STATE WATERSHED STRATEGY GUIDEBOOK

A Report by the

WESTERN STATES WATER COUNCIL

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Preface

Fundamental changes are taking place in water management in the West. There is increasing emphasis on watersheds as units for solving an array of resource problems. Increasingly, neighbors are joining together, sometimes reaching across governmental unit boundaries, and finding practical solutions to problems ranging from water pollution, to soil conservation, to fishery protection, to water supply, attempting to satisfy several interests at once. Policy makers are seeing the potential for broader use of the watershed for planning and problem solving.

Turning to the watershed approach is in large part a response to the recognition of the increasingly complex nature of water resource challenges in the West. For example, as growing cities exercise more influence on water policy, public support is increasing for instream values -- water for recreation, fish and wildlife habitat, and aesthetic values. In this context, there is increased focus on the interrelationships between water quality and water use. Support for instream values, however, comes relatively late. Most of the West's water has already been allocated. Further, providing new water supplies through the construction of large storage projects is not generally viewed as an option. Preventing water quality degradation from municipal and industrial "point source" (end of pipe) discharges has improved significantly, but pollution from diffuse "non point" discharges remains a significant challenge. Protection of ground water is becoming of increasing concern, as most drinking water in the West comes from ground water sources.

To solve the region's water challenges, many observers urge water conservation to achieve greater efficiency in the use of existing supplies and reallocation, primarily from agricultural to urban uses, and, to a lesser extent, to support instream values. But, while providing appropriate incentives for conservation and using water markets to transfer water to higher valued uses makes good sense, applying these tools to help solve the complex water supply problems in the West is difficult. Water conservation, while obviously an important tool, has limitations. It may or may not make economic sense in a particular setting, and it may have environmental benefits or detriments, depending on the situation.[1] This reality counsels against blanket requirements solely for the sake of water conservation without careful consideration of all the impacts.

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[1]The U.S. Bureau of Reclamation's guidebook for preparing agricultural water conservation plans recognizes that western irrigated agriculture has both enhanced and degraded the environment and recommends that irrigation districts ascertain the extent to which conservation measures would affect wetlands and habitat dependent upon existing flow regimes. This advice finds support in general BOR policy which states "A water conservation planning process needs to identify and evaluate the potential for environmental effects (both positive and negative) of implementing the plan. Memorandum to Area Managers from Eluid Martinez, BOR Commissioner, December 10, 1996.

Likewise, many believe that voluntary markets should be encouraged. Indeed, states have moved through various mechanisms to do so. However, although win-win scenarios are achievable, they are also difficult to attain when considering third party impacts, such as agriculture, rural communities, the environment, urban residents and ethnic communities.

Some urge governmental intervention to affect reallocation of water consistent with changing societal demands. However, significant limitations exist on the exercise of governmental power. Water law in the West developed on the basis that a system was needed which emphasizes security in the long-term use of water, necessitating the granting of private property rights to the use of that water. The emergence of public-interest criteria in evaluating new applications and the development of instream flow mechanisms are important, but relatively recent developments which apply to unappropriated water, and to some extent transfers. Most of the West's water has been historically allocated under a system that did not explicitly consider the public interest or the value of instream flows. Control of non-point source pollution is also problematic, where a mix of regulatory and non-regulatory approaches is generally considered a better, although not a simpler, strategy.

The recognition of the increasingly complex water resource challenges in the West is coupled with the increasingly accepted view that we should reject traditional ways of effectuating water policy in favor of new models. The past models of "command and control" regulatory programs and decision making through the combined influence of competing well-organized special interests are increasingly seen as ineffective. They have led to paralysis and subordination of the role of local communities and citizens.[2] In

An example of a federally delegated program that uses a watershed approach is the total maximum daily load (TMDL) program under the Clean Water Act. The TMDL process has been described in essence by then EPA Assistant Administrator Robert Perciasepe as follows: "States identify specific waters where problems exist or are expected; states set priorities; states allocate pollutant loadings among point and non-point sources; and EPA approves state actions or acts in lieu of the state if necessary. Point and non-point sources then reduce pollutants to achieve the pollutant loadings established by the TMDL through a wide variety of federal, state, tribal, and local authorities, programs, and initiatives." Pursuant to a key component of the healthy watershed strategy, EPA has moved to "rapidly increase the development and implementation of TMDLS to manage water quality on a watershed scale." According to Mr. Perciasepe, the emphasis on TMDLs means that we "are making the transition from a clean water programs based primarily on technology-based controls to water quality-based controls implemented on a watershed basis." (Memorandum to EPA Regional Administrators from Robert Perciasepe, August 8, 1997.)

[2] *The State Role in Western Watershed Initiatives*, Natural Resources Law Center, University of Colorado School of Law, p. 20-1 (1998).

this context, the new paradigm that is taking hold relies on locally initiated watershed approaches involving all the relevant stakeholders representing the range of interests within the watershed. The National Governors' Association stated in 1992: "The governors believe the future demands a new model for managing water resources, based on well-defined geographic units such as basins or watersheds. (Water Resource Management Policy Statement adopted at a 1992 meeting of the National Governors' Association). Most recently, the federal government's Clean Water Action Plan[3] recognizes a watershed approach as "the key to the future" and envisions that state and tribes, in cooperation with federal land and resource managers on federal lands will "take the lead in unifying these various existing efforts and leveraging scarce resources to advance the pace of progress toward clean water. As a number of state and tribes have demonstrated, they can meet existing requirements more efficiently and develop more coordinated and comprehensive priorities on a watershed basis."

Convinced of the state's vital role in realizing the potential of this paradigm, this guidebook is directed primarily at state water managers and other state officials. It is intended to identify for interested states opportunities and ways to develop and implement, or in some cases improve, a strategy to encourage local watershed initiatives as a means to help resolve water resource problems. Although this guidebook is written from a western perspective, it should also be useful to states located in other regions of the country. Indeed, much of the activity associated with watershed initiatives is occurring in the East.

Acknowledgments

This project was initially conceived by the Western Governors' Association (WGA), with which the Western States Water Council is affiliated. The Western States Water Council is comprised of representatives appointed by the governors of sixteen western states. The Council was created by the governors in 1965. It addresses a wide range of water resource issues on behalf of its member states. Its principle purposes are to protect and enhance state prerogatives regarding water resources management and to help build state capacity to deal with challenges in the West regarding water resources.

