the region with the West's highest concentration of watershed initiatives, and where state (and interstate) support for watershed initiatives is strongest. Similar links between watershed and river basin efforts are generally not seen elsewhere in the West, primarily due to the lack of significant river basin organizations.

C. A Rapidly Evolving State Role

The state role in western water management continues to evolve and expand in a direction consistent with the watershed management movement. Traditionally, the primary area of state activity in western water resources has been in allocating water (especially surface water) under the prior appropriation system. This role is primarily one of recognizing and administering private rights, which does not require, nor necessarily encourage, the establishment of regionally-oriented state water programs—except to the extent that some intrastate allocation systems are influenced by interstate water allocation agreements. A somewhat greater stimulus for sub-state regional planning is provided by water supply development activities, an area in which the role of western state governments has frequently been to support development programs created by other entities, namely municipalities, special districts, and federal agencies.¹⁷

In a few western states, such as California, intrastate water development activities have been particularly ambitious, and highly capable state water agencies have long since evolved to implement and oversee these activities (Hundley Jr., 1992; Kahrl, 1982; Gottlieb, 1988). In most western states, however, the state role in water issues throughout most of this century has not deviated far from the traditional focus of water rights administration. The most visible public entity in water matters has continued to be the office of the State Engineer, and the majority of state water law has concentrated on clarifying public and private rights under prior appropriation. Several significant modifications to state water allocation practices have occurred in recent years. For example, most western states have opened the doors to water marketing, utilizing market forces to update patterns of water allocation and use (Graf, 1998). The states, to varying degrees, have made these changes with recognition of the environmental and other “third party” impacts that can accompany water reallocations, responding with a variety of legislative and administrative requirements. A majority of western states now have inserted “public interest” or “public welfare” provisions in state water codes to evaluate the social, economic, and environmental merits of proposed transfers (Oggins and Ingram, 1990). Along similar lines, California has aggressively utilized the public trust doctrine

¹⁷ It is worth noting that states were not generally recognized as members of the water development “iron triangles” that were so influential in shaping western water development and policy, although state governments frequently have supported the efforts of these political subsystems. Iron triangles are normally defined as an alliance of key congressional committees responsible for authorizing projects and making appropriations, local interest groups advocating specific water developments, and the federal water development agencies (typically the Bureau of Reclamation in the West) (McCool, 1987).

to accomplish these goals—most notably in the Mono Lake case.¹⁸ A wide variety of instream flow programs have also been established, with varying levels of success (Gillilan and Brown, 1997; MacDonnell and Rice, 1993). By pursuing these and other modifications to the prior appropriation system, the western states have gradually expanded their focus in water management and have positioned themselves to exert an increasingly strong leadership role in the future.¹⁹

Even more significant institutional changes can be traced to the national transformation from the era of water development and allocation to one of environmental protection and restoration. Many of the most salient programs in environmental protection and restoration have primarily evolved under the leadership of federal agencies, with state participation occurring through a variety of intergovernmental partnerships.²⁰ Federal-state partnerships in water quality management, in particular, illustrate the federally initiated expansion of state responsibilities in issues beyond water allocation (Adler, et al., 1993).²¹

¹⁸ *National Audubon Society v. Superior Court*, 658 P.2d 709 (Cal. 1983).

¹⁹ Not surprisingly, state leadership has primarily been expressed in those policy areas with more obvious links to prior appropriation administration, such as water-use efficiency, instream flow protection, conjunctive use, and drought management (Bell, 1997).

²⁰ It remains true that water law is primarily state law, but most environmental management programs affecting how land and water resources are actually utilized are only rarely the sole jurisdiction of state agencies. States are but one player in this increasingly complex intergovernmental morass. This is especially true in regions dominated by federal land ownership and federal projects. Approximately half of the western states (excluding Alaska and Hawaii) are federal land, as compared to the national total of twenty-nine percent. Federal ownership is particularly high in the eleven most western states in the continental United States, and in Alaska which is approximately two-thirds in federal ownership (Coggins et al., 1992).

²¹ This modern focus on environmental protection and restoration has not only resulted in a broadened state role in water management, but has renewed the interest within state government for coordinating natural resource management at regionally-relevant scales. Although state support for the modern watershed management movement is the most obvious expression of this interest, it is worthwhile to note that a few significant state innovations in intrastate regional resource planning and management in the West have a much longer history. Among the most notable innovations has been the creation of TVA-like “river basin authorities” by the Texas legislature in 1934 in the Brazos and Colorado River basins. (Texas’ Colorado River is an intrastate watercourse sharing no physical or legal connection to the more famous river of the same name traversing seven southwestern states.) Like their federal inspiration in the Tennessee Basin, these Texas authorities feature a comprehensive mandate including power production, flood control, water supply, water quality, economic development, and environmental protection.

Also significant was the establishment of a network of twenty-four “natural resource districts” in the state of Nebraska. This action was initiated by the Nebraska legislature in 1969, in large part to better coordinate the approximately 500 special purpose entities in the

Trends supporting greater state autonomy (e.g., New Federalism), combined with federal budgetary shortfalls, have affected many areas of public policy, including water resources management, challenging states to step forward in leadership roles (Bell, 1997; EOP Foundation, 1997). In the water resources realm, several federal programs over the past couple of decades have encouraged states to increase their capacity to manage water and related natural resources. Congressional legislation in 1964 provided for the creation of water resources research centers within state universities in all states.²² Similarly, Title III of the Water Resources Planning Act of 1965 provided federal grants to state planning efforts.²³ Yet other examples are provided by the Land and Water Conservation Fund Act of 1965, the Coastal Zone Management Act of 1972, and the Safe Drinking Water Act of 1974.²⁴

Of particular importance has been the federal Clean Water Act. Beginning with the landmark revisions in 1972, several components of the federal water quality program have encouraged a strong management role for the states in cooperation with federal agencies—a philosophy sometimes described as “cooperative federalism.” Two sections, in particular, specifically address cooperative intergovernmental approaches to intrastate regional planning. Originally, Section 209 was to provide the vehicle for regional water quality planning and management;²⁵ however, that portion of the Act has never been aggressively implemented (Adler et al., 1993). Of much more impact has been Section 319,²⁶ which has emerged as a powerful source of federal grants to watershed initiatives seeking cooperative intergovernmental solutions to localized water quality problems associated with nonpoint source pollution. The challenge of addressing nonpoint source pollution is proving to be a strong stimulus for bringing state agencies together with

state dealing with water (Viessman Jr. and Welty, 1985). The purpose of the districts is to develop plans, programs, and facilities relating to a wide range of natural resource issues, including water quantity, water quality, and wildlife habitat management (Neb. Rev. Stat. 2-3229, 1991). These efforts in Texas and Nebraska are notable, but highly isolated, examples of well established watershed-based resource management efforts emerging under state leadership. As shown in Section II, most modern watershed initiatives—including those established through state programs—are considerably less formal than these cases, and more closely resemble the CRM processes evolving out of regional (and federal) soil conservation efforts.

²² Water Resources Research Act, P.L. 88-379 (1964) (no provisions of this law are currently in force).

²³ Water Resources Planning Act, P.L. 89-80, 42 U.S.C.A §§ 1962-1962d-3 (1965).

²⁴ Land and Water Conservation Fund Act, P.L. 88-578, 16 U.S.C.A. §§ 4601(4)-4601(11) (1965); Coastal Zone Management Act, P.L. 92-583, 16 U.S.C.A §§ 1451-1465 (1972); Safe Drinking Water Act, P.L. 93-523, 42 U.S.C.A. §§ 300(f)-300(j)(18) (1974).

²⁵ 33 U.S.C.A. § 1288 (1994).

²⁶ 33 U.S.C.A. § 1329 (1994).

federal agencies, local governments, and resource users in watershed management efforts.²⁷

To widely varying degrees, most states have taken advantage of these opportunities to increase their capabilities to manage resources and to participate in determining the future direction of western water policy (Bell, 1997). As western states have improved their capacity to manage water resources, they have also increased their eagerness to operate within what appears destined to remain a highly intergovernmental policy area. Through organizations such as the Western States Water Council and the Western Governors' Association and initiatives such as their "Park City" meetings addressing the future of water management, the western states appear genuinely enthusiastic about accepting new challenges in governance and management:

... Given its role in the federal system, the state emerges as the pivotal level for leadership, authority and accountability for facilitating problem-solving and considering related factors. To fulfill this role, states and tribes are called upon to fashion water laws and institutions responsive to the entire range of water values and interests, including those not traditionally recognized in water law and administration ...²⁸

This statement of the Western Governors' Association identifies two of the most important factors influencing the evolving state role in the western watershed movement. First, it recognizes the opportunity held by states, as intermediate units in the federal system, in facilitating the development of new intergovernmental relationships.²⁹ Second, it acknowledges that integrating new values and interests in water management activities is a real and largely unmet challenge, as antiquated institutions have been slow to change. The watershed is rapidly emerging as the preferred administrative unit for addressing these formidable challenges.

D. A Western Awakening: New Demands on Old Institutions

The Pacific Northwest has recently emerged as an unusually active laboratory for experimentation with resource management at the watershed scale. One can speculate that these experiments have been prompted by the region's recent experience with environmental disputes. Many such disputes have acutely strained relationships between

²⁷ *Shanty Town Associates. Ltd. Partnership Inc. v. EPA*, 843 F.2d 782, 792 (4th Cir. 1988).

²⁸ The so-called "Park City principles" emerged out of three workshops held by the Western Governors' Association and Western States Water Council held between 1991 and 1992 (Western Governors' Association, 1993. p.9).

²⁹ Note that these intergovernmental relationships are increasingly viewed as involving tribes—not simply as interest groups, but as sovereign governments.

government (especially federal agencies) and local communities and have graphically illustrated the drawbacks of narrow and uncoordinated resource management. Environmental “train wrecks” such as the salmon and spotted owl crises have presented formidable challenges to existing patterns of resource use and management, and have highlighted the need for new resource management policies that are more integrated and pragmatic (Lee, 1993). While it is easy and common to attribute these crises to decades of poor resource management, it is perhaps more useful to characterize these situations as resulting from the interaction of antiquated institutions with rapidly changing expectations and legal requirements calling for the protection of an increasingly wide range of public values. Coming from both within and outside of the region, a new and still evolving system of western values and goals has emerged over the past quarter century at a pace that has exceeded the capacity of institutional change. Accompanying the emergence of new value structures in natural resources has been a related challenge to existing patterns of decision-making, best expressed by the still unfulfilled desire for greater local control over resource management. As these two demands have been added to the already formidable list of challenges facing regional water resource management, an environment has been created that is proving conducive to the formation and functioning of watershed initiatives. Consequently, these demands and how they are influencing existing institutional arrangements are significant components of the watershed movement’s historical and ideological context.

1. Changing Values in the West

The 1970s was the decade in which the West finally entered its adolescence, as several influential trends began to rapidly reshape the region. One of these trends was a dramatic western economic and population boom, fueled first by an influx of retirees, families, and others looking for an improved quality of life outside of the major eastern cities, and followed soon after by an influx of companies and individuals looking for the domestic solution to the international oil crisis (Marston, 1989). These two stimuli, fundamentally different in their origins but occurring simultaneously, brought yet another “boom cycle” to the West, something that was already a well-established feature of the region. In the century since Powell first began plotting a future of western watershed democracies, the population of the region grew from 250,000 to over 50 million, an increase of 20,000 percent (Brownridge, 1989). Despite the collapse of the energy boom in the 1980s, quality-of-life immigration has perpetuated rapid economic and population growth in the West, with Las Vegas now leading the continued boom seen in many Sunbelt and Front Range cities and mountain towns.

The key element of these changing demographics is not the sheer magnitude of new residents, but where they are locating. The West has become the most urbanized (and “suburbanized”) region of the country, and a region where the traditional western occupations—ranching, mining, and farming—have largely been supplanted by information and service related occupations (Case, 1997; Power, 1996). As Brownridge notes, the New West does not fit the traditional western stereotype:

Tiny New Jersey, for all its cities, has five times as many rural inhabitants as Wyoming. ... The Rocky Mountain states have more

insurance salesmen than ranchers. ... Georgia has more miners than Idaho does.³⁰

Offering a strong rebuke to traditional western “folk economics,” researcher Thomas Power has recently observed that the availability of extractive industries is not the driving force behind modern western demographic trends. To the contrary, the jobs are following the people—rather than the other way around—and the people are not looking for regions dependent upon traditional extractive industries; people are looking for unspoiled, clean, and stable natural environments, offering amenities such as outdoor recreation, dramatic views, and access to wildlife (Power, 1996). These demands not only lure people away from crowded eastern metropolises, but away from overgrown western oases such as Los Angeles, encouraging population growth in a number of small western towns and communities with strong historic ties to traditional western economies. In addition to swelling the population of many small communities with new residents, these trends also encourage transformation from within, as many towns struggle with the challenge of exploiting these larger social and economic trends while protecting the traditional interests and lifestyles of long-time residents.

In the field of natural resources management, a variety of legislative actions, court decisions, and executive proclamations have recently been layered upon existing institutional arrangements, in a frequently awkward and ongoing attempt to formally recognize the changing values of the New West. While celebrated water conflicts such as the Hetch Hetchy Dam in California (circa 1913) and the Echo Park Dam proposal in Dinosaur National Monument along the Utah-Colorado border (circa 1955) are reminders that the development/preservation debate is not a new phenomenon, efforts to protect western natural resources took on renewed vigor by the late 1960s and early 1970s. In the field of water management, some of the most salient statutory innovations have been the federal enactment of the National Environmental Policy Act (1969), the Clean Water Act (1972), and most significantly, the Endangered Species Act (1973). No single statute has more dramatically influenced western water institutions than the federal Endangered Species Act, which is among the greatest stimuli behind the western watershed movement.

This observation, however, should not be interpreted to imply that the West has been only a spectator or pawn in this larger national movement. Many western states have also been active in transforming institutional arrangements by the passage of state conservation legislation, and by the modification of prior appropriation systems through the creation of public interest/welfare provisions, area of origin statutes, instream flow programs, use of the public trust doctrine, and many related measures that are reshaping western water codes. In many geographic and substantive areas, the “new values” of the West have been successfully translated into new legislative requirements and political realities. With increasingly fewer exceptions, the forces of environmentalism have won that contest. The remaining challenge is to implement these new requirements and

³⁰ Brownridge, Dennis. 1989. “The Rural West is Actually Very Urban.” *In*: REOPENING THE WESTERN FRONTIER, Ed Marston, editor. Washington, D.C.: Island Press. p.11.

programs—and their underlying values—in a manner that is consistent with the more ubiquitous western values of pragmatism and independence. This is one of the challenges to which the watershed movement is a response.

2. The Unfulfilled Desire for Local Involvement and Influence

As is often the case in evolving institutions, the solution to one problem has played a large role in creating or exacerbating a related problem. In this case, efforts to address new western and national values associated with water quality, endangered species, and related issues of environmental protection have resulted in powerful regulatory programs that are primarily federal in origin, although several federal environmental laws are implemented in part by state and local governments and many state environmental laws are local versions of the national statutes.³¹ While state and local governments and stakeholders are often tangentially involved in specific problem-solving efforts through mandatory public participation processes, many of the most salient regulatory programs channel decisions almost exclusively through federal agencies and, eventually, through federal courts where the influence of national environmental organizations is significant.³² Flying in the face of the broader national trends of Cooperative Federalism and New Federalism—which call for an increasing delegation of authority from Washington to the states—and in contrast to the West’s growing desire to assume greater responsibility in managing its own affairs, several significant environmental statutes and programs can combine with large and expanding federal land holdings and reserved water right assertions to perpetuate the paternalistic federal-state relationship. This relationship is often manifest in federal-local conflicts, as private rights in water and land defined under state constitutions and laws come increasingly into conflict with federal environmental statutes.

Of particular concern in many western watersheds is the influence of the federal Endangered Species Act and Clean Water Act. In celebrated cases such as the impact of spotted owl preservation on timber communities or in less visible cases such as the American burying beetle delaying an Oklahoma highway project, the Endangered Species Act has highlighted both the conflicting value structures in the West, and the frequent lack of opportunity for state and local governments to play a significant role in environmental problem resolution (Carroll, 1995; Mann and Plummer, 1995). Similarly, the national water quality standard approach found in the Clean Water Act is not always appropriate for all geographic regions; for example, limits on sediment loading may not consider background levels of sediment.

Responding to these and related concerns, a broad coalition of western state legislators and local government officials met in June of 1995 to announce a 12-point

³¹ For example, Michigan and California both have their state version of the EPA - MEPA and CEPA, respectfully.

³² While agencies are required to provide for public participation in many planning and decision-making processes, traditionally the mechanisms for participation have not been viewed by stakeholders as providing meaningful opportunities to influence decisions (Barry, 1996).

program to “rejuvenate the region,” in part through the “immediate relief from government oppression through misguided federal regulations.”³³ Similar statements by states’-rights and county supremacy activists, and by proponents of unregulated natural resource markets, are consistent with the widely held western desire to move the decision-making authority further toward local communities and stakeholders.

For many parties, calls to move the locus of decision-making from the federal level to local arenas is founded on the ideology that this will promote more creative, flexible, and efficient resource management, and will promote greater accountability among resource managers and affected stakeholders. However, for some parties lamenting “misguided federal regulations” and federal paternalism, it is undoubtedly not the locus of decision-making that is the real concern, but is instead the underlying pro-environment values reflected by these federal requirements. For this reason, some critics of the watershed movement and other forms of “civic environmentalism” fear that calls for local empowerment are, in reality, an attempt to unburden local commodity interests from restrictions associated with environmental values imposed by outside federal legislation enacted under pressure by national environmental groups (McCloskey, 1996).³⁴ While this characterization is undoubtedly accurate in some cases, most modern western communities are too diverse to assume that all local parties will champion “utilitarian” (i.e., commodity oriented) values while only federal agencies and other “outside” participants will champion environmental/preservationist values. Strong champions of both viewpoints can be found both within and outside the West, and most well-known watershed initiatives have demonstrated a simultaneous commitment to both environmental restoration and the preservation of traditional lifestyles. In fact, one of the most striking and welcome characteristics of the modern watershed movement is the explicit and long-overdue rejection of the myth that environmental restoration and economic activity are competing objectives, instead recognizing that coordinated regional water and land management are key elements of environmental, economic, and community sustainability (NRLC, 1996).