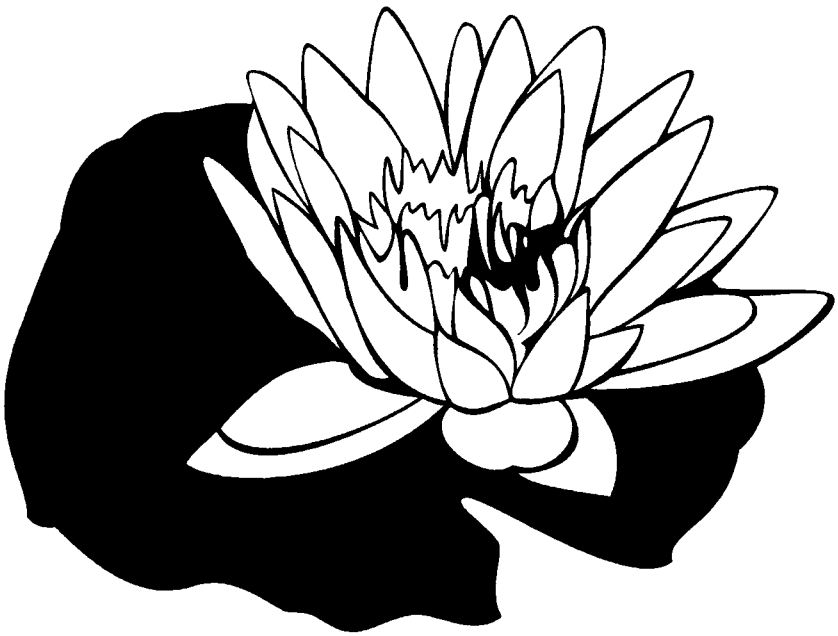
The WGA has provided important input regarding the general direction for this guidebook. Financial support has been provided by Region VIII of the Environmental Protection Agency (EPA).

This document is a result of the collaborative efforts of the staff of the Western States Water Council; namely, Craig Bell, Executive Director; Tony Willardson, Associate Director; and Jim Alder, Legal Counsel. They wish to acknowledge the invaluable help of several individuals in state government throughout the West who work at the forefront in development

[3]USEPA and USDA, *Clean Water Action Plan: Restoring and Protecting America's Waters* (1998), pp. ii-iv.

and implementation of watershed strategies. We also want to acknowledge the generosity of the World Wildlife Fund in allowing us to utilize a format very similar to their publication entitled *Statewide Wetland Strategies: A Guide to Protecting and Managing the Resource* (Island Press, 1992). We also benefitted greatly from the substance of their report, particularly the classification of the tools available for protection and management of natural resources.

Executive Summary



Executive Summary

States play the pivotal role in water management. They are responsible for allocation, administration and protection of water resources. State governments are also the link between national interests, federal programs and the local interests, issues and site-specific situations that must be accounted for in creating suitable solutions. States can bridge the gap between these various interests by creating statewide watershed programs which encourage and assist local and private parties in solving water related problems within the context of state and federal law and regulation.

The basic elements necessary for a successful statewide watershed strategy are grounded in the principles upon which the emerging watershed movement is founded. These six principles, developed in one context as the Park City Principles, together represent a comprehensive approach to resolving water problems. Rather than relying on a governmental or private entity established along artificial boundaries, these Principles urge the use of a process at a geographically-based "problemshed" level. This process should recognize all interests and involve them in the conception, organization and implementation of solutions. The principles also encourage flexibility and decentralization, as well as negotiation and market-type approaches to resolving problems.

The impetus for states to move to watershed-based strategies has arisen from many different factors; court decisions, compliance with federal water quality and endangered species requirements, or a desire to improve agency program efficiency and effectiveness through greater coordination of federal/state and local resources.

Three main categories of state watershed strategies are evolving. These strategies may be adopted by a single state agency or several agencies with related responsibilities.

- The first is a passive strategy, marked by general support of local watershed initiatives, but where the state limits its involvement to those groups who have requested the state's assistance. States adopting such a strategy have generally predetermined what their level of participation will be in response to requests from local groups.

- The second strategy involves an active participatory strategy distinguished by state efforts to serve as a catalyst for the formation of local watershed groups and development of watershed initiatives. While requiring a greater commitment of state resources, this approach remains focused on providing assistance and support, such as technical assistance, staff time or even financial assistance, without requiring control. The state usually encourages local leadership with primary responsibility for initiation, facilitation or coordination of watershed efforts.

- The third option creates a comprehensive statewide strategy which reshapes the state's programs and services, grants and loans, administrative and regulatory activities to maximize state support to nurture and create watershed groups. While greater state involvement and leadership has advantages, the support of stakeholders and local interests is perhaps the most important component of successful watershed initiatives. No single entity (federal, state, etc.) can unilaterally define the problems and impose the solutions in pursuit of its goals. To be successful, all interests must be fairly and openly taken into consideration.

Just how a state should go about creating a statewide watershed strategy will vary, but should be determined only after a careful examination of its goals and objectives. The groundwork for existing strategies has been laid in a variety of ways. It has almost always been seen as necessary for a dialogue to take place between state agencies, lawmakers and key stakeholders to formulate the desired strategy. Passage of special legislation may be necessary to provide funding or authority to carry out the agreed to strategy. The acquisition of private, professional consultation may be advisable to assist in creating a strategy designed to best meet the needs of a state and its citizens. Most states that have adopted a watershed strategy have conducted outreach activities to acquire the input and opinion of the public and key interest groups as to the creation of a watershed strategy. Designation of a lead state person or agency is recommended to focus accountability and access.

It may be advisable to conduct training for state government personnel in order to help them become oriented to the new strategy. The sharing of information and buy-in of participants will help ensure the successful implementation of a strategy. Participants need to understand the process, the issues, the policies and/or regulations, and the actions needed to successfully implement the plan. This sharing of information and recognition of interests leads to the building of trust between participants and the creation of clear objectives. Experience has shown that watershed strategies will need to change and evolve in response to issues and priorities. Building and maintaining support for the strategy is as important as the strategy itself.

There are many different tools and resources which states may rely on in formulating and implementing their strategies. How to facilitate and maximize the best use of these tools will be critical in achieving success for watershed programs because of the unique challenges presented in each watershed. These include: land use planning needs, water rights, water quality, wildlife protection, natural resources, and multiple governmental jurisdictions. Funding is a critical and overriding issue in the development and successful implementation of any strategy. Developing partnerships to share costs and showing progress in addressing issues is likewise critical.

States with watershed strategies are, for the most part, in the early stages of implementation. Many are focusing on initial planning and priority setting. The ultimate test of the success of state watershed strategies will be met as the emphasis shifts from conceptual planning to development and implementation of measures that have the support of diverse stakeholders and will make a difference "on the ground." Experience to date suggests several advantages, including:

1. pooling of scarce resources by involved state, federal, and local agencies;

2. enhanced program effectiveness through improved coordination of policies and data, implementation, and public outreach activities;

3. improved consistency and continuity by focusing on longer term objectives, as opposed to "knee jerk" reactions to a crisis;

4. significantly enhanced public participation and "ownership" in the process and greater support for water programs; and

5. greater opportunity for innovative solutions drawing on authority and programs from a variety of sources.

Chapter I

INTRODUCTION

Muddy Creek is aptly named. Located within the Greenfields Division of the Sun River Project built by the Bureau of Reclamation in Northern Montana, it picks up substantial run-off from the Greenfields irrigation district. When combined with storm events and run-off from non-irrigated lands, it contributes many times the natural flow. This results in stream bank erosion and significant water quality related problems in Muddy Creek and the Sun River which it feeds.

The Sun River in turn contributes substantial sediments to the Upper Missouri River, 80% of which comes from Muddy Creek. These effects can readily be seen in the mud flats on the Missouri within Great Falls and increased flood potential. Water quality for drinking and recreation and fish is also adversely affected. Suspended sediment concentrations in the Sun River far exceed water quality standards for both cold and warm water fish. Dissolved solid concentrations in the Sun often exceed drinking water standards. The siltation problems also adversely impact a hydropower project operated by Montana Power on the Missouri River. Wild and scenic river reaches far below Great Falls are also threatened if the problem persists.

In light of these longstanding problems, landowners had gotten together frequently and numerous studies (70) were done. But nothing happened. Because funding for studies was more easily attainable and inexpensive, most government efforts had thus been expended *analyzing* the problem and possible solutions. In addition to causing feelings of being overwhelmed, discussions about the problem resulted in considerable polarity among the parties about who was to blame, i.e., the federal project, the irrigation district, natural conditions such as storm events and non-irrigated land run-off, etc. Frustration led to the point that the only option left appeared to be litigation. However, news coverage of two people retracing Lewis and Clark's expedition including coverage showing the condition of the Sun River (once crystal clear), served as a catalyst for state action. In 1992, the state of Montana stepped in, created a method for conflict resolution among the interested parties and got a number of them together to discuss potential solutions.

The interested parties included affected soil conservation districts, the Greenfields irrigation district, property owners adjacent to Muddy Creek, state legislators, the Montana Wildlife Federation, the Bureau of Reclamation, the Agricultural Extension Service, the Soil Conservation Service (now the Natural Resources Conservation Service), the Montana Department of Natural Resources and Conservation (DNRC), as well as the Montana Department of Fish, Wildlife and Parks (DFWP), recreational interests, the City of Great Falls, Cascade County, and Montana Power. At the outset, it was assumed that the problem could not be fixed overnight and that large amounts of federal dollars did not exist to help. Thus, new innovative ideas and cost effective approaches would be needed. From the large group of stakeholders, a task force was selected to represent the combined interests of all the groups. The task force established a consensus building process, which allowed for open discussion thus contributing to a feeling of ownership in the outcome of the project.

The process almost immediately evolved into a very informal working group. Meetings were typically run in the same fashion seen in a work place where people gather together without structure to discuss and work out problems. At each meeting the group divided up the tasks by each person volunteering for what they were comfortable with. Associated government agencies provided a great deal of information and technical assistance. However, government agencies were to assist the group, not control it. The key administrative work was to be accomplished primarily by the Cascade County Conservation District and DNRC. A project coordinator was put in place.

The task force is now in the process of implementing solutions. These solutions focus on efforts to address the problem through reduction in the run-off from the irrigation project by turning to more efficient irrigation methods, and stream bank stabilization measures. These measures should in turn mitigate the problems for downstream users, including the city of Great Falls and Montana Power, as well as enhance the fisheries and downstream recreation.

Although achieving the ultimate goals will cost several million dollars, solicitations for funding have been successful so far. Contributors include the Bureau of Reclamation, the irrigation district, the state, and recreational interests. Fifteen separate entities have provided letters of support that have been useful for soliciting funding. The mechanism for receiving and distributing the funds for the Muddy Creek project is the Cascade County Conservation District. With the strong support from the local communities, as well as congressional backing, the momentum continues to grow for needed financial support. Further, large amounts of in-kind services have allowed the group to keep the project moving without large amounts of cash.

EPA has developed a web site for watershed practitioners and those who support them. By this is meant anyone who is trying to make watershed work happen or support it. It contains the "top 10" watershed lessons learned gathered from watershed coordinators across the country. Each lesson is stand-alone and contains a short description of the lesson, a few examples to illustrate it (with a contact where more information can be obtained) and a list of key contacts and resources associated with the lesson. The Top 10 watershed lessons learned are the following:

1. *The best plans have clear visions, goals, and action items.*
2. *Good leaders are committed and empower others.*
3. *Having a coordinator at the watershed level is desirable.*
4. *Environmental, economic, and social values are compatible.*
5. *Plans only succeed if implemented.*
6. *Partnerships equal power.*
7. *Good tools are available.*
8. *Measure, communicate, and account for progress.*
9. *Education and involvement drive action.*
10. *Build on small successes.*

Although several lessons can be learned from the Muddy Creek Task Force efforts, chief among them is that a state agency, in this case the Montana Department of Natural Resources and

Conservation, may provide needed impetus for bringing polarized parties together to solve problems. The pivotal role the state has played in this case is reflected in many other case studies of local watershed based initiatives across the West. Indeed, realizing the full potential of these locally based initiatives may well depend on an effective strategy to support such initiatives at the state level. This assumption provides the primary impetus for this guidebook.

A Comprehensive Approach

The Muddy Creek project was one of the case studies examined by a diverse and representative mix of water managers (federal, state, Indian, local, and private) water interest groups, and academics assembled to address changing needs in water management in the West in the context of a series of workshops sponsored by the Western Governors' Association (WGA) and the Western States Water Council (WSWC). These workshops began in 1991 in Park City, Utah, and resulted in agreement on a set of six principles which should be considered in western water resource management and policy development. These became known as the "Park City Principles" among the water resources community.