Before discounting all federal actions as unwanted paternalism, it is important to recognize that federal intervention can play an essential role in local conflict resolution, as illustrated by recent conflicts such as the Bay-Delta Accord in California or the Truckee-Carson Settlement Act in Nevada (McClurg, 1997; Clearwater Consulting Corporation, 1997). As mentioned later, federal intervention—or just the threat of intervention—is often a key stimulus behind the formation of watershed initiatives, which once established, are often highly dependent upon federal resources for their survival (Kenney, 1997). One of the major challenges of the watershed movement, therefore, is to respond to the strong and largely unfulfilled desire for greater local control and accountability, while ensuring access to essential federal technical and financial resources.

³³ Western States Coalition. 1995. *Western Legislators Reveal 12-Point Program to Rejuvenate the West*. Salt Lake City, Utah. p. 1.

³⁴ “Civic environmentalism” is a term used by Dewitt John (1994), a proponent and student of collaborative resource management.

E. Symptoms of the Unmet Challenge

Despite the recently rapid pace of institutional change in western water institutions, the need for change still outpaces the actual rate of innovation. Symptoms of this gap can be found in all geographic and substantive sectors of natural resources, but is most readily evident by observing the behavior of natural resource agencies—especially federal agencies. As the intermediary between the legislative establishment of general policy guidelines and the actual use and management of resources, agencies have the increasingly difficult challenge of translating often vague and contradictory policy directives into outcomes that, as a matter of necessity, demand greater integration and holism than ever before. Many of these symptoms of the unmet challenge of institutional reform are manifest by the lost ability of agencies to make or implement decisions, the ineffectiveness of many agency actions and programs, and the inability of agencies and stakeholders to identify and direct their coordinated efforts into pragmatic problem-solving strategies.

1. Decision-Making Paralysis: The Origins of Gridlock

The role that agencies are expected to play in the control of natural resources has changed significantly over time. The initial establishment of many natural resource agencies in the progressive era was based on the philosophy that the impartial application of scientific knowledge from the physical and social sciences was the solution to perceived private corruption of governmental decision-making processes (Hays, 1959). Over time, this philosophy helped to justify and promote agency procedures that increasingly alienated the public from resource management decisions. In many cases, this approach did not result in good public policy because the generally admirable progressive ideal of isolating technically trained agency decision-makers from public influence was undermined by two factors. First, many resource management decisions involve more than technical considerations, but involve equity issues and questions of competing value structures (Feldman, 1991). This reality became increasingly evident in the post-WWII era, when public attitudes toward resource management began to diversify and increasingly diverge from the frequently rigid focus of agencies (Gregg, 1989a). Secondly, while interests promoting the protection of public interests in water were effectively excluded from western water decision-making arenas for many decades, proponents of continued resource development—i.e., the water buffaloes—maintained close ties with agency and legislative decision-makers, highly influencing agency decision-making (Gottlieb, 1988; McCool, 1987).

In the context of western water management, these failures of the progressive ideal were best illustrated by the continued focus of the Bureau of Reclamation on massive water developments long after a vast and diverse coalition of interests had evolved to question the underlying assumptions that promoted continued construction (McPhee, 1971; Reisner, 1986). Unlike the eastern U.S. where many local groups formed in the mid-1900s to effectively protect public interests in water resources, western water management institutions continued to remain highly impenetrable to interests promoting less development, more environmentally sensitive management, and a more equitable distribution of costs and benefits. Only in recent decades have these barriers to

participation been effectively removed, primarily through federal environmental legislation enacted in the 1970s and by the continued growth of the environmental movement (Gottlieb, 1988; Ingram, 1990).

By the 1980s, a clearly dysfunctional arena of natural resource decision-making had emerged. Efforts to recognize new values and empower new parties through federal environmental laws in the 1960s and 1970s effectively ended the era in which the construction-oriented agencies had the authority and mandate to independently decide the content of natural resource policy and to implement those decisions through closed decision-making processes. Increasingly, the responsibility for directing and implementing natural resource policy is shared by two additional groups of participants, namely federal regulatory agencies and environmental groups. This first group includes relatively new agencies, such as the U.S. Environmental Protection Agency (EPA), established to implement and enforce a host of federal regulatory programs primarily concerned with pollution, and the U.S. Fish and Wildlife Service and the U.S. National Marine Fisheries Service, now empowered—and burdened—with the responsibility of implementing the Endangered Species Act. This second group includes major environmental organizations and other public interest activists, many of whom enjoyed explosive growth in the 1980s (Rosenbaum, 1991). While the authority of these groups to influence agency decision-making is in part due to grassroots financial and political support, a more tangible source of authority for these groups found in the generally liberal judicial interpretation of the standing requirements of many federal (and state) environmental statutes.³⁵ No federal agency expects to take or permit any significant action involving natural resources without first enduring a lengthy and often insurmountable gauntlet of litigation.

In addition to resulting in an era of gridlock in which decision-making power is so diversified so as to preclude decisive action by any agency, modern decision-making mechanisms continue to subordinate the role of local communities and concerned citizens—no longer to “technocrats,” as in the progressive tradition, but now to a variety of well-organized special interests representing a broad spectrum of concerns. Decisions resulting from the combined influence of competing special interests, a process known as “interest group liberalism,” generally do not encourage the evolution of a consistent or integrated vision of natural resource management, and continue to subordinate the role that local communities and citizens play in the policy-making process (Lowi, 1979; Nelson, 1995). Evidence of this situation is provided by the Lead Partnership Group, a

³⁵ Initially, the courts only required that environmental organizations allege harm to one of their members to satisfy the standing requirements. See: *Sierra Club v. Morton*, 405 U.S. 727 (1972). Recently, however, the standing requirements have become at least marginally more stringent. Today, in order to show standing to sue under most environmental statutes, plaintiffs must show an actual or imminent injury, causation, and some type of available redress. See: *Lujan v. Defenders of Wildlife*, 504 U.S. 555 (1992). Moreover, the plaintiffs need to show that the injury they suffered was within the “zone of interests” that the statute was enacted to protect. *Lujan v. National Wildlife Federation*, 497 U.S. 871, 883 (1990). Despite these developments standing remains a minor obstacle for lawsuits under environmental statutes.

consortium of bioregional watershed and community-based groups from northern California and southern Oregon, who argue that their geographically-based communities still have little to no role in resource planning and decisions that affect them. They see power in resource policy decisions centered in distant interest groups whose goals are frequently unrelated to those of the local residents (Kusel et al., 1998).

2. Ineffective Agency Programs

In addition to their growing inability to make decisions and take action, many agencies are also being increasingly criticized for adhering to programs and processes that are ineffective and inefficient. While these complaints are not new, they are largely responsible for the explosion of proposals for deregulation or privatization in a variety of substantive areas. Beginning in 1993, the National Performance Review process was initiated under the leadership of Vice President Al Gore to “reinvent government,” a term taken from the influential Osborne and Gaebler (1992) book of the same name (NPR, 1996). Disciples of reinventing government believe that the nation is plagued by institutions that do not serve public needs, providing only inefficient and ineffective problem-solving tools that represent “the death of common sense” (Howard, 1994). In the realm of natural resources management, these trends are perhaps best illustrated by programs that are reliant on regulatory criteria rather than environmental indicators, by the growing emphasis on planning efforts without a corresponding increase in implementation, and by the failure to adequately monitor resources and programs.

Many regulatory programs are organized around the performance of specific administrative tasks, which are not always consistent with the efficient pursuit of improving environmental health. For example, in the realm of water quality management, resource agencies have frequently been criticized for focusing too much on indirect management indicators like the number of permits issued or the number of water quality samples gathered rather than on achieving the larger environmental objective of clean waterways (EPA, 1995). Command-and-control regulatory programs, as featured in most pollution control programs, are particularly vulnerable to these criticisms (Knopman, 1996; Baumol and Oates, 1988). These types of weaknesses often reflect flawed systems of incentives which reward resource managers for completing administrative tasks, rather than for solving on-the-ground problems. The highly pragmatic focus of watershed initiatives is one response to this problem. Additional progress in this area will undoubtedly require more formal reforms in areas such as program budgeting and personnel evaluations, as well as a change of bureaucratic culture to encourage more creativity and experimentation in resource management.

As the challenge in water pollution control now moves from point sources to nonpoint sources, it is becoming increasingly evident that programs will need to feature a greater reliance on tying regulatory efforts to regional environmental indicators. Similarly, the species orientation of the current endangered species program is now widely considered to be ineffective and inefficient, primarily due to an emphasis on individual species numbers rather than focusing on the overall health of regional ecosystems (Lavigne, 1993). These efforts are not only often ineffective, but they can impose significant burdens on both private landowners and users of the public lands (Thomas, 1995).

The amount of resources dedicated to planning activities has greatly increased in recent decades for many reasons, including the proliferation of statutes such as the National Environmental Policy Act and the National Forest Management Act that require planning, the political gridlock that tolerates research and discussion while blocking decision-making and action, and the influence of incremental budgetary process that places planning first-in-line. This emphasis on planning would not be controversial if it resulted in useful problem-solving strategies that were implemented as designed; however, this increasingly is not the reality, as many planning efforts generate more activity in the courtroom than the field. Behan (1990) is among those authors that lament this allocation of agency resources, arguing that these funds could have financed a tremendous amount of riparian restoration, wetlands protection, reforestation, rangeland rehabilitation, instream water rights acquisitions, and related on-the-ground improvements. Given the negative influence of shrinking agency budgets on many facets of resource management and restoration, the dedication of agency resources and time to elaborate agency planning activities is increasingly being seen as wasteful and as evidence of the need for fundamental governmental reform.

Closely related to these twin problems of emphasizing administrative tasks while overlooking environmental indicators and preparing detailed plans that cannot be implemented is the lack of emphasis given to monitoring in many natural resource programs. This lack of monitoring not only includes a lack of field-level data collection concerning key environmental indicators, but also a failure to compile program-related information necessary to evaluate the administrative efficiency of agency practices (Adler, 1995). Government agencies are routinely criticized for seldom, if ever, examining programs or projects to assess whether planned benefits have been achieved, and at what costs. In many cases, agencies do not take these actions since budgetary processes do not encourage the allocation of funds to activities other than planning and projects (Helms, 1993). This observation supports the arguments of “reinventing government” proponents who believe that budgetary processes that are closely tied to outcomes can correct these and related problems of governmental inefficiency (Osborne and Gaebler, 1992; NPR, 1996).

3. The Problem of Problem-Solving

Given the modern difficulty of making natural resource policy decisions and the frequent inefficiency of existing management programs and administrative strategies, it is not surprising that most natural resource managers and stakeholders find it increasingly difficult to identify useful strategies for problem-solving. This challenge can easily become overwhelming when the problems are multifaceted, requiring significant interagency coordination. At the federal level alone, over 30 agencies in 10 departments, and 11 independent agencies, now have a significant involvement in water issues, as do 27 congressional committees, 184 subcommittees, and the system of federal courts.³⁶ A similar diversity of agencies, committees, and courts exist at the state level, which also is home to a host of water and sewage districts, local governments, and private water

³⁶ These statistics are taken from <<http://www.cee.cornell.edu/~water/>>.

systems and rights. As issues of nonpoint source pollution, endangered species, and environmental restoration call for a greater integration between water and land management activities, the number of different players, jurisdictions, and programs involved in water management continues to increase, further complicating problem-solving efforts.

Several issues must be addressed when trying to promote joint problem-solving among natural resource agencies (Kenney, 1997). Most agencies upon creation are already highly specialized in terms of their substantive focus, the functions they play (e.g., regulatory, commodity production), and their ideological and disciplinary foundations. Over time, agencies can be expected to further specialize in order to maximize their involvement in high-budget activities with supportive constituencies while abandoning less rewarding duties (Clarke and McCool, 1985). Fundamental qualities of the American political system, including the division of government into levels and branches, as well as the delineation of responsibilities and roles among the public and private sectors also tends to fragment natural resources institutions.

Overcoming all these barriers to coordinated and efficient action is not something that can be done completely or to perfection. However, through incremental reforms it should be possible to better coordinate the different substantive and geographic jurisdictions of agencies, to integrate the mandates of agencies, to clarify the roles and the balance of power among the levels of government, to reconcile the roles played by each branch of government, to forge productive partnerships between the public and private sectors, and to address other deficiencies associated with the structures of natural resource governance.

As overwhelming as it is to simultaneously address all of these factors, consider that this list only addresses the structures of governance. The processes by which individuals and organizations interact, the incentives which influence and direct their behavior, and the laws and other requirements that establish the baseline of ground rules are further complications (Adler, 1995). Still additional complications arise from the magnitude of the technical challenges. Consider, for example, the technical complexities associated with cumulative impacts. How are resource managers to react when the president of River Network asserts that “our rivers are dying from a million small wounds,” caused by herbicides, acid drainage, urban runoff, road-building, channelization, and a loss of streamside vegetation.³⁷ Similarly, how can water quality managers modify programs to adapt to the challenges of nonpoint source pollution, which is “generated from varied and diffuse sources.”³⁸ Wilsonian notions of public administration, which call for strict administrative adherence to narrow policy directives, do not account for the cumulative effect of actions by private interests and public agencies. There is an undisputed need for policy-makers, agencies, and resource users to broaden their horizons to consider a larger set of interrelationships, and a larger community of interests. This is a real, practical need, and a prerequisite to improved

³⁷ Wallin, Phillip. 1995. “From the President,” RIVER VOICES, 6(3):3, Fall/Winter.

³⁸ EPA (U.S. Environmental Protection Agency). 1994. *The Watershed Protection Approach: A Project Focus* (draft). June. pp 1-8.

problem-solving. To address this need, several types of institutional innovations should be pursued to modify bureaucratic incentive structures to encourage a greater use of multiparty decision-making and problem-solving strategies. A key element of this reform should be to pursue the expanded use of watershed initiatives.

II. EXPERIMENTATION WITH WATERSHED INITIATIVES

Watershed initiatives are just one of several responses to the resource management problems outlined above. When viewed as components of a “watershed movement,” these efforts constitute a broad and ambitious experiment in governance, where many of the most basic elements of natural resource institutions are being challenged. Among those elements opened-up for scrutiny include the determination of who should be involved in making management decisions, at what geographic locations should these decisions be based, and what should be the evaluation criteria utilized to determine appropriate water uses and management philosophies. These are extremely important issues that deserve the attention they are now receiving. When viewed as individual efforts, watershed initiatives are neither sophisticated nor glamorous exercises, but are typically highly-pragmatic, ad hoc efforts concerned with finding and implementing solutions to localized natural resource problems. In the following paragraphs, some of the common qualities of watershed initiatives in the West are reviewed to illustrate how these individual efforts are working to operationalize the goals of the watershed management movement.³⁹

A. Origins and Focus

1. Origins

The great variety of these initiatives makes it difficult to generalize about the origins of watershed-based resource management efforts. Nonetheless, it is fair to conclude that most have humble beginnings. A typical example is the Bitterroot Watershed Forum in Montana, which originated when five concerned citizens convened to discuss water use and water quality issues in the watershed. A much smaller percentage of watershed initiatives have had more formal beginnings. For example, Congress in 1990 and 1992 passed legislation (the Zuni Land Conservation Act of 1990 and the Zuni River Watershed Act of 1992) directing a variety of interests to cooperate in formulating a watershed plan that would protect and rehabilitate cultural and natural resources on tribal, public, and private lands in the Zuni River watershed in New Mexico.⁴⁰ State legislation designed explicitly to create new watershed initiatives is also relatively uncommon; however, many states are developing programs to recognize, support and utilize groups which evolve independent of formal governmental processes.

³⁹ Most of this information is based on seventy-six western case studies reviewed in *The Watershed Source Book* (NRLC, 1996) and in related research performed by Kenney (1997).

⁴⁰ Similar legislation has recently been used to expand an already existing watershed restoration effort in the nearby Rio Puerco watershed. The Rio Puerco Management Committee was established pursuant to Section 401 of the Omnibus Parks and Public Lands Act of 1996 (Kenney, 1997).

While it is true that most watershed initiatives operate without a statutory mandate and lie outside of the normal governmental bureaucracy, the role of governmental agencies in assisting the formation and functioning of watershed initiatives should not be underestimated. Of the seventy-six efforts documented in research by the Natural Resources Law Center, fewer than one-quarter of the groups were started by local citizens or other private groups on their own initiative (NRLC, 1996). State governments have been most active in creating watershed-based management groups, having created approximately 40 percent of all groups, while federal and local government entities, in approximately equal shares, have been responsible for creating the remaining groups. Additionally, many groups that have originated without direct governmental involvement have only come into existence due to a fear that governmental intervention would be forthcoming, usually due to a water quality violation or an endangered species listing. In these situations, cooperative public-private watershed partnerships are often viewed by stakeholders as being preferable to unilateral governmental intervention.

Typically, governmental bodies become involved in watershed initiatives on a case-by-case basis, rather than through a comprehensive program. For example, when Washington's Department of Ecology (DOE) was directed by the state legislature to write a management plan for the Nisqually River, the agency responded by encouraging the formation of the interagency Nisqually River Council to oversee planning and resource management issues in the watershed. The Muddy Creek Project in Montana was initiated by the Montana Department of Natural Resources and Conservation to provide a means for local residents and agency officials to discuss water quality problems in the Muddy Creek watershed. Similarly, EPA and the Colorado Department of Health began coordinating public conferences about issues arising in the Clear Creek watershed that eventually turned into the Clear Creek Watershed Forum. To date, comprehensive schemes to encourage the creation of numerous watershed-based management efforts throughout a state or region, such as the Governor's Watershed Enhancement Board program in Oregon, discussed later in Section III, have been much less common.

2. Focus

One of the strengths of watershed initiatives is their ability to focus activities directly at the most pressing problems of a particular watershed without being constrained by inflexible mandates or program requirements. Substantive issues frequently addressed by watershed groups include water quality degradation, habitat protection and enhancement, and to a much lesser extent, water supply and allocation controversies.⁴¹

⁴¹ The relative lack of watershed initiatives addressing water supply issues is perhaps best explained by the nature of the prior appropriation doctrine, which can discourage cooperative problem-solving since shortages (and surpluses) are not shared equally, but are allocated to specific individuals in accordance with the priority system. In contrast, the benefits associated with improvements in water quality and general environmental health are likely to be more broadly distributed. A notable exception may be the Bear Creek Council in the Rogue River Watershed of Oregon. This council has used the "beneficial use" component of the prior appropriation doctrine to target inefficient users in the hopes of reducing waste and increasing in-stream flow quantities. Due to this effort, water users in

The focus of many initiatives can be traced to a particular environmental crisis or regulatory stimulus, such as an Endangered Species Act or Clean Water Act violation, which can act as the seed upon which a more holistic focus evolves. Within these substantive areas, additional concerns typically include the desire to increase coordination among government entities, the promotion of sustainable economic development, and the encouragement of greater local involvement and control over resource management activities.