Given that western water management faces increasingly difficult challenges from changing demands for water resources, changes which reach beyond the capacity of established mechanisms to address, workshop participants felt that new approaches were necessary. The Park City workshops captured a growing consensus that conflict resolution at the watershed level, rather than along artificial government or private boundaries, offered the opportunity for a holistic approach to resolving water problems. Such an approach facilitates integrated analysis and decision making through comparison of risks, impacts, trade-offs, costs and benefits of various options. While local wisdom will always tailor application of such an approach,

The Park City Principles

1. *There should be meaningful legal and administrative recognition of diverse interests in water resource values.*

2. *Problems should be approached in a holistic or systemic way that recognizes cross-cutting issues, cross-border impacts and concerns, and the multiple needs within the broader "problemshed" -- the area that encompasses the problem and all the affected interests. The capacity to exercise governmental authority at problemshed, especially basinwide, levels must be provided to enable and facilitate direct interactions and accommodate interests among affected parties.*

3. *The policy framework should be responsive to economic, social and environmental considerations. Policies must be flexible and yet provide some level of predictability. In addition, they must be able to adapt to changing conditions, needs, and values; accommodate complexity; and allow managers to act in the face of uncertainty.*

4. *Authority and accountability should be decentralized within policy parameters. This includes a general federal policy of recognizing and supporting the pivotal role of states in water management as well as delegation to states and tribes of specific water-related federal programs patterned after the model of water quality enforcement.*

5. *Negotiation and market-like approaches, as well as performance standards, are preferred over command and control patterns.*

6. *Broadly based state and basin participation in federal program policy development and administration is encouraged, as is comparable federal participation in state forums and processes.*

D. Craig Bell, Jo S. Clark, Julia Doermann, and Norman K. Johnson, *Retooling Western Water Management: The Park City Principles* 31 LAND & WATER L. REV. 303, 305-307 (1996).

some of the best examples of successes today come from such a comprehensive, inclusive process. Indeed, perhaps the most profound result of the Park City workshops, and other similar endeavors, is the recognition that: "In shaping the destiny of western water management, each interest will act in its own realm, but it must also work in concert with others to make the system work better."

Purpose of This Guidebook

For a variety of reasons, states are well positioned to implement a strategy to foster the creation of local watershed initiatives, and to help implement the proposed solutions that arise from such initiatives. While there is no "recipe" for developing such a statewide strategy, nor will any two strategies be necessarily similar, a process to develop and implement a successful statewide strategy should contain certain basic elements. It is the purpose of this guidebook to identify these basic elements. The guidebook also identifies resources to help implement a strategy. In so doing, the guidebook will underscore the potential advantages accruing to a state that takes the lead in developing and implementing such a strategy, as well as address the challenges they will face along the way. In so doing, it is recognized that no panacea is being offered. Indeed, the "jury is still out" on whether this emerging paradigm for resolving the complex water resource problems of the West will actually prove to be fruitful. Early indications are sufficiently promising, however, to warrant this guidebook to assist interested states in developing a strategy to encourage it.

The Pivotal Role of the States

The state was deemed by the Park City participants to be the most suitable level of government to enable and empower comprehensive approaches to problem-solving developed through local

A recent report by the Natural Resources Law Center at the University of Colorado School of Law concludes that 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. Further, "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....

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. 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."

watershed initiatives. Participants recognized that decentralized, close-to-the-ground approaches work best because they accommodate site-specific variations and local needs and values. While there are overriding national interests and goals that states and local decisions should recognize, the group concluded that states are the bridge between necessary grassroot activities and federal interests and goals.

The state role includes allocation of water supplies, administration of water rights, implementation of water quality protection programs, and protection of public water resource values. States are in the best position to integrate related aspects of water management, such as surface and groundwater, water quantity and quality, and economic development and environmental protection, and to balance water uses.

The Park City participants concluded that to effectively fulfill this role states must 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. States should improve their integration of the broad spectrum of public values now protected through a diverse array of public interest considerations required by federal laws and programs. Most state water codes require consideration of the public interest. However, many public interest advocates have turned to the federal government as a more amenable forum than the states. In spite of significant advances in public interest protection, according to the Park City consensus, states should do a better job of incorporating public interest values into water management decision making, or risk more federal preemption of their decisions.

While focusing on the central state role, the Park City group found that significant progress cannot be achieved without federal support and cooperation. The Park City group found that the federal government should continue to establish national policy

The Watershed Approach

Generally, the watershed approach proceeds from the assumption that sound water resource management decisions depend on understanding the relationship between water use, water quality and the conditions within the watershed. A watershed is the geographic delineation of an entire water body system and the land that drains above a certain outlet point. By selecting the location of the outlet point, a watershed can be made larger or smaller; smaller watersheds can nest within larger watersheds. The watershed management zone can then be defined to match the geographic scale of the problems to be addressed. In the watershed approach, community-based partnerships between local sponsors and partners determine the focus of efforts. A government agency may assume a lead role as a result of a negotiation or in the early stages of the process while local partnerships are forming, but often the government role is typified by providing support to local sponsors and partners to guide decision-making on local issues. The culmination of watershed based efforts is the implementation of regulatory and non-regulatory solutions that address local water resource problems, involving coordination and integration of various programs and activities affecting the watershed.

guidelines, and should provide research and funding to meet national goals. But in addition, the federal government should:

- decentralize authority and accountability;
- encourage broad state participation in federal policy development and administration;
- transfer to states additional federal water-related responsibilities; and
- give preference to performance standards instead of adopting command and control strategies.

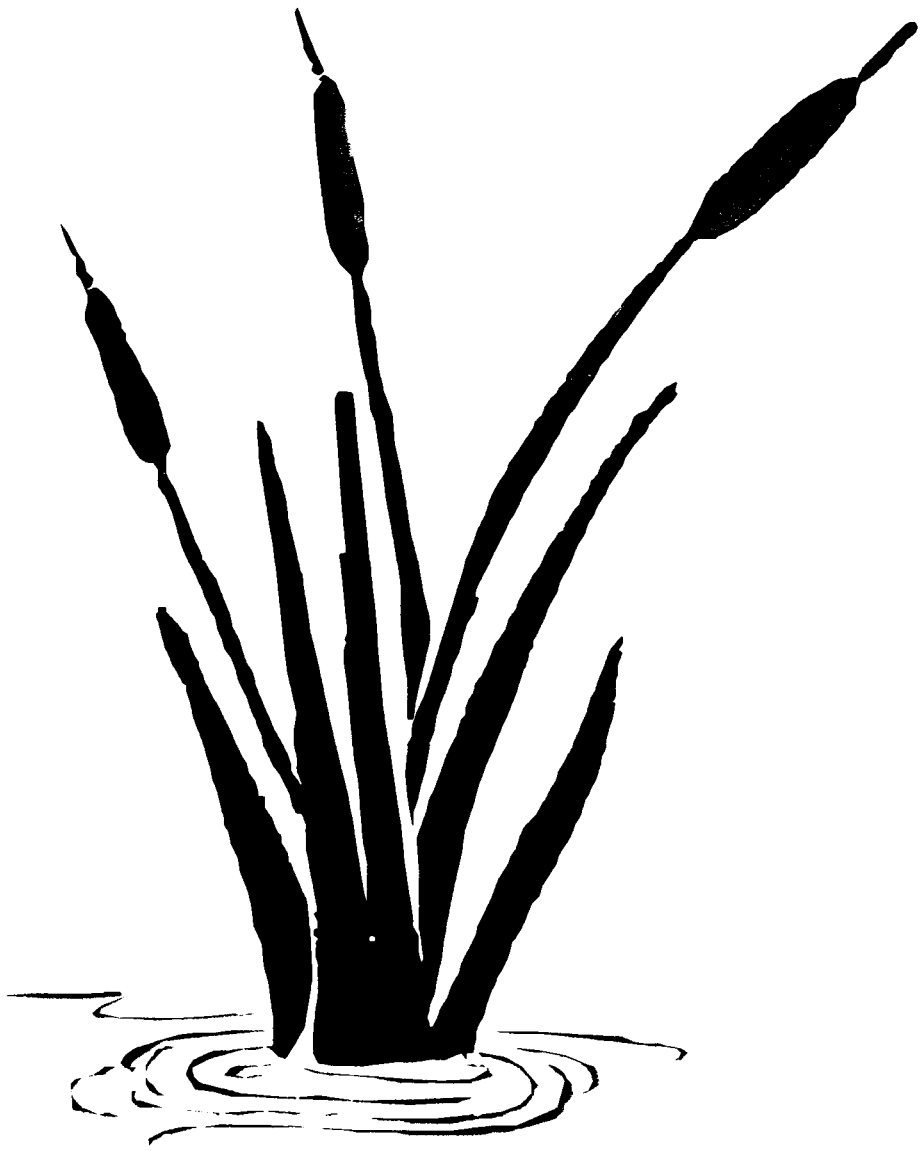
The Park City participants noted that local and regional governments and private entities offer the greatest variety of institutions providing water resource services. These services include urban and industrial water supply, wastewater collection and treatment, irrigation, drainage, recreation, fish and wildlife enhancement, and environmental amenities. Traditionally, local entities have addressed single purpose functions. In the future, the Park City participants concluded, local entities must increasingly work with state and other local interests, operate in the context of comprehensive regional development and resource protection, and facilitate watershed management efforts.

To some extent, states have been involved for some time in encouraging watershed-type efforts, but interest in watershed management at the local level has increased rapidly in the last few years. The watershed approach will not be a "silver bullet" for all water resources challenges. In some cases, state support for watershed initiatives may not be appropriate. However, the watershed approach is being viewed by a growing number of states as an effective method of targeting the most critical problems that affect a watershed while reducing duplication and inconsistency among regulatory entities, and increasing harmony and cooperation between user groups. Further, it allows public involvement to be focused on a defined area, where results can be measured, and fosters cooperative problem solving where players can assist each other to reach mutually beneficial results.

A greater state role in serving as the pivotal integrating level of government in water management is thus increasingly focusing at the local level and specifically on watersheds. The importance of this state role to the success of local watershed efforts is a core finding of this guidebook.

Chapter II

CREATING A STATE STRATEGY



Introduction

Why a state strategy? As described in the previous chapter, there are a number of inherent reasons why states are well positioned to assume a role in encouraging and assisting local watershed initiatives. While it doesn't necessarily have to be the state, there are potential advantages to the state taking an active leadership role. But, whether or not the state is or should take the lead may depend on any number of considerations such as the availability of state resources, staff and money, state interests, priorities, and leadership incentives. Thus, each state will want to define what that role is or should be.

Defining the State Role

A number of western states have adopted or are considering management approaches that focus on watersheds as a means of defining and addressing specific problems within a limited geographic boundaries. Statewide watershed management may lead to the creation of new state programs, but it is primarily a new management approach -- not a new program.

In developing a state watershed strategy, it is important first to define the state's own **goals and objectives**, which then may be summarized generally as a mission statement. Consideration will be given to how and what goals should be set, who should participate in the goal setting process, and how progress towards implementation will be measured. Some potential state objectives may be to:

- Provide a forum for greater public involvement in state decision and policy making.
- Form local partnerships to set priorities and be more responsive to public needs.
- Maximize the efficient and effective allocation, protection, and use of resources (using partnerships).
- Encourage a fair and equitable distribution of cost and benefits.
- Coordinate planning and implementation activities with other agencies and government entities.
- Provide a more comprehensive technical basis to support resource management decisions.
- Foster an open and continuous evaluation process.

Once the state has defined its goals and objectives, the focus then shifts to developing a state strategy that will best achieve those goals and objectives while utilizing a watershed approach.

Evolving State Strategies

A quick review of the evolution of state watershed strategies reveals any number of variations. It is important to observe that a state or individual state agency may select the same or different strategies, for various reasons, and that no two states now seem to have consciously adopted the same strategy.

With strong political support from the governor and the legislature, Oregon has taken perhaps the most comprehensive and proactive approach to watershed management, reorganizing programs around watersheds and initiating pilot state watershed projects. A number of states, with encouragement and support from the federal Environmental Protection Agency, are reorganizing their water quality protection programs to reflect a new watershed approach. Washington has recently taken additional steps toward a comprehensive state watershed strategy that integrates water quality and water quantity programs. Montana and New Mexico have established state water resources planning processes that incorporate many elements essential to a watershed strategy and are moving towards a more geographic-based approach to problem solving.

Different strategies may require different budgeting, planning and management procedures and processes. Some strategies are passive, some more active, and some more comprehensive. The purpose of this guidebook is not to recommend any particular strategy, but highlight different considerations and possible approaches for undertaking a process to develop a strategy tailored to an individual state or state agency.

The Variety in State Strategies

A state may choose to take a **passive strategy** and support local watershed initiatives, but wait to be asked to participate and be invited to meetings. The state's level of participation may be circumscribed by the availability of resources or its interests in the activities of the particular watershed group, as well perhaps as by its confidence in the feasibility of the undertaking. However, it is hard to imagine many situations in which state participation or at least cooperation would not be essential to the success of any watershed initiative. Such participation may include:

- data collection and monitoring;
- assessments of problems and resources;
- prioritization of actions and resources;
- and helping develop individual watershed management strategies (i.e., draft management plans, implement plans, evaluate results and revise watershed management plans).

States adopting such a strategy have generally determined in advance what their level of participation will be in response to requests from local groups. Several states appear to have adopted this particular watershed strategy in some form, if only by default.