In many cases the area encompassed by any given watershed effort does not rigidly follow the contours of the hydrologic boundary, but is often limited to a particular section of the watershed. Three situations are most commonly responsible for encouraging a limited geographic focus. First, when the problems of interest to participants are isolated within a particular region of the watershed, a broader perspective is deemed unnecessary. For example, the Rio Puerco Watershed Committee (also known as the Cuba Watershed Committee) is concerned primarily with erosion and sedimentation issues around the town of Cuba, New Mexico, and is only tangentially involved in the larger watershed planning activities of the Rio Puerco Management Committee. A second related situation occurs when an entire watershed presents too many issues to be easily addressed by a single group thereby encouraging the formation of several distinct sub-groups to pursue local solutions to larger regional problems, a strategy featured in the Sierra Nevada Project in California and in many of the Pacific Northwest salmon recovery efforts. The final and perhaps most common situation that encourages a limited geographic focus within a watershed is a lack of resources, typically funding. In these situations, a successful group may expand its geographic and substantive focus over time as greater expertise and resources are secured. This pattern has been observed in several watershed initiatives, including the Big Spring Creek Watershed Water Quality Project in Montana and the Feather River Coordinated Resource Management Group in California.⁴²

Bear Creek saw more water in a drought year than was available in most normal years (Kraeg, 1995).

⁴² Several collaborative groups also exist that focus on natural resources extending beyond the contours of a single watershed. These “transboundary” efforts, often concerned with public lands and wildlife issues, are often considered to lie outside the realm of watershed initiatives due to the lack of prominence given to water management concerns, even though they may otherwise share many of the structural and functional qualities common of watershed initiatives. An excellent example is provided by the Greater Yellowstone Coalition, an interstate and multi-watershed effort defined not only in terms of hydrology and topography, but also with respect to the distribution of plant and animal life and the location of prominent geologic and geothermal features.

B. Structures and Functions

1. Participation

The membership composition of individual watershed initiatives varies widely. Some initiatives, such as the Nisqually River Council in Oregon, are composed primarily of members representing public agencies, though many of these groups—including the Nisqually River Council—seek input from citizens through a citizens advisory committee. In other groups, such as the Middle Rogue Watershed Council in Oregon, only local residents and organizations participate as full members, while input from federal and state agencies is sought through a variety of information exchange mechanisms. A review of the watershed initiatives studied by the Natural Resources Law Center showed that less than ten percent of them were composed entirely of local citizens, roughly a quarter were composed primarily of federal and state agency representatives, and the majority of the groups had a broad, balanced membership including both local residents, stakeholders, and an array of federal, state, and local governments. Even those watershed initiatives dominated by members from one sector or another, such as the Nisqually and Middle Rogue Councils, frequently have established advisory or technical committees to ensure regular input from other sources. Most watershed initiative participants, from both the public and private sectors, participate in a voluntary capacity, often serving on evenings and weekends.

Although most watershed initiatives boast diverse memberships and equal access to all interested parties, some concerns of inadequate representation do exist. These concerns have been most forcefully articulated by representatives of national environmental groups, who fear that some watershed initiatives are inappropriately dominated by local commodity interests and do not always feature the input of members representing broader national environmental interests (McCloskey, 1996; Blumberg, 1997; Benson, 1996). In some cases, this inadequate representation may simply derive from the national group not having any local members available to participate in the watershed initiative. While in other cases, the initiative may be pressured to selectively exclude particular parties in order to maintain a cohesive group structure.⁴³

A concern over the internal politics of the group can also discourage open meetings. For example, the San Miguel River Coalition in Colorado decided that to enable its members to be more open and candid with each other, meetings would not be open to the public. Rules such as this have discouraged some agencies from participating in watershed initiatives and other collaborative efforts, due to a concern over violating the

⁴³ The issue of representation is of particular concern to Michael McCloskey, chairman of the Sierra Club: “Few of the proposals for stakeholder collaboration provide any way for distant stakeholders to be effectively represented. While we may have activists in some nearby communities, we don’t have them in all of the small towns involved. It is curious that these ideas would have the effect of transferring influence to the very communities where we are the least organized and potent. They would maximize the influence of those who are least attracted to the environmental cause and most alienated from it.” Michael McCloskey. 1996. “The skeptic: Collaboration has its limits.” *HIGH COUNTRY NEWS*, 28(9):7, May 13.

Federal Advisory Committee Act.⁴⁴ Striking a balance between broad participation and group cohesiveness can also become an issue when a group grows to an unmanageable size. In these situations, many watershed initiatives have found it useful to divide the group into smaller subgroups or committees, such as an executive council, to make decisions with input from a variety of advisory councils. The most common advisory councils are composed of the general public, or technical experts. Committees formed around particular geographic regions or issues are also common.

Despite the complications associated with broad and open memberships, the participation and involvement of a diverse array of interested members of the community appears to be a key, and common, attribute of most watershed initiatives. Broad memberships are not only useful in getting all interested parties involved in credible problem-solving efforts, but are useful in concentrating resources, human and otherwise, on identified problems. Accordingly, most groups allow or seek participation from all interested parties and from all interests who, if excluded, could derail the group problem-solving effort. Groups established to achieve more limited purposes may succeed with relatively limited participation. For example, the Little Bear River Steering Committee in Utah is composed almost solely of dairy farmers in the watershed, because the only issue the group is addressing is the question of how best to manage animal wastes to improve water quality.

Many groups include a designated coordinator or facilitator. While this person may be a volunteer and regular group member, frequently this person is a paid professional hired by (or loaned to) the watershed initiative. For many groups, particularly those lacking a regular and substantial source of funds, coordinators may be temporary or part-time employees. The presence of a designated coordinator is often the single-most important key to improving the efficiency, effectiveness, and stability of a group. Many of the persons serving this function are not identified with any particular interest, which helps to preserve the trust of other members. For example, the Lane Council of Governments handles these responsibilities for the McKenzie Watershed Council in Oregon. Objectivity and trust is maintained in the Henry's Fork Watershed Council in Idaho by the use of two facilitators, one from an environmental organization and one from an irrigation district.

2. Goals and Activities

Unless given a specific mandate through statute or other formal means, watershed initiatives are generally free to determine their own purposes and objectives. As a result, there is no single pattern of activity that applies to all groups. Several types of activities, however, seem common to many of the initiatives. Activities directed toward raising the level of understanding about the watershed and its functions receive substantial attention in virtually all of the watershed efforts. At periodic meetings, group members may make presentations, outside speakers are frequently scheduled, and time for members and observers to interact is generally provided. The group may also take field trips to

⁴⁴ FACA (Federal Advisory Committee Act). P. L. 92-463, 5 U.S.C.A. App. 2 §§ 1-5 (1972).

investigate watershed conditions firsthand. The goal typically is to seek out new and diverse perspectives, both from within and outside the group, and to develop the expertise of the group. Initial efforts are usually aimed at the elucidation of basic information, while later efforts concentrate on increasingly more sophisticated topics as members gain a deeper understanding of the issues.

The degree to which watershed groups focus on education of the broader community outside the group varies, but most watershed initiatives are involved in public education to at least some degree. This is the primary purpose of some groups, such as the Verde Watershed Association in Arizona. The Upper Rogue Watershed Council in Oregon puts much effort into the education of visitors from outside the watershed, striving to enhance tourists' awareness of river issues, and the ways in which they can help solve watershed problems. Several watershed initiatives produce publications documenting resource conditions and the structure and activities of the watershed effort.

The coordination of diverse entities with overlapping or conflicting management authorities is a prominent goal of many watershed initiatives. By bringing together or coordinating the expertise, resources, and management goals of agencies and other interests, watershed initiatives hope to more effectively use and safeguard watershed resources. A frequently mentioned and highly acclaimed example of a group undertaking these kinds of activities is the Henry's Fork Watershed Council in Idaho, which since 1993 has been operating in a basin that includes part of eastern Idaho and western Wyoming. The Council, operating with three sub-groups, reviews and coordinates all proposed public and private activities with the potential to affect the watershed, makes recommendations, and establishes priorities. Similarly, the Feather River Coordinated Resource Management Group in California screens all projects brought to the group.

Conflict resolution is another common goal of many watershed groups. As discussed earlier, decision-making by agencies and other management entities is often made difficult by the existence of conflicting interests and pressures. Some groups are explicitly formed for the purpose of attempting to resolve conflicts. For example, the Upper Clark Fork River Basin Steering Committee in Montana was formed to resolve conflicts surrounding the use and allocation of water in the basin. Other groups, while not explicitly formed to resolve conflicts, effectively serve this function by providing opportunities for the discussion of problems, viewpoints, and potential solutions in a non-confrontational setting.

Watershed residents sometimes form groups to develop policy alternatives, solutions, or plans. In some cases this function is undertaken to fulfill an explicit requirement of state or federal law. For example, the Idaho Division of Environmental Quality, to comply with a mandate of the federal Clean Water Act requiring development of a plan for improving water quality in the Middle Snake River, enlisted the help of a broad base of interests including industry, conservation groups, federal, state, and local governmental entities, and interested citizens. As watershed initiatives gain expertise and support, the development of plans becomes an increasingly common activity.

A related function of some watershed initiatives is to advocate the adoption of particular policies. Watershed groups, composed of members with a strong personal interest in a resource or resource problem, may be in a better position than a less directly involved outside interest, or governmental agency to pursue long-term goals and influence

political decisions affecting the watershed. Resource management decisions often have a much greater impact on watershed residents who have to live with the decisions than they do on outsiders, giving these groups the incentive to sustain projects as long as required. This “staying power” of participants, along with the broad base of interests often represented in watershed initiatives, can give these groups significant influence with policy-makers.

A majority of the western watershed initiatives documented by the Natural Resources Law Center are action oriented, often performing on-the-ground activities designed to restore habitat and improve water quality. This action orientation is often key to drawing participation and financial support, as many stakeholders and resource managers seek alternatives to planning processes and decision-making forums that increasingly do not result in on-the-ground activity. Some examples of active watershed initiatives include the Model Watershed Project, concerned with the Lehmi, Pahsimero, and East Fork of the Salmon Rivers in Idaho, which has aided salmon recovery efforts through a number of structural and operational changes to irrigation facilities, including an annual “fish flush.” Similarly, the Lower Truckee River Restoration Steering Committee in Nevada is working to restore aquatic and riparian ecosystems by implementing new reservoir operating regimes, constructing fences to protect riparian areas, and developing and demonstrating new fish migration facilities.

Improving the processes of decision-making and problem-solving are additional goals of many watershed initiatives. Promoting citizen participation, interagency coordination, transboundary cooperation, and civil communication are all generally seen as independently worthy goals, consistent with the “watershed democracy” ideal articulated a century earlier by John Wesley Powell. Getting people together to talk and to share perspectives and experiences is often listed by group participants as one of the primary successes of the watershed effort. Whether explicitly addressed as a separate activity or occurring as a byproduct of other activities, this social function of many watershed groups is often a significant motivation behind the formation and continued existence of many watershed initiatives (particularly those where individual citizens play a prominent role).

3. Decision-Making

The form of decision-making adopted by watershed groups is controlled largely by membership characteristics. In general, decision-making among watershed groups is strongly cooperative, reflecting the mixed composition of watershed group members and occurring within the confines of existing federal and state law. An evaluation of the watershed groups studied by the Natural Resources Law Center showed that decision-making in over three-quarters of the groups was shared among citizens and agencies, albeit to different degrees. In about a third of these groups decision-making was shared equally among all group members, citizens and agency representatives alike. In a similar number of groups, essentially those in which citizen members greatly outnumbered agency members, decisions were made primarily by citizen participants, but with substantial input from agency members. In some cases, usually where groups were initially formed by agency personnel, the pattern was reversed, so that agency personnel were the primary decision-makers but with substantial input from citizens. In only a few of the watershed

groups was decision-making dominated by either agency members or citizens. Shared decision-making may be the single most important and defining characteristic of the watershed movement.

Strategic considerations often play a role in determining which members can vote or otherwise participate in decision-making. Tensions between citizens and government, laypersons and experts, and locals and outsiders may well need to be addressed by carefully allocating decision-making authority. It may also be necessary to limit voting rights in order to keep the decision-making group to a manageable size. This is one of the primary reasons that many watershed initiatives use committees or subgroups as part of decision-making processes. For example, experts from government agencies and academia, perhaps meeting separately as a Technical Advisory Council, may be assigned authority for making or recommending decisions requiring extensive technical expertise, while local residents reserve authority to make decisions about broader policy matters. Perhaps most common is a situation in which separate committees all make recommendations to either an executive committee composed of more diverse membership or to the group as a whole, which then makes the final decision.

Most of the watershed groups studied have taken explicit measures to set up decision-making structures and mechanisms that avoid the possibility of deadlock. Many watershed groups, in keeping with the general character of the effort, have adopted a policy of making decisions by “consensus”—which is normally defined to mean a group decision that all parties will adhere to and will not challenge outside of the group. This can enhance the willingness of diverse watershed interests to participate, as it eliminates the possibility of being “railroaded” by members perceived to be in the majority. On the other hand, strict consensus requirements can potentially give undue power to vocal minorities, thereby encouraging “lowest common denominator” decisions (McCloskey, 1996). Additionally, the consensus requirement can significantly impede progress in watershed initiatives where membership is open to any and all interested parties. For example, the San Pedro Coordinated Resource Management Group in Arizona had the problem of outsiders showing up to veto proposed decisions negotiated by the core group of participants.

While consensus decision-making is nearly uniformly lauded by most watershed initiatives, the term has been defined and implemented in many different ways. For example, the McKenzie Watershed Council in Oregon defines different “levels” of consensus, each appropriate for a particular kind of decision-making. In the Henry’s Fork Watershed Council in Idaho, it is the responsibility of the co-facilitators to jointly determine when the necessary level of consensus has been reached. Still other groups, such as the Upper Rogue Watershed Council in Oregon, have established policies that first require attempts to reach consensus, but allow a fall-back position in the form of a “super-majority” rule if consensus does not appear possible. Consensus does not always require the interests of all parties to be reflected in the group decision, but does require that all interests be given serious consideration as part of the decision-making process.

C. Key Resources of Watershed Initiatives

1. Financial Support

The most frequently limiting resource of watershed initiatives is funding for both on-the-ground projects and group administrative tasks. Most watershed initiatives are highly dependent on federal funding. These funds are normally channeled through federal agencies in grant programs, such as the "319" nonpoint source pollution grants administered by the U.S. Environmental Protection Agency (Clean Water Act).⁴⁵ EPA has been a primary source of financial support for many watershed initiatives. Most other federal natural resource agencies also have a variety of grant programs from which to disburse funds to watershed initiatives, although tightening agency budgets and increasing numbers of watershed initiatives ensure that demands far exceed supply.⁴⁶ A much smaller set of watershed initiatives, including the McKenzie Watershed Council in Oregon, receive specific congressional appropriations. As discussed in Section III, state agencies and legislatures also occasionally play an important role in funding watershed initiatives.

Many watershed initiatives find that governmental support, especially federal support, is essential and often available, but comes at the expense of restrictions that complicate efforts to efficiently plan and conduct restoration projects. Financial support for on-the-ground projects is normally more easily obtained than for the hiring of coordinators, which is further complicated when federal regulations pertaining to contracting and applicant screening are considered. Project funds can be difficult to efficiently utilize due to many factors, including fragmented land ownership (e.g., restrictions on using public money on private land), narrow purposes of program grants, and cost sharing requirements. Often these barriers are most easily overcome by channeling federal funds through an intermediary, such as a state agency or a nonprofit organization.

While most groups tap public funding sources, few watershed initiatives have the luxury of being selective or timid in seeking financial support, and many, therefore, are funded from a variety of sources. Membership contributions can be a significant funding source, particularly for groups with large numbers of agency and/or corporate members, or with large membership and relatively limited needs. For example, the Yakima River

⁴⁵ 33 U.S.C.A. § 1329 (1994).

⁴⁶ Last year's (May, 1997) budget agreement between the President and Congress is likely to reduce federal funds for western water management. According to a recent analysis of the agreement conducted by the EOP Foundation for the Western Water Policy Review Advisory Commission, federal outlays for western water management "in 2002 would be 15 percent below the 1997 level with substantial reductions for the Bureau of Reclamation (33 percent), Department of Agriculture water-related programs (27 percent), and Corps of Engineers (20 percent). Even with a planned funding increase, Environmental Protection Agency outlays will not keep pace with inflation." EOP Foundation. 1997. *Budgeting for Federal Water Projects*. Draft Report to the Western Water Policy Review Advisory Commission, U.S. Department of the Interior. July 7, p. 1.

Watershed Council in Washington was able to raise \$300,000 from membership and community contributions. Private foundations and companies also provide funding to some watershed initiatives, as shown by the partial support of the Clear Creek Watershed Forum in Colorado by the Coors brewing company. Conference and publication fees can provide additional revenue sources in some cases.

2. Other Resources

While financial assistance is often the most limited and flexible resource for a watershed initiative, other types of assistance are often available and are generally aggressively sought. One of the most widely available and useful sources of support is in-kind services donated by participating parties or other concerned watershed residents. Donations of office space, equipment, supplies, staff time, and phones can make the difference between an ongoing, successful watershed initiative and one that falters for lack of resources. Reliance on in-kind services may also enhance other goals, such as maintaining local control and building group cooperation and trust. This type of support is often provided by local conservation districts, a type of quasi-local government overseen by the Natural Resources Conservation Service. In fact, the Natural Resources Conservation Service is one of the most ardent supporters of the watershed movement, not surprising given the agency's history of federal/local partnerships, regional management, and consensus-driven problem-solving.