A state may choose a more **active participatory strategy** and seek to serve as a catalyst for the formation of local watershed groups and development of watershed initiatives. Obviously, this requires a greater commitment of state resources. A state, for example, may choose to encourage and support local leadership, or step out on its own and assume a stronger

leadership role with primary responsibility for initiation, facilitation or coordination of watershed efforts. However, so far, it generally appears that an active state's approach is focused on providing assistance and support, without requiring control. A state may also provide information and technical assistance, staff time and other inkind contributions, or cash to help finance watershed initiatives. A state may also be in a position to help provide policy direction and perhaps regulatory relief in order to encourage watershed planning, reduce duplication, and to avoid inconsistencies. For example, more and more states, with EPA's encouragement, are using a watershed approach to focus regulatory, planning, and implementation activities to more comprehensively address water quality and environmental values.[4]

Lastly, a state may also choose a **comprehensive statewide strategy** and systematically redesign and redirect its programs and services, grants and loans, administrative and regulatory activities to maximize state support to nurture and implement watershed group recommendations. A state may initiate pilot programs or projects within watersheds and focus its natural resources policy development and management decisions around watersheds.

Whether or not it is appropriate for the state to chair and manage a watershed group may depend on the circumstances surrounding the particular issue(s) to be addressed. However, an important principle behind successful watershed initiatives has been the support of stakeholders and local interests. No single entity (federal, state, etc.) can unilaterally define the problems and dictate solutions. The state must represent its interests, and may be the catalyst to start the car and provide a map, but someone else may be the better driver and everyone in the car must have a say in where it's going and when to go.

Greater state involvement and leadership may have advantages. These include:

- States have primary responsibility for the management of water and related resources, as well as fiscal, technical and other resources to address problems.
- States have often effectively served as a bridge between federal, local and other interests, promoting communication and cooperative action.
- States have their own broad range of interests and responsibilities for protecting the public and the environment and to fashion solutions and encourage appropriate compromises.
- State's sovereign legal immunity may also provide it some greater measure of protection against lawsuits by potentially aggrieved parties.

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[4]As described more fully in the sidebar on page 4, the total maximum daily load program, for example, envisions a transition from water programs based on technology-based controls to water quality-based controls implemented on a watershed basis.

Whatever role the state may wish to assume, a conscious effort to define and implement that role will necessarily involve the development of a state watershed strategy. The following is a discussion of the basic elements attending successful development of such a strategy, based on the experiences of states who have been involved in such an effort.

Organizing a State Watershed Strategy Development Process

"Practical proposals for change often languish because insufficient attention is paid to the process of building support for them and sustaining that support over the long haul."[5]

Building and maintaining support and momentum for a state watershed strategy is as important as the strategy itself. Without careful development and nurturing, or without sufficient support from state leaders and stakeholders, no strategy will survive for long. Again, it is critically important to involve stakeholders in the strategy development process. Conflicts cannot be side stepped or ignored. Otherwise, without a feeling of ownership for the strategy, excluded stakeholders will likely derail the process. Although collaborative processes are challenging, they have the most promise for developing and successfully implementing any state watershed strategy.

In developing a watershed strategy, selecting and clearly framing the right questions are important. For example:

- What are the relevant issues?
- Who are the stakeholders?
- How controversial are the issues?
- How important are the issues to the stakeholders?

Rumble in the Watershed

The following example of a flawed beginning to a local watershed initiative is taken from the *High Country News*, Vol. 29 No. 11, June 9, 1997:

The goal was to form a group to manage Idaho's South Fork of the Snake River watershed. But when environmentalists and locals met on the issue last month, things turned sour fast. Hostilities began after a citizens' group...voted to form a Watershed Council without any representation of area environmental activitists.

Big mistake. Now, members of the new council realize they have little credibility without environmental representation. But the activists, outraged at their treatment, aren't going back without an apology.... Meanwhile, the council has decided to become a watershed advisory group, which has power to set pollution levels for the watershed. But the group needs environmental representation to satisfy federal regulation, and activists have been slow to volunteer. 'We're in a cooling-off process right now,' says Jon Ochi, an Idaho Falls environmentalist. 'It will take some time to rebuild the trust.'

[5]Statewide Wetlands Strategies: A Guide to Protecting and Managing the Resource, World Wildlife Fund, Island Press, Washington, D.C., 1992, p. 43.

- Can everybody gain by changing the status quo?
- What are the potential risks of dialogue?
- What decisions have to be made?
- What's the desired outcome?
- Who is responsible for implementation?
- What resources are available?
- Would a facilitator be useful?

Once a mechanism is chosen, components of the watershed strategy will be developed.

State Watershed Strategy Coordinator

The development process may benefit by having a state watershed strategy coordinator who has political support. An appointment by the governor and/or state legislature serves to provide public legitimacy and momentum. A strategy coordinator may be selected from a variety of sources:

1. A state agency lead or other state entity official may be the best coordinator.

2. A person from the agency which already has primary responsibility for watershed management and coordination in the state.

3. The governor's policy and planning office.

4. A joint legislative committee, or legislative task force chair.

5. A private citizen with substantive expertise and strong interpersonal skills.

6. Someone from academia with public-private sector cooperation expertise.

Related duties and functions of the coordinator would be to:

- Help identify and contact stakeholders
- Coordinate communication and public outreach activities
- Identify and catagorize issues
- Facilitate an assessment and summary of needs
- Identify and coordinate ongoing watershed activities
- Oversee development of the state strategy
- Facilitate state agency participation and support
- Serve as liaison between agencies, organizations, stakeholders and the public
- Develop recommendations for legislative action

Strategy Development Processes

State watershed strategy development is likely to involve the use of multiple processes. A particular process may be selected depending on the stage of strategy development, such as information gathering, stakeholder identification, or plan development and agreement. There are few rigid guidelines for collaborative processes, but several general mechanisms are common. These include informal outreach activities, public meetings, workshops, advisory committees, formal negotiations, and fact finding task forces. The following is a brief discussion of various mechanisms.

Informal Outreach

This may involve communication between the coordinator and individuals or groups to provide and gather information and identify concerns and priorities. Informal communications can be phone calls or meetings, opinion surveys, toll-free lines, newsletters, brochures and other publications, on-line information access, etc. The purpose is to let the public know about the strategy development process and begin building constituencies.

Public Meetings

These meetings are open to any interested party. Public meetings may be structured to provide one-way communication, such as an agency explaining the process and issues and simply listening to comments without response, or with two-way communication and the agency/coordinator responding to questions and comments from the floor. Public meetings are sometimes a legal requirement. These may be large general sessions, or involve the use of smaller discussion groups.

Workshops

Workshop participation may be by invitation only, in order to involve a small, but representative group of stakeholders. Workshops may be designed to provide an opportunity for stakeholders to meet and get to know one another, as well as each others concerns and priorities. They may be used to discuss differences and new management options, and explore win-win opportunities. The topics of discussion are usually clearly defined in advance, but alternative actions are not.

Advisory Committees

Advisory committees may be an effective means to involve stakeholders and others with specific interests and/or expertise that may be helpful in the strategy development process. Careful consideration should be given to the selection of members, and the committee's responsibilities should be clearly articulated. An advisory committee may be particularly useful as a means to explore alternative solutions to difficult issues. Committee members may also meet periodically with the coordinator on an individual basis.

Formal Negotiations

This process is used to develop and execute agreements related to the state watershed strategy. It is critical that all stakeholders be invited to participate so that they will have an investment in the outcome and will work to implement any agreement. Such negotiations can be expensive and time consuming. They also require a lot of groundwork in order to ensure that there are sufficient incentives to encourage the parties to reach an agreement. However, such negotiations can be effective in breaking down political barriers and building broad support.

Use of a Facilitator

Facilitation can be used in conjunction with any of the foregoing mechanisms to organize and guide states through the challenging process of designing a watershed management framework, while keeping partners involved, focused, productive, and unified. A facilitated approach often includes a portion or all of the following:

– Education on statewide watershed management and experiences in other states

– Consultation on approaches for organizing and developing a statewide framework

– Management of the process for designing and developing statewide frameworks

– Neutral facilitation of discussion and consensus building

– Mediation among framework development group members to resolve differences

– Documentation of the framework to provide a long-term reference for a state

– Assistance in making the transition to the new framework

Benefits realized by using a facilitated process include:

– Providing types of technical support not typically available within resource management agencies and organizations

– Creating an open, focused, creative, productive, and challenging environment where working relationships and partnerships can develop that will carry over into strategy implementation

– Identifying concrete and common goals and objectives for strategy design

– Presenting or generating alternative options for strategy development groups to consider in key decision areas

– Helping to create a sense of group momentum and accomplishment.

Key elements of the facilitation process include:

– Scoping--the process of learning more about a statewide watershed management approach and examining whether such an approach would be beneficial.

– Work group formation--involves assembling a work group from interested participants who are willing and able to spend their time developing the strategy.

– Strategy design and development--a facilitator is used to help participants reach a series of milestones established in their work plan by planning and preparing the agenda for meetings or workshops or by providing neutral leadership or mediation of strategy design work sessions.

– Transition planning--facilitators can help: identify areas where standard operating procedures should be updated or new guidance developed to support implementation; clarify resource needs for implementation; establish outreach and training plans; identify legal or institutional barriers that could inhibit or block implementation; and, outline keys to success and indicators to monitor to ensure that efforts stay on the right track.

– Strategy documentation--documenting the progress and outcome of the strategy development process is a valuable service that can be provided by facilitators.

Developing a comprehensive statewide watershed management framework in Texas began to be seriously considered in 1993. The state was already using a basin approach for monitoring and assessment based on the 1991 Clean Rivers Act. Agency directors within the Texas Natural Resource Conservation Commission (TNRCC) were interested in how a statewide approach would help them to coordinate management decision-making and implementation activities with the basin monitoring and assessment efforts. In early 1993, TNRCC invited a representative of North Carolina to give a presentation on North Carolina's statewide basin management approach. As interest increased, the Commission hired a **facilitator** to help the agency further explore potential application for Texas. After a series of internal discussion meetings, TNRCC held a 2-day workshop in July 1993 for a large portion of its staff. Staff concerns led to identification of key issues to be resolved and creation of several work groups to resolve the issues before moving ahead. The work groups met on their own (i.e., without a facilitator) throughout 1994 and addressed most of the outstanding concerns. In late 1994, TNRCC established a Watershed Coordinator position to help expedite development of a comprehensive statewide framework.

Funding

Providing some level of funding may be vital as a catalyst for formation and implementation of watershed initiatives. As an example, state financial support for a neutral mediator, rather than lending state agency personnel, may be key where problems within a watershed have caused controversy and polarization among the parties.

State financial assistance may include direct funding by legislatures. However, such funding has typically been directed at specific projects and tends to be short-term and site specific. While such projects may well be an important part of a watershed initiative, groups also seek some minimal level of long-term funding to cover administrative, communication and other expenses. A few suggestions forwarded to develop such long-term sources of income include: (1) assessing a "headwaters protection" fee on downstream urban water users whose source of domestic supply is the watershed; (2) major non-point source industries, such as agriculture, timber, and mining, could be assessed a fee to support watershed efforts; and (3) similarly, a portion of point source discharge permit fees might be targeted to watershed initiatives. The purpose of these suggestions is to distribute the cost to those groups that benefit from the environmental and other improvements.[6]

There are complications involved in getting funding to watershed groups if funding is contingent on money being filtered through a government entity. Bureaucratic delays can burden effective project implementation, particularly where projects involve private landowners.

Regardless of whether direct funding is provided, states can support watershed initiatives through in-kind assistance. This typically takes the form of technical assistance whereby state agency personnel help watershed groups assess conditions, set priorities and implement projects. More definition and some examples of such technical assistance are found under the section on "State Tools" to assist watershed groups in Chapter 5.

Formation of Watershed Groups

Another key issue in strategy development will be the composition of watershed entities. As previously discussed, states have taken various roles in relation to watershed groups and initiatives. Their experience underscores that states are in a pivotal position to influence the formation and composition of such groups, as well as the geographical boundaries within which they operate.[7]

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[6]*The State Role in Western Watershed Initiatives*, Natural Resources Law Center, University of Colorado School of Law, p. 55 (1998).

[7]See generally id. at 58-64.

As a means of exercising influence, a few states have provided official recognition to watershed groups to assure that such groups meet minimum requirements. However, it has been noted that such recognition by the state may have the undesirable side effect of creating a perception that the watershed initiative represents a "governmental project," a perception that can hinder support. Less formal recognition has also occurred. In California, for example, a number of agencies and groups have joined together to assemble information on more than one thousand projects being developed and implemented throughout the state. Montana's Department of Natural Resources and Conservation has established a database that provides contact persons for about 30 watershed groups.