An equally important resource for many groups is access to technical information and expertise. Citizen-based groups in particular often lack the data and expertise necessary to successfully address watershed problems that they have identified, so the participation of technical experts from federal and state agencies, or from universities, is often sought. Occasionally, watershed initiatives are utilized as the vehicle through which technical information is gathered and disseminated, an approach to public participation aggressively employed by the Verde Watershed Association in Arizona. It is imperative that outside technical experts not be allowed to overly dominate the activities of watershed initiatives, because the negative image of "technocrats" can harm the credibility of efforts with local stakeholders.

A resource that very few watershed initiatives have or desire is explicit formal decision-making authority. It is influence, not authority, that watershed initiatives desire. The operational strategy of most watershed initiatives is to bring together public and private entities who already exercise authority in a given watershed and to secure desired results through coordinated action, rather than to create a new source of authority at the watershed level. By their very nature, watershed initiatives tend to reduce the need for any new formal authority by increasing the commitment levels of watershed group participants. Goals are achieved through increased communication and cooperation rather than through the independent (and uncoordinated) exercise of regulatory powers.

The "moral authority" developed by watershed groups through openness, competence, and representation of diverse interests can be substantial. For example, very few if any substantial public or private watershed projects are undertaken in the Henry's Fork watershed without having been evaluated and approved by the Henry's Fork Watershed Council, despite the fact that the Council lacks any formal authority. Frequently, the moral authority of watershed groups is used to influence the use of the

formal authorities of other entities: e.g., at the request of the Little Bear River Steering Committee in Utah, the state Division of Water Quality agreed not to use its authority to issue citations for water quality violations so long as the Committee was working with landowners to correct ongoing problems. Similarly, the Colorado Water Quality Control Commission agreed not to impose more restrictive water quality standards on the Animas River so long as the Animas River Stakeholder Group was working to analyze the basin's problems and devise its own solutions.

In only a few isolated situations have watershed initiatives taken on “enforcement roles” in order to fill a perceived deficiency in existing resource management arrangements. One such example can be found in the upper Salinas River basin in California, where a local watershed group established an effective “River Watch” program to get a handle on several illegal activities affecting the river corridor, including off-road vehicle use, illegal dumping, and other forms of trespass. A somewhat similar “river ranger” program established by the San Miguel River Coalition in Colorado features a full-time ranger hired to educate the public and monitor uses in and near the river corridor. Even in this situation the watershed initiative borrowed from existing authority rather than seeking its own, by convincing the U.S. Forest Service—an active member of the Coalition—to hire the ranger. Interestingly, the overwhelming majority of watershed initiative proponents and opponents do not see a value in formal transfers of authority from governmental agencies to watershed initiatives, although such proposals are frequently forwarded as a way to provide additional support to the watershed management movement.⁴⁷

⁴⁷ Several potential problems could occur if formal authorities were transferred to individual watershed initiatives. Five of the most obvious problems are listed below. First, such a transfer would necessitate the imposition of formal rules of membership and decision-making, and would likely require the initiatives to be involved in functions such as hearing appeals and enforcing judgements. This would bring an unwanted layer of bureaucracy and formality to these efforts. Second, a formally empowered watershed initiative would likely not provide as welcome and risk-free an environment to potential participants, and could therefore discourage full participation and candid, trust-building interactions. Third, a formal transfer of authority and responsibility away from existing agencies to watershed initiatives could remove the “regulatory hammers,” such as those provided by an Endangered Species Act listing or a water quality violation, that currently provide an essential stimulus for many active watershed groups. Fourth, such a transfer of authority would require a comprehensive restructuring of the existing bureaucracy, as many agencies would become largely redundant or obsolete. And fifth, if the power to decide and take action rested with the watershed initiative itself, rather than the individual participants, then the necessity of accommodating all interests and reaching consensus agreements is lost, along with the incentive for many parties to participate. Given the magnitude of these problems, combined with the observation that very few individuals with direct experience with watershed initiatives support proposals for transferring authority, such proposals do not merit serious consideration (Kenney, 1997).

D. Traits of Successful Watershed Initiatives

Given the variety of watershed initiatives, the resource management challenges they are established to address, and the relative youth of most initiatives, it is often difficult to identify which efforts are truly successful. Ultimately, success must be measured in terms of improved environmental variables (e.g., cleaner water or healthier species) and stronger communities (e.g., sustainable economies). In the short term, however, it is sufficient to define success as those initiatives that are viewed by participants as successful, and those that are helping to direct needed resources, efforts, and ideas toward the solution of complex environmental problems and the integrated management of valued natural resources.

Five qualities appear to be most instrumental to success in watershed initiatives.⁴⁸ The first is leadership, which is most effectively obtained through the use of a paid coordinator or facilitator. Groups that cannot afford coordinators often have trouble scheduling events and maintaining interest, and have difficulty locating and obtaining financial support. Second, and closely related to the issue of leadership is participation. Among the key participants normally found in successful watershed initiatives are locally respected individuals who can bring a sense of local credibility to the effort. The participation of agencies, landowners, and other major stakeholders is also normally essential to concentrate the necessary resources for problem-solving, and to achieve adequate coordination. Next, selecting an appropriate focus is also essential. A focus that is too broad (in terms of geography or substance) can be overwhelming and can lead to failure, while a focus that is too narrow may not overcome the deficiencies in fragmented thinking that are at the root of many resource management problems. Ideally, the focus of the group should promote an early success for the group, which can foster more significant long-term accomplishments. Additionally, resources are a key to success. Key resources include funding for coordination and projects, meeting facilities, technical information and expertise, and the authority and manpower to implement projects. The final key to success is the utilization of credible and efficient processes of decision-making and action. Most watershed initiatives find that this includes processes that emphasize voluntary cooperation, consensus decision-making, organizational flexibility, and a pragmatic approach to problem-solving.

⁴⁸ A “top ten” list of keys to successful watershed initiatives has been compiled, with the assistance of the Natural Resources Law Center and many others, by the U.S. Environmental Protection Agency. This list can be viewed on the Internet at: <<http://www.epa.gov/owowwtr1/watershed/lessons/toc.html>>.

III. STATE WATERSHED APPROACHES

States can play a pivotal role in encouraging and facilitating integrated resource management at a geographic level and the enthusiasm in many states for watershed-scale management is undeniable. Many states in the West and elsewhere appear convinced that the collaborative development and implementation of modern watershed management programs is more than a temporary phenomenon, but instead signals a fundamental, long-term evolutionary advance in the governance and management of natural resources. As one of many players frustrated by the historic lack of mechanisms for promoting regionally integrated and efficient water management, many states are now stepping forward to exploit their central position in the intergovernmental system to nurture and support the growth of new arrangements. This is a role with broad and high-level support within state governments across the nation. Indeed, in 1992 the National Governors' Association stated that: "The governors believe the future demands a new model for managing water resources, based on well-defined geographic units such as basins or watersheds."⁴⁹

Acting on this vision, the western states are implementing a wide variety of ambitious, yet pragmatic, institutional innovations to redefine the state role in watershed-level resource management strategies. States' participation in the watershed movement range from state-wide, legislatively established programs which integrate activities of various state programs and departments, at one end of the spectrum, to informal attempts within individual state agencies to address water quality issues from a more geographically based perspective. The following overview of state approaches illustrates the range of strategies which the states are adopting.

A. State Agencies Integrating a Watershed Approach

Water quality management is the most active substantive area where several western states are pursuing a watershed approach. For example, Alaska, Arizona, Utah and Washington⁵⁰ have worked extensively with EPA to develop framework documents to guide their water quality control agencies' activities (EPA, 1996). Meanwhile, Colorado, Idaho, Nevada, and Wyoming are crafting their own state approaches to water quality issues, while New Mexico is concentrating on water quantity issues. These efforts are reviewed below, followed by a discussion of the more comprehensive and well-known state initiatives in Oregon, California, Washington, and Montana.

⁴⁹ Water resource management policy statement adopted at a 1992 meeting of the National Governors' Association. Stoerker, Holly E. "The State Perspective." *In: WATER RESOURCES ADMINISTRATION IN THE UNITED STATES* 274, 279 (American Water Resources Association, 1993) at 281-82, citing Water Resources Management Policy, National Governors' Association, Adopted Aug. 1991, revised Feb. 1992.

⁵⁰ Washington's Department of Ecology program is described in the next section.

1. Alaska

In late 1996, EPA and Alaska's Department of Environmental Conservation (DEC) entered into a partnership to develop a watershed approach to water issues.⁵¹ Through a major outreach effort, the state attracted the participation of a diverse group of stakeholders to develop a framework for the state's watershed program (EPA, 1997b). About 30 stakeholders, who regularly attended monthly meetings, reached consensus on all of the major decision topics. The group developed a mission statement, the content of watershed plans, a cycle for carrying out activities within each watershed, watershed sequencing, an exhaustive communication strategy, and subgroups to work on statewide geographic information system coordination and environmental indicators of success.

The Alaska framework has a two-prong approach that targets "active" watersheds—those currently known to be a problem—and encourages "discovery" on lesser known watersheds. Active watersheds are addressed with a seven-step cycle of activities over a five-year period. The process requires:

- 1) Convening a watershed initiative involving stakeholders;
- 2) Reviewing and compiling existing information and defining goals;
- 3) Identifying issues;
- 4) Setting priorities and targets;
- 5) Developing strategies;
- 6) Developing a watershed management agreement; and
- 7) Implementing the plan.

In the discovery phase, each of the six major hydrologic regions of the state will be investigated to determine which watersheds should be converted to active status.

While the state was a major player in development of the framework, it has not yet fully embraced the framework process. The DEC has decided to implement the framework only on a pilot project basis and maintain the framework document as a "draft" until all of the many interest groups of the state are satisfied with the process. Apparently, mining interests fear that the framework will be used to increase regulation of their activities.

2. Arizona

The Arizona Department of Environmental Quality (ADEQ) has also embarked on a watershed-based approach to water quality management.⁵² The approach provides that Watershed Advisory Committees, composed of representatives from federal, state,

⁵¹ This section was based in large part on an interview with Jeff Hock, Manager, Waterbody Recovery and Assessment Team, Watershed Management Program, Alaska Department of Environmental Conservation, August 27, 1997.

⁵² This section was based in large part on an interview with John Hathaway, Senior Environmental Engineer, Water Quality Division, Arizona Department of Environmental Quality, August 29, 1997.

and local agencies, municipalities, tribes and landowners/residents, work closely with ADEQ Watershed Management Zone Teams in each of the 10 zones created for the state. The watershed committees and teams operate according to a framework document that includes a six step process (Arizona Department of Environmental Quality, 1997):

- 1) Identify and bring together stakeholders;
- 2) Collect and evaluate watershed data;
- 3) List and target environmental concerns;
- 4) Develop management strategies and measures of success;
- 5) Compile a watershed plan; and
- 6) Implement and evaluate the plan.

The ADEQ teams report their zone's needs to a state watershed coordinator who works with department program managers to determine assignments and allocate department resources based on the zone teams' recommendations. Planning in the ten zones is scheduled to occur on a five-year cycle with creation of the ten Watershed Advisory Committees to occur over the next few years. Arizona's approach emphasizes public involvement and empowerment of local communities to set priorities, and encourages better coordination among the government entities and agencies involved. The program calls for using a sound technical basis to support environmental decisions and continuous evaluation and improvement of environmental programs and regulations (EPA, 1997c). While Arizona's Watershed Framework document remains technically a draft, this designation seems to indicate more a willingness to learn from and adapt to the experience of implementation, rather than the lack of full commitment to the process.

3. Utah

The Division of Water Quality (DWQ) within Utah's Department of Environmental Quality is reorganizing its efforts to protect water quality through a watershed approach. In this regard, the DWQ is emphasizing better coordination and integration of existing management programs and more direct involvement of Utah citizens in managing and protecting water resources.

Under a draft framework document released in February of 1997, the state is divided into ten watershed management units made up of 44 third-level watersheds (Utah, 1996).⁵³ This partition is intended to encourage a sense of ownership and stakeholder involvement in planning and implementing stewardship activities. Each management unit will develop a strategic plan addressing funding, personnel, special study requirements, compliance, and enforcement within the unit. The DWQ is broadening its watershed assessments to consider wildlife habitat factors, landscape characteristics, and point and nonpoint sources of pollution and will then prioritize water bodies in order to allocate

⁵³ The 44 third-level watersheds are simplifications of the U.S. Geological Survey's 68 Hydrologic Unit Code areas and are identical to the Utah Division of Water Resources State Water Plan units.

department resources. Criteria for allocating resources will include feasibility of management, cost, potential for success, and the degree of public support.

The DWQ intends to develop management plans which specify strategies for meeting identified goals and objectives. These plans will be written in a non-technical style to reach a wide audience. Implementation will include support for on-going projects, issuance of permits with conditions reflecting watershed plan provisions, and encouragement of the use of best management practices to control nonpoint source pollution. The framework itself will be subject to revision as both the DWQ and other stakeholders learn from their experiences at watershed plan implementation.

4. Colorado

During the recent major reorganization of the Water Quality Control Division (WQCD) of the Colorado Department of Health and Environment, Colorado began to incorporate a watershed approach to achieving and sustaining the quality of state waters (Norbec, 1997). Working through a departmental design team, the WQCD embarked on a reorganization process intended to eventually focus the Division's efforts on a watershed basis. When completely implemented, the state's holistic watershed approach is intended to streamline the WQCD and make it more responsive to the contribution of local watershed groups.

As a first step, the WQCD divided the state into four basins—the South Platte, Rio Grande/Arkansas, Upper Colorado and Lower Colorado—and created watershed teams and watershed coordinators for each basin. Representatives of each functional unit within the WQCD (e.g., permitting, field inspections, compliance, monitoring and assessments, administrative staff) participate as team members. The watershed coordinators are field representatives responsible for interfacing with existing watershed councils within their areas.⁵⁴ This team structure gives the WQCD the ability to be more responsive to local communities and their concerns and to address key issues using an integrated approach that is expected to provide more effective solutions.

5. Idaho

Efforts of the Idaho Department of Health and Welfare's Division of Environmental Quality (DEQ) to adopt a watershed perspective for water quality programs have been facilitated by its legislature. In 1995, the Idaho legislature recognized the value of Idaho's surface waters and approved the adoption of water quality standards to enhance and improve the quality and value of those waters.⁵⁵ The Idaho law requires that the director of the DEQ designate at least one basin advisory group to advise the director on water quality objectives for each of the state's six administrative river basins. Basin advisory group members are paid, and the composition of each group must

⁵⁴ In 1996, there were six local watershed initiatives in Colorado covering less than five percent of the state. In 1998, there are 30 local watershed initiatives in Colorado covering 20-25 percent of the state.

⁵⁵ 1995 Idaho Sess. Laws, Ch. 352; Idaho Code §§39-360-3639 (1997).

reflect a balanced representation of the interests in the basin, including a representative of agriculture, mining, nonmunicipal point source discharge permittees, forest products, local government, livestock, Indian tribes water-based recreation, environmental interests, and the general public.

Each basin advisory group provides coordination of the water quality programs of all relevant public agencies and provides advice to the director on various water quality issues, including priorities for water quality monitoring, designating beneficial uses of streams, categorizing and prioritizing streams in accord with the total maximum daily local (TMDL) requirements of the Clean Water Act,⁵⁶ and establishing priorities for water quality programs within the basin.

The basin advisory groups also recommend members for advisory groups that the director may establish for watersheds within each basin. Under the statute, the director may establish these groups to advise the division on the development and implementation of TMDLs and other state water quality plans, including specific actions needed to control point and nonpoint sources of pollution within their watershed. Watershed advisory groups are voluntary groups, although they may receive technical and clerical support from one of six regional DEQ offices. The advisory groups must be representative of the industries and interests affected by the management of the particular watershed, along with representatives of local government and the land management or regulatory agencies with an interest in the management of the watershed and the associated water bodies. Additionally, in making recommendations which will control point and nonpoint sources of pollution, the groups must cooperate with public planning processes and otherwise involve the public.

6. Nevada

While Nevada has no special statutes or planning document for establishing a watershed focus for its state water quality agency, the Nevada Division of Environmental Protection (NDEP) is beginning to approach problems from a watershed perspective.⁵⁷ Primarily, the NDEP is using a watershed approach in its efforts to address nonpoint source pollution. The division is currently updating water quality assessments for the state and will prioritize problem areas on a watershed basis. The state then plans to work to abate problems working through local government entities and existing or new watershed stakeholder groups. Watershed groups are currently active in the Lower

⁵⁶ Section 303(d) of the Clean Water Act requires that a state establish waste load allocations for point sources and load allocations for nonpoint sources for certain waterbodies (33 U.S.C. § 1313(d) (1995). Together, these allocations comprise the total maximum daily load (“TMDL”) for a waterbody. The TMDL is a mechanism for water-quality based control actions where technology-based controls alone are not adequate to meet water quality standards. TMDL calculations ensure that the cumulative impacts of multiple point sources are accounted for and evaluated in conjunction with nonpoint sources in an integrated, basin-wide approach to identifying and resolving water pollution.

⁵⁷ This section was based in large part on an interview with Jim Smitherman, Environmental Scientist, Nevada Division of Environmental Protection, November 22, 1997.

Truckee, Upper Carson, Middle Carson, Lower Carson and Steamboat Creek (tributary to the Truckee River) watersheds. Funding for the NDEP's efforts currently comes from EPA through the state's nonpoint source program.

The state has also begun to address point source pollution in the Las Vegas area from a watershed perspective. The NDEP is issuing NPDES permits in conjunction with a revision of state water quality standards being done on a watershed basis.

7. Wyoming

Like Colorado, Wyoming has no specific legislation that mandates a watershed approach, but it too reorganized its Department of Environmental Quality, Water Quality Division (WQD) in the spring of 1997 to function on a watershed basis. The division organized five of its water quality functions (nonpoint source pollution, 404 certification and wetlands protection, point source pollution, NEPA evaluations, and water quality standards) into one watershed-based work unit headed by a Watershed Program Manager. The division is now working with EPA to develop a plan to implement their watershed approach and, in the process, to improve both the efficiency and effectiveness of the division's water management program.⁵⁸

In its new organization, the WQD will continue to work with watershed groups throughout the state. To date, most of the groups, formed through local conservation districts, have dealt primarily with nonpoint source pollution issues. While these groups are likely to continue with this focus, the state expects that better coordination among interest groups and a more holistic approach to watershed management will result in more effectively addressing both point and nonpoint source pollution.

8. New Mexico

In 1987, the New Mexico legislature started to encourage regional groups to form in order to develop regional water plans.⁵⁹ New Mexico's regional water planning statute left to the Interstate Stream Commission (ISC) the task of funding, evaluating and implementing the regional plans. Initially, the ISC provided little direction for the content of plans, which consequently took a variety of shapes and forms. Through this planning process, interests located within and concerned about a specific geographic area were given funding to plan for their region. The statute gives local groups the freedom to designate planning unit boundaries on the basis of common political, economic and hydrologic interests.⁶⁰

⁵⁸ This section was based in large part on an interview with Beth Pratt, Watershed Program Manager, Wyoming Department of Environmental Quality, January 22, 1998.

⁵⁹ H.B. 377, 38th Legis., (N.M. 1987); 1987 N.S. Sess. Laws, Ch. 182; N.M. Stat. Ann. §§ 72-14-43-44 (1987). This section is based in large part on an interview with Erik Galloway, Program Manager, Evaluation and Planning Section, Surface Water Quality Bureau, October 8, 1997.

⁶⁰ N.M. Stat. Ann. § 72-14-44 (1987).

While New Mexico's regional water planning legislation and implementing guidelines do not dictate membership of planning groups, they set some criteria to ensure efforts are made to effectively include all affected interests in the planning process. The statute requires the "use of an appropriate planning process" which ensures that local tribes have an opportunity to participate and that public notice, review, and comment be used where appropriate.⁶¹ Additionally, the ISC guidelines require proof that "reasonable and diligent efforts have been made to reach the public so as to invite, value and reflect public comment."⁶² Plans are to include a list of those entities contacted, along with corroboration of their support or refusal to participate. Public meetings must be designed to maximize participation, and public comment on draft plans is required (Handbook, 1994).

Through private funding, the New Mexico Regional Water Dialogue (Dialogue) was established in 1991 to support the regional planning process in the state. It has provided a forum for a statewide network, bringing together bureaucrats, community leaders, elected officials, consultants, special interests, and other interested citizens. The Dialogue has grown to provide a valuable link between experienced and new regional planning efforts, and between regional planning and related state efforts. The Dialogue also serves as a facilitator between the state and regional planning participants, and has added strength to the regional planning effort by providing participants with a unified voice to reach state legislators.

In 1994, after struggling with how the results of diverse regional approaches to water planning might be incorporated into a state plan, the ISC developed a Regional Planning Handbook with the help of Dialogue. The handbook presents assumptions, guidelines, and a template to provide a more unified approach to regional water planning, but is not intended as a list of requirements (Handbook, 1994). While the handbook attempts to direct the efforts of citizen participation toward a more uniform goal, it also encourages broad public participation in development of regional plans in order to increase their potential contributions to state decisions with regard to the public welfare and conservation. In 1998, the Dialogue initiated a pilot program of providing voluntary peer review of draft regional plans. The program is intended to help regions create superior water plans by providing a discussion of the strengths and weaknesses of a draft plan as well as an evaluation of how the plan fits within the ISC template established in the Handbook (Dialogue, 1998).

After ten years of planning, many of the regional plans remained incomplete. In 1998, the New Mexico legislature appropriated \$1.75 million—all of it from the executive branch's share of severance tax bond revenues—to complete sixteen unfinished regional water plans and to begin construction of a state framework plan to connect them.⁶³ A

⁶¹ N.M. Stat. Ann. § 72-14-44 (C) (1997).

⁶² New Mexico Interstate Stream Commission, *REGIONAL WATER PLANNING HANDBOOK*, p. 11 [Handbook, 1994].

⁶³ Of this total, \$1 million will be distributed by the ISC as regional planning grants. Over \$2 million has already been distributed to support water planning since the program

state water plan, incorporating the framework plan, the regional strategies, and water resource assessments from the Office of the State Engineer, is expected within about five years.

While the regional planning process is used to primarily address questions of water quantity, the state is encouraging formation of watershed groups to help address nonpoint source water quality problems. Most of the money the state receives through EPA's Section 319 program is not focused on watersheds, but rather is being used to address the requirements of a consent decree which prioritized stream reaches for establishing TMDLs. Some Section 319 funds are, however, being used to help watershed groups form and participate in on-the-ground watershed restoration projects. Watershed grant money was also earmarked to sponsor a watershed conference in 1998 and to support New Mexico's "Watching Our Waters" citizen based water monitoring effort (Handbook, 1994).

B. More Comprehensive State Initiatives

In addition to initiatives to redirect the efforts of individual state agencies, a few of the western states have embarked on more comprehensive state initiatives for watershed-based water resource management. The Oregon program appears to be the most highly-developed and integrated program, with California, Washington, and Montana still struggling to create programs acceptable to both their governors and legislatures.

1. Oregon

Oregon's efforts to address environmental quality on a watershed basis began over a decade ago. In 1987, the Oregon legislature established the Governor's Watershed Enhancement Board (GWEB)⁶⁴ to provide funding and assistance to individuals and groups working to enhance watershed functions and to provide education about watershed resources. Funding through the GWEB has grown from \$500,00 for 1987-89 to \$2.6 million for 1995-97 (Oregon, 1996a).

In 1993, the Oregon legislature created a separate pilot project, the Watershed Health Program, to support the watershed approach by encouraging formation of local watershed councils. The councils were to provide a forum for citizens to work on a voluntary basis in partnership with local, state, tribal, and federal agencies to solve

began in 1987 (Dialogue, 1998).

⁶⁴ 1997 Or. Sess. Laws, Ch. 636. The GWEB is currently composed of chairs of the Environmental Quality Commission, the State Fish and Wildlife Commission, the State Board of Forestry, the State Soil and Water Conservation Commission, and the Water Resources Commission. In addition to these voting members, nonvoting members are the Governor's natural resources adviser, the director of the agricultural extension service of Oregon State University, the Director of Agriculture, and representatives of the United States Forest Service, the Bureau of Land Management, and the Natural Resources Conservation Service. Ore. Rev. Stat. § 541.360 (1995).

problems in their own watersheds. For this program, the legislature allocated \$10.2 million in lottery funds to target problems in two areas—the Grande Ronde in northeastern Oregon and the South Coast and Rogue Basins in southwestern Oregon (Soscia, 1995). Priority was given to these basins based on urgency for watershed restoration, with primary concern for anadromous fishery restoration, fisheries and timber jobs, and reconciliation of fish/power issues.

The Watershed Health Program was a bold experiment that resulted in concentrated planning and on-the-ground projects in the two areas, while more limited funding through the GWEB continued to support projects throughout the state (Soscia, 1995). The large infusion of Watershed Health Program money for these two areas resulted in action plans identifying watershed problems and needs and providing a blueprint for solutions. The state funding also attracted about 30 percent matching funding from a variety of sources and resulted in over 150 on-the-ground projects.

This large infusion of money into a limited geographic area for a very short time period (two years) created difficulties for effectively spending the money. The fast-track program provided insufficient time for watershed councils to form, develop working relationships and produce assessments, action plans, and good watershed projects. In addition, staff hired for the new program were inexperienced in both state government and watershed work, and were poorly integrated into existing field programs. Concentration of money in the two areas also caused ill feelings in other areas of the state where watershed groups had well-planned projects ready to be funded (Soscia, 1995).

Learning from this experiment, the Oregon legislature modified the GWEB's structure and responsibilities in 1995 and 1997, and created the Oregon Plan, which consists of the Coastal Salmon Restoration Initiative (CSRI) and the Healthy Streams Partnership (Partnership). The CSRI, which outlines a comprehensive, multi-interest and multi-agency effort to restore the coastal coho salmon population to sustainable population levels, was prompted by the threat of endangered species listing of coho along Oregon's coast. The Partnership is an effort to integrate resources and knowledge to improve the health and function of aquatic systems and enhance beneficial uses of water for future generations. The Partnership was specifically initiated to address federal Clean Water Act (CWA) requirements. Oregon's CWA Section 303(d) list included 870 stream segments not meeting water quality standards across the state. Through the Partnership agreement and Senate Bill 1010, the state agreed to develop water quality plans statewide in four to five years and TMDLs in 91 subbasins in ten years.

Key elements of the 1995 legislation (House Bill 3441) include:⁶⁵ designating the Governor's Natural Resource Policy Advisor or his/her designee as the GWEB chair; allowing the GWEB to designate high priority watersheds; allowing for establishment of local, voluntary watershed councils recognized by state government; and requiring the GWEB to operate a program that relies on and grants funds for the support of watershed councils in assessing watershed conditions, developing action plans, implementing projects, and monitoring results. In the 1997 amendments, the legislature provided additional staff for the GWEB and various state agencies to coordinate watershed

⁶⁵ 1995 Or. Sess. Laws, Ch. 197; Or. Rev. Stat § 541.350C (1995).

monitoring efforts and data management.⁶⁶ The amendments also created a tax on timber harvesting to provide funding, not to exceed \$15 million, for the GWEB's Watershed Improvement Grant Fund (House Bills 3700, 5042 and 5044).

Watershed councils play an important role in both the CSRI and Partnership programs of the Oregon Plan. Local watershed councils are the focal point of Oregon's decision-making and local involvement in habitat protection and restoration for the CSRI.⁶⁷ Under the Partnership program, watershed councils, as well as other community groups and individual landowners, are eligible for project funding to improve and monitor water quality while area management plans are being developed, and to share in the implementation of water quality plans (Oregon, 1996a).

While the legislature provides funding to watershed councils, and provides guidance for their establishment, the Oregon legislature has made it clear that formation of a council under Oregon law is a local government decision, with no state approval required.⁶⁸ The Oregon statutes do not specify the form of recognition required by local government, and appropriate recognition seems to range from resolutions or letters of recognition to more formal establishment of a council by county order (Oregon, 1996b). State assistance of recognized watershed councils depends on the organization being balanced in makeup, reflecting the interests of the affected watershed, and having a potential to protect and enhance the quality of the watershed in question.⁶⁹

⁶⁶ Over \$8.5 million was allocated to create fifty-eight new positions for the State Department of Agriculture, the Department of Environmental Quality, the Department of Fish and Wildlife and the Department of Forestry. An additional \$5.9 million was allocated to GWEB to implement the Oregon Plan.

⁶⁷ The role of watershed councils includes: assessing and addressing specific limiting factors to salmon recovery; assessing entire watersheds across ownership lines, integrating the role of local landowners, prioritizing and implementing on the ground work through action plan development and implementation, making habitat improvement decisions based on the best available science, receiving and disseminating technical habitat information, and monitoring the effectiveness of action plan implementation (Oregon, 1996a).

⁶⁸ "Watershed council" means a voluntary local organization designated by a local government group convened by a county governing body to address the goal of sustaining natural resource and watershed protection and enhancement within a watershed. Or. Rev. Stat. § 541.350(7).

⁶⁹ Or. Rev. Stat. § 541.388(1). "Local watershed councils ... shall consist of a majority of local residents, including local officials. A watershed council may be a new or existing organization as long as the council represents a balance of interested and affected persons within the watershed and assures a high level of citizen involvement in the development and implementation of a watershed action program. A local watershed council may include representatives of local government, representatives of nongovernment organizations and private citizens" Or. Rev. Stat. § 541.388(2).

2. California

Like Oregon, California also began to address water quality issues on a watershed basis over a decade ago. In 1969, California created Regional Water Quality Conservation Boards (RWQCBs) defined geographically by watershed boundaries.⁷⁰ Following creation of the federal nonpoint source program under 1987 amendments to the CWA, the RWQCBs worked cooperatively with local watershed stakeholders groups to achieve nonpoint source pollution control.

In 1995, as part of their strategic planning process, the State Water Resources Control Board (SWRCB) and the RWQCBs initiated a more formal, integrated approach, called the Watershed Management Initiative, to provide for water resource protection, enhancement, and restoration while balancing economic and environmental impacts (Vitulli, et al., 1998).⁷¹ Through this initiative, the boards, are targeting watersheds for improved management. For this effort, the RWQCBs participate as members of local stakeholder groups to identify and prioritize watersheds and forge unique solutions considering all local conditions and pollution sources. The regional and state boards coordinate the actions of other government agencies and programs to facilitate work of the stakeholder groups.

The Watershed Management Initiative is expected to better address nonpoint source pollution in part through establishing improved working relationships between staff previously assigned only to either the point or nonpoint source programs. In this process, statutory changes may be necessary to provide regulatory flexibility. In addition, use of incentive-based strategies and coordination of multiple funding sources will require training, modification of agency procedures, and experimentation. Consequently, implementation of the initiative, officially begun in July 1997, started with a number of pilot projects (Vitulli, et al., 1998).

California also considers better coordination of overlapping state and federal activities, especially those involving regulation and funding, essential to effective use of the stakeholder groups. A good example of California's emphasis on interagency coordination is the state's creation of the California Biodiversity Council (CBC). The CBC was formed in 1991 after ten state and federal land management agencies, along with the University of California, signed a Memorandum of Understanding (MUO) committing themselves to cooperate in promoting biodiversity conservation (Wheeler, 1993). Today, at least 45 local, state, and federal agencies have signed on to the cooperative agreement. The signatories to the MOU seek to provide a framework for local governments, conservation organizations, community and industry groups to work more closely with state and federal agencies.

The CBC believes that interagency coordination at the watershed level is essential to reducing the social and economic costs of protecting biodiversity and complying with

⁷⁰ Calif. Stats. 1969, Ch. 482, §18; Calif. Water § 13200 et seq.

⁷¹ This section is based, in part, on an interview with Ken Coulter, Nonpoint Source Section, State Water Resources Control Board, September 4, 1997; *Western States Water* # 1216, September 5, 1997; "LOA Analysis of the 1997-98 Budget Bill Resources Crosscutting Issues," see <http://www.lao.ca.gov/resources_crosscutting_anal97.html#_1_4>.

the Endangered Species Act. Ed Hasty, California's BLM State Director, has been involved with the CBC program from the beginning. He explains, "[W]e are not, as a council, doing any top down direction [of watershed groups]. We're just encouraging people to work together and make these truly multi-jurisdictional plans"⁷²

California has provided other support for watershed groups as well. With cooperation and flexibility as its trademarks, the California Coastal Conservancy has been working for ten years under its Watershed Enhancement Program with local entities including Resource Conservation Districts, local governments, and non-profit organizations to fund projects directed toward the restoration of coastal watersheds. The Conservancy is not a regulatory agency and, as a result, has been effective in establishing trusting relationships with private landowners that may provide a link with other agencies and interest groups.⁷³ Conservancy funding is derived primarily from bond acts and is available for watershed enhancement plan development and implementation.

In 1997, the Governor proposed three new efforts for resource conservation and management, including a watershed program to provide funding for an integrated approach to managing and restoring the state's watersheds.⁷⁴ Under the 1997 Watershed Initiative, the Governor requested almost \$3.8 million in the 1997-98 budget to assess the ecological health of watersheds, evaluate impacts on the watersheds, assist in the development of watershed management plans, conduct restoration projects, and fund regional watershed coordinator positions.

The Watershed Initiative failed to pass the legislature after the state's Legislative Affairs Office (LAO) criticized it as lacking well defined and measurable goals, for failure to evaluate long term costs and funding sources, and for failure to identify how implementation would be integrated with existing programs and personnel. While the LAO endorsed the essence of the Governor's approach to managing watersheds, it recommended that the implementing departments (Department of Conservation, Department of Forestry and Fire Protection, and Department of Fish and Game) address the practical deficiencies in the initiative before the legislature fund it in total. At the end of the legislative session, even partial funding (\$1 million), recommended by LAO for ten RWQCB coordinator positions, was cut from the budget in the last minute insanity of a mandated total budget reduction of \$1 billion.

The Governor's office is expected to revise the proposed initiative and resubmit it in the future. In the meantime, the Governor created, by executive order, a Watershed Protection and Restoration Council (WPRC), chaired by the state's Secretary for Resources, and including the Secretaries for Environmental Protection; Food and Agriculture; Business, Transportation and Housing; and Trade and Commerce. The

⁷² Interview with Ed Hasty, California's BLM State Director (May 8, 1995).

⁷³ The Commission was established under the California Coastal Act of 1976, Cal. Pub. Res. Code 3000-30900 (West 1986), as a permanent planning and regulatory agency to assure that statewide concerns are addressed in local decisions about coastal development.

⁷⁴ The Governor's other initiatives focused on coastal zones and natural community conservation planning.

chairs and presidents of various state boards and commissions are ex-officio members of the WPRC (Vitulli, et al., 1998).

The WPRC is intended to help focus state resources and activities on watershed protection and enhancement, including the conservation and restoration of anadromous salmonids in California watersheds. In establishing the WPRC, the Governor pledged support for community based watershed efforts to protect water, fish and wildlife populations, and productive agricultural lands. Referring to fish and wildlife, the Governor recognized the importance of cooperation among the various levels of government and stakeholder groups and reiterated his commitment to protecting these resources through multiple species watershed-based planning and implementation (WSWC, 1997; Vitulli, et al., 1998).

3. Washington

Washington has been developing its watershed approach to resource planning and management since 1975 when the Water Resources Program started developing water allocation and instream flow protection plans on a watershed basis (Slattery et al., 1997). Collaborative, watershed-based planning and management began in earnest, however, with the 1990 Chelan Agreement which created the Washington Water Resources Forum. The agreement and forum grew out of court mandated discussions between the state and tribes on instream flows necessary to satisfy tribal treaty rights.⁷⁵ After other water interests within the state joined in the instream flow discussions, the Chelan Agreement represented a commitment on the part of its signatories to follow a process of collaborative negotiation rather than litigation. The forum included representatives of state, local and tribal governments, environmentalists, recreation, business, fisheries and agriculture. It made state-wide recommendations for cooperative planning and recommended formation of two watershed planning pilot projects. The Washington legislature supported the cooperative effort and provided funding (about \$650,000 each, plus staff time for over five years) for the Methow River Water Pilot Project and the Dungeness and Quilcene Pilot Planning Project. The plans developed in these projects are being implemented by Ecology and local governments. While the forum eventually deteriorated, and finally shut down in the mid-1990s, as the various interests withdrew support from their representatives, the potential for various interests to address problems on a watershed basis had been established (Slattery et al., 1997).

As the number of federal, state, tribal, and local levels of government involved in watershed initiatives grew, the state legislature and the governor became concerned about the number of different basin or watershed programs being developed by state agencies and the potential for overlap. In 1994, the legislature and governor created the Watershed Coordinating Council (WCC) to improve interagency coordination on a

⁷⁵ In the 1973 Boldt decision (*United States v. Washington*, 384 F. Supp. 312 (W.D. Wash. 1973)), the court ruled that the tribes were entitled to harvest 50 percent of the resources that they are guaranteed “in common with” non-Indians. While the state attempted to frustrate the decision for many years, it eventually recognized that it would have to address the issue of instream flows with the tribes in order to satisfy tribal treaty rights.

watershed basis.⁷⁶ The umbrella organization included representatives of ten state agencies, including the departments of transportation, agriculture, ecology, health, fish and wildlife, and community, trade and economic development. The WCC focused first on coordination among state agencies and later on coordination between state agencies and federal, local and tribal governments as well as private landowners. Functions of the WCC were assumed in 1997 by the Joint Natural Resources Cabinet which does not have the federal, tribal, city and county government representation of the former organization (Slattery et al., 1997).

While the Dungeness/Quilcene and Methow Pilot project legislation encouraged other watershed to undertake similar planning efforts, a lack of state funding frustrated efforts (Slattery et al., 1997). Following a series of failures at additional planning legislation, the state of Washington has recently passed compromise legislation providing direction and funding for integrated watershed planning.⁷⁷ Under Engrossed Substitute House Bill 2514, local governments may choose to undertake a watershed planning process. To be funded under this bill, the plan must address water quantity issues and may include elements pertaining to water quality, protection or enhancement of fish habitat, and setting of minimum instream flows in the watershed. Engrossed Substitute House Bill 2514 provides funding for establishing local planning units within each Water Resource Inventory Area (WRIA) or on a multi-WRIA basis, and provides guidelines for both the scope of the plans and the planning process itself.⁷⁸

The legislation directs the planning units to review existing data as well as existing planning, projects, and activities regarding natural resource management or enhancement within the management area and to prioritize new projects.⁷⁹ In addressing water quantity, the planning unit must provide an assessment of current supply and use and develop strategies for future use. Under the legislation, the governments initiating the planning process may choose to include an instream flow component, a water quality component, and/or a habitat component in their planning process. Upon completing its watershed plan, the planning unit may approve the proposal by consensus of all of the members of the unit or by consensus among the governmental members plus a majority of the nongovernmental members.

⁷⁶ 73 E.S.H.B. 2741, 53rd Legis., (Wash. 1994); 1994 Wash. Sess. Laws, Ch. 2399; Governor's Executive Order 94-04, Coordinated Watershed Planning, Implementation, and Restoration for Fish and Wildlife (April 1, 1994).

⁷⁷ H.B. 2428, proposed in 1996, would have required the WCC to commence a pilot project in at least four watersheds to coordinate watershed activities, with representatives from each WCC agency forming an interagency team in each pilot watershed. In 1997, House Bill 2054, authorizing local watershed planning, was passed by the legislature and vetoed in large part by the governor.

⁷⁸ E.S.H.B. 2514, 55th Legis., House Bill Report (Wash. 1998).

⁷⁹ E.S.H.B. 2514, 55th Legis., (Wash. 1998).

Washington has also been developing an agency-wide watershed approach within its principal water quality and quantity management agency, the Department of Ecology (Ecology). Ecology's current program evolved from a new managerial framework, initiated in 1994, to improve protection of the state's water quality. This process, known as the Water Quality Management Area (WQMA) approach was designed to guide Ecology's Water Quality Program over a five year period. The approach was intended to improve coordination of water quality activities, service delivery, and protection and prevention activities in order to improve water quality statewide (McBride, 1998).

The framework created a five-year process which included scoping (year one), data collection (year two), data analysis (year three), technical report preparation (year four), and implementation (year five). For the approach, the state was divided into 23 WQMAs, and each WQMA was assigned a Water Quality Basin Lead to represent the basin in prioritizing water quality issues. While this approach worked well for point source issues, including discharge permitting, it did not deal effectively with nonpoint source problems.

During this same period, the agency established four Local Action Teams (LATs) in the Chehalis, Snohomish, Yakima and Nooksack basins. While they did not cover the whole state, the LATs are designed to get Ecology staff closer to the local issues and people necessary to gather information and solve local, water related problems (Slattery et al., 1997)

During the summer of 1997, Ecology reevaluated these water quality focused programs as well as the needs and objectives of the agency as a whole and decided to implement an agency-wide comprehensive watershed management process. This decision was driven, in part, by an Environmental Protection Agency TMDL lawsuit, the potential for listing salmon under the Endangered Species Act, and citizen expectations that Ecology would enforce current regulations. The proposed comprehensive watershed approach would integrate management of water quality, water quantity, and fish habitat.

The Comprehensive Watershed Management approach which resulted is similar in design to the smaller Water Quality Program approach. The state is divided geographically into watershed management areas (WMAs) and agency actions are organized on a flexible five-year cycle with one or more WMAs cycled in each year. Each step of the five-year process addresses specific evaluation, planning and implementation needs. Each WMA is assigned a team with, at a minimum, staff from the agency's water programs dealing with water quality, water quantity and fish habitat. A team leader coordinates activities and functions as Ecology's spokesperson on water issues when dealing with other government agencies, the tribes, or the local communities. Through the teams, the agency identifies problems, outlines strategies, and implements recommended solutions in cooperation with its community and local partners.

The approach is a coordinated and integrated effort to link science, permits, and other water pollution control and prevention activities to meet state water quality standards. Through it, the agency is creating a process for systematically issuing permits, assessing water quality conditions, focusing staff effort, and developing an improved basis for decision making in each WMA. As a management tool, the watershed approach

focuses resources by matrixing staff through time into a variety of tasks and areas of the state.

The agency-wide approach addresses both point and nonpoint source problems to improve protection of the state's water quality, water quantity, and fish habitat. Point source permits are scheduled within individual watersheds to be issued during the same year to ensure equity, consistency, and predictability. Nonpoint source pollution controls, the more difficult problem, are also being integrated into the process. According to the state:

[N]onpoint problems must be addressed through cooperative relationships with local partners. In order to facilitate these activities, issues must be targeted, partners identified and cultivated, and funding sources must be coordinated and focused to address mutually agreed upon priority needs.⁸⁰

4. Montana

Since the early 1990s, Montana has used watershed groups to address contentious natural resource management issues.⁸¹ The Bitterroot Watershed Forum, for example, was formed by a group of citizens in 1993 to address both ground and surface water quality and quantity issues in the Bitterroot River Basin. While the group receives funding or in-kind services from a variety of sources (e.g., Montana Department of Natural Resources and Conservation [DNRC], U.S. Geological Survey, and EPA), it remains a citizen lead initiative. Other groups, like the Upper Clark Fork River Basin Steering Committee, have been established by statute. In 1991, the Montana legislature at the request of a coalition of water users in the Clark Fork Basin, enacted Senate Bill 434.⁸² This legislation authorized the DNRC to appoint a 21-member Upper Clark Fork River Basin Steering Committee representing a broad range of stakeholders in the basin, and directed the preparation of a comprehensive basin plan.

In 1995, the Montana legislature was presented with several options to encourage and support local watershed organizations. Initially, the Conservation and Resource Development Division (CRDD) of the DNRC applied for a grant from the state legislature

⁸⁰ McBride, Ron. 1998. "An Overview of Washington State's Watershed Approach to Water Quality." Watershed Coordinator, Water Quality Program, Department of Ecology, Olympia, WA. Internet article: <<http://www.epa/owowwtr1/watershed/proceed/mcbride.html/>>.

⁸¹ This section was based in large part on an interview with Rich Moy, Montana Department of Natural Resource Conservation, January 20, 1998.

⁸² S.B. 434, 52nd Legis., (Mont. 1991); 1991 Mont. Sess. Laws Ch. 741; Mont. Code Ann. § 85-2-336 (1991).

to support local watershed organizations through its Conservation Districts.⁸³ This grant application was withdrawn due to the DNRC Director's concern that the Conservation Districts' historically narrow agricultural focus would unduly limit the breadth of stakeholder participation. However, the DNRC did request the introduction of House Bill 192 to authorize state agencies to assist, cooperate with, and encourage the formation of local watershed groups.⁸⁴ In addition, the Montana Watercourse Program, a project of Montana State University, applied for a grant from the legislature to provide educational programs to watershed groups around the state.

In the end, all of these initiatives failed, in part because they were viewed as unwarranted government interventions into local affairs. Many locals felt that there was already sufficient local and agency involvement in watershed level resource management without a formal system in place. The anti-government political climate was strong enough to obscure the fact that these initiatives actually intended to foster local participation in watershed management. Gary Fritz, the former Administrator of the Montana Water Resources Division, explained, "If [local interests in Montana] get the feeling that the process may be government-driven, it won't work."⁸⁵ Fritz, and other supporters of these initiatives, admitted that the watershed initiatives should have been formulated with the involvement of local communities from the beginning.

Despite failure of House Bill 192, 22 state and federal agencies signed a memorandum of understanding (MOU) in 1995 to encourage participation, interaction and coordination among the agencies with natural resource management responsibilities in the state, as well as to forge new partnerships with local communities and others interested in developing sustainable strategies for the management of Montana's watersheds and ecosystems (Montana Interagency Coordinating Group, 1995). The MOU provided legitimacy to the Montana Watershed Coordinating Council (MWCC), which includes signatories of the MOU as well as conservation districts and watershed groups. The MWCC is attempting to coordinate watershed activities in the state, to provide effective service to watershed groups, and provide educational outreach. Currently, the MWCC is creating a source book of watershed groups and an Internet homepage to facilitate this mission.

In June of 1997, the MWCC, in cooperation with the state's Department of Environmental Quality (DEQ) and the EPA, held a watershed workshop in which it began to examine the opportunities for coordinating watershed protection and restoration efforts and enlisting the participation of watershed groups in fulfilling its mandate under the

⁸³ The CRDD interacts with Conservation Districts in cooperation with the Natural Resource Conservation Service (formerly the Soil Conservation Service) of the USDA.

⁸⁴ H.B. 192, 54th Legis., (Mont. 1995).

⁸⁵ Interview with Gary Fritz, Director of the Montana Water Resources Division (May 8, 1995).

state's new TMDL legislation.⁸⁶ Earlier in the year, the Montana legislature passed a comprehensive TMDL bill designed to bring Montana's water resources into compliance with water quality standards as quickly as possible and with full public participation.⁸⁷ While Montana's TMDL legislation did not provide funds for on-the-ground projects, it, in combination with House Bill 2,⁸⁸ provided for nine full-time positions for TMDL development.

Watershed groups are expected to be involved in all phases of the DEQ's TMDL program. Under House Bill 546, the DEQ is to coordinate with a statewide TMDL advisory group, local conservation groups, and watershed groups to develop TMDLs for the 800 water quality impaired water bodies in Montana. Existing watershed groups will also be active in developing the ranking system for impaired water bodies and in implementing water quality plans (Lehman, 1998).

C. State Utilization of Watershed Groups

Each state that has embraced their own watershed approach to resource management has also committed, in some form or another, to recognizing and using watershed initiatives in fulfilling their mandate for resource management. With this commitment, a primary challenge facing state policy-makers and resource managers is to identify and utilize those strategies that most productively serve the ideological goals of the watershed movement, while respecting the unique circumstances that define the existing institutional framework within their states and particular watersheds.

The following pages highlight opportunities for states to support existing watershed groups and influence formation of new ones.

1. Supporting Existing Watershed Groups

As indicated in the discussion of individual state initiatives, many states have found a variety of ways—both on existing and supplemented budgets—to support watershed groups. Most such support can be categorized as financial assistance, in-kind services, and educational programs, which may or may not be correlated with actual participation of state agencies in watershed initiatives.

State financial assistance includes direct funding by legislatures, as in Montana's support of the Upper Clark Fork Basin Steering Committee, and state and federally appropriated money distributed through state agencies, as described for Washington and

⁸⁶ H.B. 546, 55th Legis., (Mont. 1997); 1997 Mont. Sess. Laws Ch. 541; Mont. Code Ann. 75-5-103.

⁸⁷ In the fall of 1996, industry, conservation groups and the Montana DEQ had begun to discuss developing TMDL legislation. In February 1997 a coalition of five Montana conservation groups filed a citizen suit against EPA under the Clean Water Act for Montana's failure to list all impaired waters and develop TMDLs (total maximum daily loads for problem parameters) pursuant to § 303(d) of the Clean Water Act.

⁸⁸ H.B. 2 55th Legis., (Mont. 1997); 1997 Mont. Sess. Laws, Ch. 551 (enacted).

Oregon. Except in the case of legislatively established groups, much state funding, like federal funding discussed earlier, is directed at specific projects. Project funding tends to be short-term and targeted to specific on-the-ground tasks. While field projects are an important part of a group's mission, groups are also seeking at least minimal, long-term funding from states to cover administrative, communication, and educational expenses (Mueller 1997).

As suggested in Section II, providing a neutral facilitator for the group may be a valuable role for state government. Providing funding for a facilitator, rather than simply loaning state agency personnel, may be essential in areas where the catalyst for the watershed group is a problem that has generated significant tension. Funding for monitoring of specific project installations and reevaluation of newly implemented management efforts is also needed, yet scarce.

There have been some creative suggestions for watershed initiatives to develop a long-term source of income. For example, a portion of point source discharge permit fees might be directed to watershed efforts or major nonpoint source industries such as agriculture, timber, and mining might be assessed a fee to go towards watershed efforts. Others have suggested assessing a "headwaters protection" fee on downstream urban water users whose source of domestic supply is the watershed. The intent is to fund work in the watershed and pass the costs on to those groups or entities that benefit from the environmental improvements.

Even when money is available and there is a commitment to supporting watershed initiatives there may be difficulty in getting state funding to specific groups. Even if the watershed initiative qualifies as a nonprofit organization, it may not be eligible for some direct funding. Among the criteria for awarding grants in California, for example, is the cooperation and support of local government and private landowners, thus encouraging broad-based efforts (State Coastal Conservancy, 1993).⁸⁹ Competitive grant programs administered by California's Wildlife Conservation Board and the State Water Resources Control Board 319 Program historically have awarded money only to local government entities. As a result, funding to watershed groups must be filtered through a government entity. A related problem is illustrated by a recent proposal to distribute over \$61 million in CALFED grant funds for ecosystem restoration. Only one project out of 50 (about \$277,000) was targeted for a watershed group. In this distributional scheme, only registered contractors could effectively compete for awards—a condition which eliminated most watershed groups from consideration.⁹⁰

Once funding is approved, bureaucratic delays in disseminating funds can also be an obstacle for groups who must then put the burden on contractors to wait 90 or 120 days for payment. Particularly with projects involving private landowners, a short time frame for money transfers may be important in effectively implementing projects.

⁸⁹ A 1993 summary of projects indicated that grants under the California Coastal Conservancy Program ranged from about \$25,000 to over \$1 million for planning and implementation projects.

⁹⁰ Internal CALFED working document entitled *Category III Funding Recommendations - Fall 1997*.

Whether or not direct funding is available, states can support watershed initiatives through in-kind assistance. Such assistance can be provided regardless of whether the state or its agencies are members of the particular group that needs support. Like direct funding, in-kind assistance can be used for on-the-ground projects or for the more mundane, yet necessary, administrative support. Perhaps the most common in-kind contribution to a group is technical assistance through which professional personnel in state agencies can help watershed groups to assess conditions, identify priorities, and implement projects.

Oregon's 1993 Watershed Health Program, described earlier, provides an extreme example of technical assistance support for watershed groups. Through this program, twenty-three positions, staffed out of the Oregon Department of Water Resources, were specifically authorized by the legislature to provide technical assistance on two pilot watersheds. Because the technical assistance positions were assigned to individual state agencies, the positions did not come out of agency position ceilings. The sheer level of state staff support apparently stimulated some fears of state domination, but the agency technical staff help was widely sought and used.⁹¹ A less ambitious program of technical assistance might make state agency staff available to serve on watershed group technical advisory committees or simply be available on an informal basis to give advice on issues such as watershed condition, water quality and potential program priorities.⁹²

A special focus for both state financial and in-kind assistance is educational programs for either the general public or for watershed group members themselves. Several states are attempting to educate people within basins about the particular basin or more generally about water management or resource management issues.⁹³ Typically, the states provide funding and sometimes personnel to coordinate or conduct the educational activities. At least one state assigns "extension service" type specialists to be available consultants to those within a basin.⁹⁴ Training sessions can be used to build

⁹¹ 1993 Or. Sess. Laws Ch. 765; Or. Rev. Stat. § 536.037 (1995).

⁹² In the Feather River basin, for example, the Regional Water Quality Control Board staff has been active in the Coordinated Resource Management group, and has served on many of the project-specific technical advisory committees.

⁹³ The Montana Department of Natural Resources and Conservation and Montana State University have supported an educational program called "The Montana Watercourse." The program is designed to provide water use and management education for teachers and "adult" education. One part of this adult program is focused on going into watersheds (upon request only) to set up tours and workshops. A resource guide to assist with teaching local watershed groups how to empower themselves to solve local watershed problems is being developed by program staff at Montana State University.

⁹⁴ The University Extension system in California has responded to the need in local areas to obtain assistance with topics that go beyond agricultural-related issues by placing "Resource Specialists" in several counties. These specialists are a modern day version of the

capacity among those living within a watershed to better understand and address their unique resource needs and concerns. Educational programs can also provide a forum for individuals sharing a common geographic area to come together and, in a relatively neutral forum, share their values, concerns, and desires for the basin.

Training opportunities for group participants can be important because the citizen members of the groups may lack the technical expertise to address certain problems they have identified in the watershed. With some training, group members might undertake a variety of functions, including oversight of projects and monitoring of outcomes. Because watershed groups must often undertake fundraising, training on fiscal matters may also be of value to group members.⁹⁵ Additionally, training to familiarize the participants with state policies and processes can be important if the group is interested in influencing agency policy and priorities. Only when participants in these processes understand why agencies follow certain practices can they effectively brainstorm alternatives for achieving objectives for their watersheds.

In many cases, the most efficient long-term way for states to provide financial assistance, in-kind services, and educational support to watershed initiatives is to encourage state agencies to actively participate in these efforts when so desired by other watershed initiative participants. While a requirement for mandatory participation can be created through state legislation or an administrative directive, over the long term, meaningful agency participation is probably best provided through institutional reforms that modify those incentives that direct agency behavior. Agencies can normally be assumed to take those actions that reward traditional constituencies, and that lead to increased agency budgets and staffing. The pursuit of coordinated and integrated resource management at the watershed level may not be consistent with these traditional incentives, unless reforms are implemented modifying budgeting practices, human resources decision-making, and other areas of the bureaucratic landscape.

2. Influencing Watershed Group Formation

While there is ample opportunity for states to support existing watershed initiatives, the states are also in a pivotal position to proactively influence the formation of new groups. States can either directly establish groups or simply encourage their formation through legislation or agency action. Short of actual formation of the groups, the states can also affect group structure or mission.

While any state government that utilizes watershed initiatives in some sense “recognizes” their validity, a few of the states afford groups formal recognition or status. Formal recognition by the state can provide the initiative with validation. Recognition can also foster a sense of legitimacy or pride which may promote stability in existing groups,

traditional extension agent. Their focus and expertise goes beyond agriculture to include a wide range of resource management issues of concern to rural areas today.

⁹⁵ The Washington Department of Ecology currently helps local communities to apply for grants and low-interest loans, intended to improve and protect water quality, through a series of workshops for local governments and Indian tribes. (Press release from Washington Department of Ecology, January 5, 1998).

and stimulate additional groups to form. From the state's perspective, official recognition can be used as a tool to assure that either new or existing groups from which it takes counsel meet certain minimum requirements.

A few states have specifically established or formally recognized existing initiatives through legislation. For example, in Idaho, legislative recognition was twofold, following development of a comprehensive plan by the broad-based Henry's Fork Watershed Council. First, in 1994 the Idaho legislature approved a basin plan developed by the Council. Later that same year, the legislature adopted a charter for the Council. In the Upper Clark Fork basin in Montana, recognition came in 1991 through Senate Bill 434, adopted at the request of a coalition of water users in the Clark Fork Basin. This legislation authorized the formal establishment of the Upper Clark Fork River Basin Steering Committee representing a broad range of stakeholders in the basin, and directed the preparation of a comprehensive basin plan.

Note that recognition of a watershed initiative by the state can potentially have the undesired side-effect of giving the appearance that the effort is a "governmental project," a characterization that can undermine popular support for many otherwise viable initiatives. Viable initiatives tend to be perceived as being local creations, even if state and federal agency participation and support is featured. Before taking any action designed to provide state recognition of watershed groups, it is important to ensure that this recognition is actually desired by those participating in the targeted efforts.

States have also provided for more broad based establishment of watershed groups. For example, in 1995, the Oregon legislature promoted establishment of groups by providing for local government recognition of locally organized, voluntary watershed groups.⁹⁶ The Oregon statute makes it clear that recognition of a council is a local, rather than state government decision, and does not specify the form that recognition might take (Oregon, 1996b). Recognition may vary from a simple letter of recognition or county resolution to a more formal order of the county council which defines membership, duties, legal frameworks, and so on, as done in Tillamook County. The Idaho code also provides for establishment of watershed advisory groups, but specifies that the groups may be established by the director of the Idaho Department of Health and Welfare to advise the department on water quality issues.⁹⁷ New Mexico's efforts to encourage groups to form has been more narrowly focused on the development of regional water plans.⁹⁸ Through this planning process, interests located within and concerned about a specific geographic area have been provided with funding incentives to form water planning groups.

Less formal state recognition of initiatives, even that which does not imply any endorsement of groups, may also influence formation of groups and is increasingly available through inventories maintained by a state agency or university. In California,

⁹⁶ H.B. 3441, 68th Legis., (Or. 1995); 1995 Or. Sess. Laws, Ch. 187; Or. Rev. Stat. §§ 541.355 (1995).

⁹⁷ Idaho Code § 39-3616 (1997).

⁹⁸ 95 H.B. 377, 38th Legis., (N.M. 1987); 1987 N.M. Sess. Laws, Ch. 182; N.M. Stat. Ann. §§ 72-14-43, -44 (1987).

a number of agencies and groups⁹⁹ have joined together to gather information on more than 1,000 conservation, mitigation and restoration projects being developed and implemented throughout the state, and to report these data via printed copy and an Internet database know as the Natural Resource Project Inventory (NRPI).¹⁰⁰ The database includes both project descriptions and information on the watershed groups which coordinate many of the projects. On a smaller scale, Montana is developing an Internet database of watershed groups through its Department of Natural Resources Conservation. The database describes and provides contact persons for about 30 watershed groups operating in the state.¹⁰¹

3. Influencing Group Characteristics

In addition to influencing the formation of groups, states can also affect specific initiative characteristics. Typically states attempt to influence group composition or areas of operations (the extent of their watershed group boundaries). While states that want to influence group characteristics may not go so far as to refuse to participate in watershed groups that do not meet their criteria, such non-complying or non-recognized groups may not be eligible for certain state funding or technical assistance or be as influential in the state's water management program.

a) Membership of Groups

Special mention is made of the state role in affecting the membership of watershed-based efforts because it is an issue that has become a touchstone for debate about proposed watershed programs in some states. Furthermore, program and statutory modifications to address this issue are not uncommon. A lack of membership requirements may mean that some interests are excluded from the watershed effort, and this has been noted with concern, particularly by national environmental organizations (McCloskey, 1996). Similarly, state or local government control over membership can be met with equal suspicion.

In Oregon, 1995 draft legislation would have put counties in the central position of designating membership. However, there was a fear that this process would be dominated by political power structures, at least in rural areas of the state. In the end a compromise was reached. Oregon's watershed legislation encourages local government groups to form voluntary watershed councils and the Act provides some basic requirements for the composition of a council, but the Act makes it clear that anyone may

⁹⁹ Supporters of the data base include signatories of the California Biodiversity Council, the University of California Cooperative Extension, the Coordinated Resource Management Plan Council, and the Klamath Watershed Coordination Group.

¹⁰⁰ The NRPI web site (<http://ice.ucdavis.edu>) is an expansion of previous inventories including the California Watershed Projects Inventory, a multi-agency, state-federal cooperative effort to establish a database on watershed conservation projects in the state. (California Watershed Projects Inventory (CWPI), web site is at http://ice.ucdavis.edu/California_Watershed_Projects_Inventory.>)

¹⁰¹ [<http://www.montana.edu/wwwrc/docs/links/wtshedshtml>](http://www.montana.edu/wwwrc/docs/links/wtshedshtml).

form a council, not just government groups.¹⁰² The Act does not specifically dictate who may form the group, nor mandate membership on the council, but groups shall include a “majority of local residents, including local officials.”¹⁰³ The Act also provides that the Governor’s Watershed Enhancement Board (GWEB) may consider the make-up of the council in evaluating requests for state assistance. Generally, the GWEB will consider whether the council “reflects the interests of the affected watershed and the potential to protect and enhance the quality of the watershed in question.”¹⁰⁴ Grant applications to the GWEB may be filed by any person, or state or federal agency, or tribe, as well as by a watershed council or political subdivision of the state. However, it is clear that state water management strategies will be based on a watershed management program that “relies on the establishment of voluntary local watershed councils comprised of residents, state and federal agency staff, members of federally-recognized Indian tribes, and other citizens interested in the benefit of watersheds.”¹⁰⁵

In Oregon, a council may be a new or existing organization, as long as it represents a balance of interested and affected persons, and shares a high level of citizen involvement in the planning and implementation program. The legislation lists ten examples of interests which might be represented, including: local and regional boards, commissions, districts and agencies, tribes, public interest groups, private land owners, industry representatives, academics and scientists, and representative of federal and state agencies. Local government officials may determine whether to participate in the voluntary formation of local watershed councils. Where multiple local jurisdictions are involved, they shall “together determine their respective roles and the appropriate method for appointing members.”¹⁰⁶

Washington’s 1997 House Bill 2054, passed by the legislature but vetoed in large part by the governor, is an example of proposed watershed management legislation with highly specific requirements for membership, at least for watershed planning groups. A portion of the bill that was vetoed required: 1) mandatory county and city representatives; 2) one member per county representing public water supply utilities, appointed jointly by all utilities in that county; 3) one member representing all basin conservation districts, appointed jointly by those districts; 4) nine members representing various special interest groups, selected by counties and cities jointly; 5) four members representing the general

¹⁰² Or. Rev. Stat. § 541.350(7) (1995). A watershed council is “a voluntary local organization designated by a local government group convened by a county governing body to address the goal of sustaining natural resource and watershed protection and enhancement within a watershed.” Councils must represent a balance of interested and affected persons within the watershed.

¹⁰³ Or. Rev. Stat. § 541.388(2) (1995).

¹⁰⁴ Or. Rev. Stat. § 541.388(1) (1995).

¹⁰⁵ Or. Rev. Stat. § 541.384 (1995).

¹⁰⁶ Or. Rev. Stat. § 541.384 (1995).

citizenry, at least two of whom must be water rights holders; 6) one representative from each tribal government holding land and fishing rights located within the watershed management area; and 7) one representative from the Departments of Ecology, Fish and Wildlife, and Transportation (with one vote collectively between the three agencies). In addition, members could have voted to add up to five additional members representing other interest groups and the general citizenry. In selecting special interest group representatives, counties and cities were to “consider” hydroelectric and thermal power producers, industrial water users, general businesses, agriculture, forestry, recreation, environmental, and commercial and recreational fisheries interest groups. The objective in choosing representatives was to ensure that economic interests in the management area are represented, and take care to provide a reasonably balanced representation of in-stream and out-of-stream interests in water. Specific procedures on the allocation of votes among members and other voting procedures were also spelled out in the bill.

Washington’s new legislation, Engrossed Substitute House Bill 2514, is compromise legislation following the governor’s veto of the majority of House Bill 2054 and his comments that House Bill 2054 did not provide sufficient flexibility to accommodate a wide array of watershed planning needs. Under House Bill 2514, the membership of the watershed planning groups is more flexible, although initiation of the process is dictated by statute.¹⁰⁷ Watershed planning may be initiated for one Water Resource Inventory Area (WRIA) or a multi-WRIA area. Planning units must be initiated jointly by all counties within the WRIA(s), the largest city or town within each WRIA, and the water supply utility obtaining the largest quantity of water from each WRIA. If these entities decide to proceed with a planning process, they must invite all tribes with reservation lands within the management area to participate. These entities, and any tribes which accept an invitation to participate, constitute the “initiating governments” for the planning process.

The initiating governments must then work with state government, other local governments in the management area, and affected tribal governments in developing a planning process and the final composition of the planning unit. In developing a proposed composition of the planning unit, the initiating governments must provide for a wide range of water interests. The number of state agency representatives on the planning unit is determined by the initiating governments in consultation with the governor’s office, but state agencies may organize and agree upon their representation.

New Mexico's regional water planning legislation and implementing guidelines do not dictate membership except for the tribes, but set some criteria to ensure efforts are made to effectively include in the planning process all affected interests. Interstate Stream Commission guidelines require proof that "reasonable and diligent efforts have been made to reach the public so as to invite, value and reflect public comment."¹⁰⁸ More specifically, regional plans must show that stakeholders have been identified and an effort

¹⁰⁷ E.S.H.B. 2514, 55th Legis., (Wash. 1998).

¹⁰⁸ New Mexico Interstate Stream Commission, REGIONAL WATER PLANNING HANDBOOK, p. 12. The legislation requires the “use of an appropriate planning process.” N.M. Stat. Ann. § 72-14-44 (C) (2) (1987).

made to involve them in the planning process. Plans are to include a list of those entities contacted, along with corroboration of their support or refusal to participate (Handbook, 1994).

Where a state does not dictate the membership of an initiative or influence it through funding, it can at least indirectly influence membership by educating the public on the value of broad-based representation. The Napa County Resource Conservation District (District), for example, conducts workshops to develop an effective process for interest-based resource management. In those workshops, the District teaches that an interest cannot be denied participation. The District's approach is to bring people to an understanding that realizing one's own interests requires recognizing others' interests and helping to accomplish the other interests as well.

b) Watershed Boundaries

States have also attempted to influence the boundaries chosen by watershed initiatives. These efforts can be highly worthwhile from an administrative standpoint, particularly if the state is attempting to fully integrate advice from groups into an existing regional resource management process.

In Oregon, watershed management legislation includes a hydrological definition of watersheds as "the entire land area drained by a stream or system of connected streams such that all stream flow originating in the area is discharged through a single outlet."¹⁰⁹ However, the legislation does not direct any state agency to determine exact boundaries for watershed groups. Instead, it allows local governments to voluntarily initiate and implement management programs for protection and enhancement of watersheds within their jurisdiction. For cases where watershed boundaries cross multiple jurisdictions, the legislation again gives the state a back-seat role and recommends that "the affected local governments together determine their respective roles."¹¹⁰

Washington is very specific in determining boundaries for watershed planning groups under its new legislation. Under the Water Resources Act, which directed the Department of Ecology to develop a comprehensive state water resources program, the agency divides the state into sixty-two WRIsAs named for the major watersheds and subwatersheds in the state.¹¹¹ Under Engrossed Substitute House Bill 2514, planning

¹⁰⁹ Or. Rev. Stat. § 541.350(6) (1995).

¹¹⁰ Or. Rev. Stat. § 451.384(3) (1995).

¹¹¹ Wash. Rev. Stat. Ann § 90.82.005 (1998). In the early 1960s, the Department of Ecology delineated 62 WRIsAs. By the mid 1990s, most state agencies used either the WRIsAs or some combination or subdivision of them. In 1994, the Washington Watershed Coordinating Council recommended that the WRIsAs be adopted as the initial basis for defining watersheds. The Council had been charged by E.S.H.B. 2741, the legislation that created the Council, to recommend a definition of the geographic unit to be used for watershed planning and implementation (Washington Department of Ecology, 1994a and 1994b).

units can be established for either a single WRIA or multiple WRIs, where appropriate, but not an area less than a WRIA.¹¹²

Other states, such as Utah and Arizona, have designated watershed management areas based on hydrologic criteria. While there is no requirement that existing or new watershed groups confine their activities to designated boundaries, both states plan to encourage formation of groups to work with the states on management of the specific areas.

New Mexico's approach is distinguished by the freedom given to local groups to designate planning unit boundaries. Boundaries for the regions or watersheds were not dictated by the legislation or by the implementing agency. Rather, regional boundary identification was left to the local groups, to be done on the basis of common political, economic, and hydrologic interests.¹¹³ By 1995, twenty-two regions had applied for planning grants under the legislation. These regions are a mix of hydrologically-based and politically-based areas. A lack of designated regional or watershed boundaries, however, has left some areas of the state "orphaned."¹¹⁴

¹¹² E.S.H.B. 2514, 55th Legis., (Wash. 1998).

¹¹³ N.M. Stat. Ann. § 72-14-44 (1987).

¹¹⁴ Moore, Lucy. 1995. *A Case Study—Regional Water Planning in New Mexico: An Opportunity for Citizen Involvement in State Government*. Western Network, (unpublished paper), p. 3. The author provides the example of the Estancia Basin, in central New Mexico, which was not included in any of the regional planning areas and did not develop their own planning effort.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Preliminary Advice To Policy-Makers: Building Upon Success

1. Reasons for Optimism

The initial effects of the modern watershed movement have been quite positive on two levels. From the standpoint of actual resource management, the watershed movement has challenged resource users and managers to focus less on issues of legal rights, procedural requirements, and jurisdictional delineations, and more on issues directly related to on-the-ground problem-solving. In a staggering number of cases throughout the West, this highly pragmatic and creative focus has reinvigorated parties weary from years of unproductive and bitter interactions, and has created an environment conducive to trust-building and experimentation. From the perspective of resource governance, the benefits of the watershed movement are equally significant, promoting decision-making in processes that are open and transparent, and in an environment respectful of divergent interests and values. By promoting processes that are democratic and outcomes that are efficient and practical, the watershed approach is clearly an improvement over past strategies of resource governance and management and their associated by-products of governmental fragmentation, decision-making gridlock, and resource management “train-wrecks.”

As the descriptions of state programs illustrate, state watershed approaches differ widely and are rapidly evolving. While some states have taken an active interest in facilitating the formation of watershed-based resource management efforts, groups in many other states are left to largely develop on their own, occasionally receiving some form of state recognition or support only after they have become established. In many places, states are developing formal mechanisms to facilitate cooperation among government agencies and other concerned parties along watershed lines, while in other states, new patterns of interaction and cooperation are being pioneered on an ad hoc basis. In this environment of diversity and constant change, one—and perhaps only one—West-wide trend is resoundingly clear: the state role in watershed initiatives is growing, and growing rapidly.

2. Some Cautionary Notes and the “Do No Harm” Rule

As state policy-makers become more aware of the benefits of integrated watershed management and increasingly eager to develop policies and programs to encourage further progress in this area, it becomes necessary to temper this understandable enthusiasm with several cautionary notes. Perhaps most important is the observation that not every watershed group is effective or otherwise worthy of state support. The overall success of the watershed movement can hide the fact that some individual watershed initiatives fail to satisfy modern normative principles of open participation and holistic resource management. Still other groups may simply be overwhelmed by the nature of the resource management problems they choose to address. The reliance of watershed initiatives on consensus decision-making may encourage the selective exclusion of potentially dissenting opinions and can encourage “lowest common denominator” decision-making.

While these problems may not be common in watershed efforts, many initiatives have experienced problems and have had to radically reinvent themselves in occasionally unsuccessful attempts to maintain momentum and viability. This is not surprising. Much in the way that a thriving economy features many unhealthy and ultimately unviable businesses, the strength of the watershed movement is, in large part, due to the high number of experimental and “risky” ventures, some of which produce dramatic results while others fail. Just as the forces of free enterprise reward success and punish failure, policy-makers with limited resources must be prepared to only encourage and reward those efforts that meet specific standards of success.

In addition, the success of most watershed initiatives is largely derivative of the informal and flexible nature of these efforts, qualities that stand in direct contrast to the uniform and rigid qualities normally associated with government programs. Despite the essential involvement in, and support of, watershed initiatives by a diversity of government bodies, watershed initiatives thrive by operating outside of normal government channels, and participants can be openly skeptical, even fearful, of proposals that promise to bring more formality, structure, or bureaucracy to their efforts (Kenney, 1997). This is perhaps best illustrated by examining the issue of formal authority, something watershed initiatives rarely have and even more rarely want. Policy-makers wishing to build upon the initial success of the watershed movement should heed this widely articulated desire to not transfer formal authorities to watershed initiatives, as this would undoubtedly require the initiative to follow rigid guidelines associated with participation and decision-making rules, and could disrupt the delicate chemistry of these multiparty efforts by eliminating the practical requirement of consensus decision-making.

An additional and related consideration comes from the observation that each watershed effort is a unique compilation of participants, financial and technical resources, processes, and organizational structures, imposed upon a watershed’s particular blend of legal, cultural, political, and historical traditions, physical qualities, and resource management problems. In trying to assist watershed initiatives, policy-makers must remember that one size does not fit all, and that different watershed initiatives will require different types and levels of support. Many can likely be best aided by being ignored.

For example, some participants associated with the Applegate Partnership, a community-based group concerned with forestry issues in southwest Oregon, felt that the effectiveness of community-led problem-solving efforts has been partially hindered since the community was singled-out for praise as a model of innovation and success in the Northwest Forest Plan. Under the spotlight, many participants became less willing to consider innovative and risky problem-solving approaches and to openly discuss issues and alternative solutions (Shannon et al., 1995).

Similarly, it is inappropriate to assume that a program that works well in Oregon or Washington will work equally well in Nevada or New Mexico, as each state has its own unique institutional and physical qualities. The same is true for different types of resource management problems: e.g., while many watershed initiatives excel at addressing issues relating to regional water quality or environmental restoration, very few have successfully addressed issues relating to water supply. This is likely due to the “positive-sum” nature of benefits associated with environmental restoration, as compared

to the frequently “zero-sum” nature associated with water reallocation—the dominant modern strategy for addressing water supply issues.¹¹⁵ As Benson observes, the politics of water reallocation can discourage cooperative action: “It is easier for all concerned to focus on somewhat less controversial matters, such as installing fish screens, planting trees along riverbanks, and keeping cattle away from riparian areas.”¹¹⁶

Each type of resource management problem, in each particular watershed, presents a different challenge to problem-solvers in terms of crafting incentives and mobilizing the resources to act. Whether or not a watershed group will be effective in a particular situation is largely determined by how well the participants can tailor organizational structures and processes to the particular demands of the particular problem. Any program—no matter how well intentioned—that limits the flexibility or creativity of these efforts is as likely to be a liability as an asset to problem-solvers. Given that the watershed movement is, by most accounts, alive and well, policy-makers should consequently be cautious about promoting ambitious reforms.

3. Defining the Future State Role

While these considerations strongly suggest that significant and immediate state reforms are not necessarily required or justified to continue the early successes of the modern watershed movement, there are several actions that the western states should take to accentuate and build upon the tremendous potential of watershed-based resource management. As shown earlier, states are frequent and valued participants in many watershed initiatives, bringing an increasing level of technical expertise, management authority, and occasionally financial resources to a variety of water-management issues. While these are extremely important contributions that should be maintained, they are frequently not the most important assets that states bring to western watershed initiatives. In many initiatives, the primary challenge facing participants is to improve the historically adversarial and unproductive interactions between (and among) resource managers—particular federal actors—resource users, local communities, and interest groups. This is particularly evident in those watersheds featuring a strong federal presence as either landowner or regulator, often in response to endangered species or

¹¹⁵ A “positive sum” solution is one in which the total benefits (to all parties) exceed the total costs. The most important type of positive sum solution is known as a Pareto optimal solution, which is one in which all parties either benefit or are at least made no worse off by the action. A “zero sum” solution is one in which benefits to one or more parties are matched by an equal amount of costs borne by one or more parties. The priority tenet of prior appropriation ensures that many western water conflicts are zero sum in nature, in that any gain in supply by one party must be balanced by a loss in water supply by another party. In contrast, efforts to improve water quality or species health have the potential to create widely dispersed benefits that more than offset the widely disbursed costs, thereby creating a positive sum outcome. Consensus decision-making processes are highly reliant upon finding positive sum—particularly Pareto optimal—solutions.

¹¹⁶ Benson, Reed. 1996. “A Watershed Issue: The Role of Streamflow Protection in Northwest River Basin Management.” *ENVIRONMENTAL LAW*, 26(1): 175-224, p. 2.

water quality issues, and in those situations where issues of water allocation—still the primary focus of state regulatory activity—are subordinate to more general objectives of environmental restoration and community stability. In these situations, states can often be most useful by taking on the role of an “intergovernmental lubricant,” encouraging, supporting, and facilitating innovations in the processes and structures through which transboundary and multiparty problem-solving efforts occur. It is this role of facilitator that is especially needed in regions and subject matters plagued by the modern problems of decision-making gridlock and governmental fragmentation which feature water management regimes struggling to accommodate new public values in water along with demands for greater local involvement in decision-making. As an intermediary level of government in a highly complex intergovernmental system, states are particularly well-suited to this role.

B. Recommendations for Future Action

In order to build upon existing patterns of success, seven general and highly related recommendations are offered to guide state policy-makers.

1. Legislative and administrative reforms should be pursued to bring an integrated geographic focus to all facets of state natural resources planning and management.

The watershed movement is largely a response to programs, laws, and other policies that have traditionally failed to bring an adequately holistic focus to natural resources management. Many of these deficiencies continue today, as evidenced by arrangements that fail to effectively address the connections between surface water and groundwater, water supply and water quality, land and water management, and between natural resources management and broader cultural and socioeconomic objectives. A variety of state legislative and administrative reforms should be pursued to address these fundamental institutional inadequacies.

2. State agencies with water-related responsibilities should be vested with mandates and bureaucratic incentives that encourage their participation in, and support of, watershed initiatives.

An appropriate foundation for state support of watershed initiatives is a clear state policy articulated to state agencies in favor of integrated water governance and management at regionally-defined scales. Such a policy statement, articulated either legislatively or administratively, provides a basis upon which more sophisticated watershed programs can evolve in response to public demands and acquired knowledge. This policy would also provide a basis for resolving disputes between state agencies when one agency has evolved a more sophisticated watershed-based program (e.g. one of the

many western water quality control agencies) while an agency with overlapping jurisdiction has not (e.g. many wildlife agencies, transportation departments, etc.).

To ensure that this evolution occurs as directed, it may be necessary to supplement this pro-watershed state mandate with revised bureaucratic incentive structures. Existing internal reward structures, budgetary processes, personnel systems, and so on, may all have to be modified to overcome bias against the adoption of new procedures. Ultimately, the most useful and long-term inducement to encourage agency participation in watershed initiatives will come from the agency's enhanced ability to achieve resource management goals operating through watershed initiatives, as compared to utilizing their current problem-solving tools.

3. Mechanisms that encourage or facilitate improved channels of communication and coordination among (and within) the various state agencies that interact with watershed initiatives should be provided through legislation or administrative policy.

One of the central challenges of integrated resource management is to provide mechanisms through which a diversity of managers and other stakeholders can, and will, interact. This is a major function provided by watershed initiatives—most of which can offer at least one example of how this simple function was able to solve a problem or resolve a dispute long perpetuated by inadequate communication. In order to take full advantage of this opportunity, it is important that the individual state agency representatives participating in specific watershed initiatives be in communication with each other and, perhaps more importantly, with other personnel along the bureaucratic hierarchy of their own agency. Only in this way can individual state agencies, and state government as a whole, take a coherent watershed approach to resource management as well as assume a leadership role in facilitating the coordination of other levels of government with the private sector.

Policy-makers should pursue procedural and structural reforms necessary to build these linkages and to disseminate knowledge gained from these exercises. States may need to provide training to agency staff to facilitate their participation in conflict management and collaborative decision making.

4. As part of their overall watershed management approach, states should consider providing a legislative and/or administrative framework to encourage, in a broad way, the formation of new watershed initiatives.

Many western states are discovering that watershed initiatives can provide a valuable alternative to more traditional mechanisms of resource problem-solving. This finding is encouraging, as a real lack of effective problem-solving tools often plagues efforts at resource management—especially those designed to address multiparty and

transboundary problems. States should maximize the advantage of this alternative by providing a framework and incentives to encourage an accelerated proliferation of watershed initiatives. This recommendation is directed more toward the many arid and semi-arid regions of the West than to the Pacific Northwest, as the former regions generally have much lower concentrations of watershed initiatives.

5. State funding programs for watershed efforts should be established where possible, and should be broad enough to include support for organizational, administrative, educational, and on-the-ground activities of selected initiatives.

Even though most watershed initiatives are highly reliant upon voluntary efforts, they do incur costs and typically require some type of outside funding. These funds can come from a variety of sources, including federal, state, and local agencies, conservation districts, nonprofit organizations, corporations, and citizens. Federal funding, provided by a variety of grant programs administered by the relevant natural resource agencies, is the most common major contributor to watershed efforts, although these funds appear to be becoming increasingly unavailable for many initiatives. Funding for administrative purposes, such as the employment of a watershed coordinator, are often particularly difficult to secure. Consequently, state programs that make funding available to watershed initiatives in quantities and time-periods sufficient to support comprehensive problem-solving efforts can be a tremendous asset to the watershed movement.

6. States should establish general criteria and standards that watershed initiatives must meet in order to obtain the participation of state agencies, to compete for state funding, and to achieve state recognition.

At a minimum, these criteria should require all efforts to pursue goals in compliance with federal and state laws, to feature rules of open participation and to strive for broad representation of all relevant interests, and to promote and utilize sound science and planning processes in the development of management strategies. To the extent possible, these criteria should be stated succinctly, and in a manner that will not unduly constrain creativity. More specific criteria in these and other subject areas should be avoided, to the extent possible, in order to preserve a high level of flexibility in watershed initiatives while minimizing bureaucracy.

7. Reforms that transfer the authority, responsibility, or accountability for resource management to watershed initiatives should not be pursued.

The overwhelming majority of watershed initiative participants and supporters, as well as watershed initiative critics, agree that it is critically important not to formally transfer the authority to make and enforce management decisions to watershed initiatives. Watershed initiatives are generally effective vehicles for decision-making and implementation, but these activities are accomplished using the voluntary exercise of management authorities held independently by participating members and jointly utilized in accordance with a strategy developed through consensual agreement. Any deviation from this *modus operandi* is likely to significantly disrupt the characteristic dynamic that makes watershed initiatives an usually productive forum for candid interactions and creative problem-solving.

These general recommendations should prove useful in efforts to expand state programs encouraging the proliferation and use of watershed initiatives. While many of these recommendations can be pursued individually and incrementally, states eager to take a more ambitious approach to watershed management are encouraged to develop comprehensive programs, perhaps similar to the highly acclaimed Oregon model, but tailored to the state's unique institutional and physical needs.

V. LITERATURE CITED AND INTERVIEWS

The information presented in this report was taken from a variety of sources, and is based on research performed over a four-year period for three distinct watershed-related research projects. Information drawn from published sources has been noted in the text, and full bibliographic details are provided below as literature cited. Specific citations, where relevant, are given in the text and associated footnotes. With the exception of specific quotes, information taken from personal interviews is generally not attributed to particular individuals in the text since interview transcripts have not been reviewed by interviewees and will not be published as part of this research, and since this report primarily focuses on those ideas articulated by the majority of interviewees and reviewers—rather than a single respondent. Also, in a few cases, individuals presented ideas and comments only on the condition that their names would not be directly associated with particular ideas. The Natural Resources Law Center is grateful to the interviewees for their insights and cooperation in this research.

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B. Interviews and Personal Communications

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The following individuals were interviewed by Natural Resources Law Center researchers and contractors, primarily Frank Gregg, Teresa Rice, Doug Kenney, and Kathryn Mutz as part of research conducted for this project.

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Beck, Ray. Chief, Division of Conservation and Resource Development Division, Montana Department of Natural Resources and Conservation. Interview on May 8-9, 1995.

Bonomo, Tom. District Manager, Prescott National Forest, U.S. Forest Service. Interview on March 4, 1997.

Bowker, Dennis. Napa County Resource Conservation District. Interview on January 9, 1996.

Brand, Peter. California Coastal Conservancy. Interview on January 11, 1996.

Brandow, Clay. Watershed Specialist, California Department of Forestry and Fire Protection. Interview on January 11, 1996.

Brandt, Darren. Idaho Division of Environmental Quality. Interview on October 10, 1997.

Broetzman, Gary. Project Manager, Colorado Center for Environmental Management. Interview on January 6, 1996.

Carelli, Chuck. State Watershed Advisory Council, representative of Washington Department of Ecology. Interview on February 2, 1996.

Cawley, Ken. Consultant, Meadowbrook Conservation Associates. Interview on January 10, 1996.

Creager, Clayton. Consultant, Tetrotech. Interview on September 8, 1997.

Coulter, Ken. Nonpoint Source Section, State Water Resources Control Board. Interview on September 4, 1997.

Fliniau, Holly. Remedial Project Manager, Clear Creek Colorado, U.S. Environmental Protection Agency. Interviews on June 6, 1994, and January 14, 1997.

Flint, Richard. Watershed Resources Development Coordinator, California Department of Fish and Game. Interview on January 10, 1996.

Fritz, Gary. Director, Division of Water Resources, Montana Department of Natural Resources and Conservation. Interview on May 8, 1995.

Galloway, Erik. Program Manager, Evaluation and Planning Section, Surface Water Quality Bureau. Interview on October 8, 1997.

Gorbach, Chris. Planning Team Leader, U.S. Bureau of Reclamation. Interview on July 14, 1994.

Gourley, Chad. Former watershed coordinator, Lower Truckee River Restoration Steering Committee. Interview on March 7, 1997.

Graf, David. Coordinator, South Platte Forum. Interview on January 16, 1997.

Graham, Bill. Washington Rivers Council. Interview on May 10, 1995.

Grande Pre, Chuck. Wildlife Manager, Colorado Division of Wildlife. Interview on January 17, 1997.

Hasty, Ed. California State Director, U.S. Bureau of Land Management. Interview on May 8, 1996.

Hathaway, John. Senior Environmental Engineer, Water Quality Division; Arizona Department of Environmental Quality. Interview on August 29, 1997.

Heiman, Dennis. U.S. Environmental Protection Agency; California Regional Water Quality Control Board. Interview on January 10, 1996.

Henley, Russ. Policy Analyst, Strategic Planning Group (California). Interview on January 12, 1996.

Hicks, Larry. Resource Coordinator, Little Snake River Conservation District. Interview on March 10, 1997.

Hicks, Mark. Program Manager, South Fork Dialogue Group; El Dorado County Conservation District. Interview on March 4, 1997.

Hock, Jeff. Manager, Waterbody Recovery and Assessment Team, Watershed Management Program; Alaska Department of Environmental Conservation. Interview on August 27, 1997.

Holmes, David. Colorado Department of Health, Division of Water Quality. Interview on May 8, 1996.

Hoshovsky, Marc. Biodiversity Conservation Planner, California Department of Fish and Game. Interview on March 11, 1997.

Huber, Joy. Former Executive Director, Washington Rivers Council, currently of River CPR. Interviews on February 1, 1996 and June 4, 1998.

Ingman, Gary. Montana Department of Environmental Quality. Interview on September 12, 1997.

Johnson, R.W. Chairman, Rio Puerco Watershed Committee. Interviews on July 14, 1994, and February 26, 1997.

Kaffer, Dan. Liaison between the U.S. Natural Resources Conservation Service and the Nevada Division of Environmental Quality. Interview on July 15, 1994.

Kellogg, Gregory. U.S. Environmental Protection Agency, Alaska. Interview on August 27, 1997.

Kreag, Becky. Associate Director for Administration, Oregon Department of Water Resources. Interview on April 25, 1995.

Laurie, Tom. Intergovernmental Liaison, Washington Department of Ecology. Interview on June 16, 1998.

Lorenzato, Stefan. California State Water Resources Control Board. Interview on January 11, 1996.

Manning, Van. Manager, Salem District Office, U.S. Bureau of Land Management. Interview on April 25, 1995.

Marlow, Ronald. Water Management Engineer, U.S. Natural Resources Conservation Service. Interview on March 10, 1997.

Martinez, Eluid. New Mexico State Engineer. Interview on April 6, 1995.

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Moore, Lucy. Director, Water Dialogue Project, Western Network. Interview on April 6, 1996.

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Norbeck, Carl. Watershed Coordinator, Clear Creek Watershed Forum. Interview on January 16, 1997.

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Rice, Bob. Oregon Department of Water Resources. Interview on April 24, 1995.

Robinson, Rob. Reclamation Specialist, U.S. Bureau of Land Management. Interview on January 8, 1996.

Russell, Carol. Animas Team Leader, U.S. Environmental Protection Agency. Interview on January 7, 1997.

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Sheehan, John. Executive Director, Plumas Corporation (California). Interview on January 10, 1996.

Simms, Sue L. Watershed Coordinator. Washington Department of Ecology. Letter dated March 17, 1998.

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Smitherman, Jim. Branch Supervisor, Nevada Division of Environmental Protection. Interviews on March 6, 1997, July 22, 1997 and November 21, 1997.

Soscia, Mary Lou. Program Manager, Oregon Watershed Health Program. Interview on April 24, 1995.

Stine, Raymond G. California Department of Forestry and Fire Protection. Interview on January 10, 1996.

Thomas, Craig. Ph.D. Candidate, University of California-Berkeley. Interview on January 31, 1996.

Thompson, Dick. Chairman, Verde Watershed Association. Interview on July 7, 1994.

Trapani, Jude. Project Coordinator, Lemhi Model Watershed Project. Interview on March 3, 1997.

Walker, Steve. Member, Lower Truckee River Steering Committee; U.S. Natural Resources Conservation Service. Interview on July 7, 1994.

Wall, Jerry. Soil Scientist, U.S. Bureau of Land Management. Interview on February 25, 1997.

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Wilcox, Jim. Coordinator, Feather River Coordinated Resource Management Group; Plumas Corporation. Interviews on January 10, 1996, and March 4, 1997.

Wolfe, Ellen. Program Director, Montana Watercourse Program. Interview on May 8, 1995.

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In addition to the interviewees listed above, several other individuals have also provided valuable support of the Center's watershed initiatives research in many ways, including participation in Center sponsored workshops addressing watershed issues, as reviewers of Center publications, and more generally as information sources on specific watershed initiatives. The Center greatly appreciates this assistance. While it is impossible to recognize all of these contributors, many are listed below:

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