States may influence specific group characteristics. Because a state may refuse to support non-compliant groups through funding or technical assistance, this role of the state has been controversial. Control over membership may be met with suspicion, while on the other hand, a lack of membership requirements may result in affected interests being excluded, a matter which has been of concern to national environmental organizations.[8] Oregon requires a balance of interested and affected persons and encourages a high level of citizen involvement. The Oregon legislation lists ten examples of interests which might be represented to achieve such a balance. New Mexico's regional water planning legislation sets criteria to ensure efforts are made to effectively include all affected interests. Guidelines require evidence that "reasonable and diligent efforts have been made to reach the public so as to invite, value, and reflect public comment." Regional plans must show that stakeholders have been identified and efforts made to involve them in the planning process.

Another major item for consideration as state strategies are developed is the geographic boundaries within which watershed groups may operate. Where the state is endeavoring to integrate local stakeholder advice into existing resource management processes, such efforts serve the interests of efficient administration. The State of Washington specifies boundaries for watershed planning groups. Under the Water Resources Act, the Department of Ecology divided the state into 62 water resource inventory areas. Oregon's watershed management legislation includes a geological definition of watersheds, but does not mandate boundaries for watershed groups. Rather, it permits local governments to voluntarily initiate and implement management programs for watersheds within their jurisdiction. If watershed boundaries cross multiple jurisdictions, the legislation provides that "the affected local governments together determine their respective roles."

On the other hand, New Mexico gives considerable freedom to local groups to designate planning unit boundaries. As a result, these regions currently are a mix of hydrologically-based and politically-based areas. Utah and Arizona have designated watershed management areas based on hydrologic criteria. No requirement exists that watershed groups confine their activities to the designated boundaries, but both states encourage formation of groups to work with them within the specified areas.

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[8]Id. at 69.

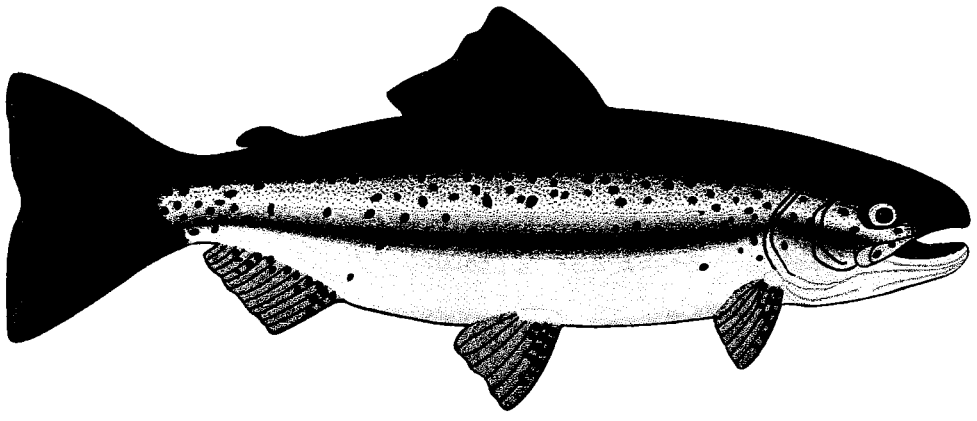
Managing a Collaborative Process

Successfully managing a collaborative process to develop a strategy can be a laborious and time consuming process. It involves laying the groundwork, selecting the appropriate participants, delineating the issues, developing clearly defined objectives, establishing protocols or ground rules for participation, decision making and timetables for action, building effective support, developing an agreement, implementing the outcomes and maintaining support for any plan and the process.

The following chapter contains a summary of the process used by various states to develop their respective watershed strategy.

Chapter III

EXAMPLES OF STATE DEVELOPMENT OF WATERSHED STRATEGIES



Introduction

This chapter of the guidebook provides a summary of the watershed strategies in several western states and responses of various state agency personnel in answer to the questions about the development of their respective strategy. It is not a comprehensive survey, but rather a description of several state strategies that are believed to represent the types of watershed strategies that have developed thus far in the West. In putting together this part of the guidebook, we tried to reflect as closely as possible the actual language of the respondents to our survey. It is their experience and perspectives that represent the most valuable part of this guidebook. In some cases, in summarizing the response, the questions are combined where this appeared appropriate. The following questions were included in the survey:

In your state:

- How was the groundwork laid? Where did the mandate, impetus, legislative authority etc come from? How were goals identified? What outreach activities were conducted?
- How were participants selected to participate in the process? What criteria were used?
- How were objectives identified - what if participants in the process differed on objectives?
- What was the type of agreement reached as the outcome of the process of development?
- What obstacles/issues remain?
- Did the strategy evolve from its initial iteration; if so, how?, why?
- What do you feel will be critical to successful implementation in the future?
- What other experiences, perspectives could you share on a process of developing a successful state watershed strategy?

The responses to the central questions posed above are summarized in a table on page 83.

ARIZONA

Watershed Strategy Description

Arizona has engaged in an effort to reorganize its water quality protection program to involve a comprehensive approach to watershed planning. An initial motivating factor for this approach was that there were already a couple of local advisory councils involved in the management of some of Arizona's river basins. This, combined with the nationwide trend towards watershed planning and federal agency support for such management styles, prompted the Arizona Department of Environmental Quality (ADEQ) to adopt a comprehensive approach.

Organization of the Arizona watershed approach is coordinated on three levels and relies on six separate entities. The three levels of coordination are: the *local subwatershed*, which rallies public support and participation of local stakeholders to establish specific watershed management action plans to protect water quality; the *watershed level*, for assessing water quality conditions within the watershed and establishing management goals and priorities specific to the region; and, *statewide*, for agencies and organizations that conduct watershed management activities across the entire state and have need of a statewide structure for targeting and coordinating efforts with one another.

The six entities which comprise the framework upon which ADEQ relies are capable of operating at more than one of the levels just described. *The Natural Resource Coordinating Committee* is an existing statewide interagency body with members from many key state agencies with responsibility for natural resource management. It provides a forum for communication among participating agencies that can be further expanded to meet the increased need for communication within the watershed approach.

A *Watershed Advisory Committee* is established for each delineated watershed. It is composed of stakeholders (those affected by water quality problems or management and regulatory actions), sponsors (agency or organization taking the lead in coordinating stakeholder meetings and preparing watershed reports), and partners (agencies and organizations that have agreed to participate who contribute to the development and implementation of the plan and negotiate with other stakeholders to identify complementary objectives and areas for collaboration). Committees serve as the focal point for planning and implementation activities.

Watershed Project Teams are an extension of the advisory committee and may include staff from statewide agencies and local agencies. They are focused on tasks that require direct implementation and close collaboration with residents and landowners, especially nonpoint source projects. *ADEQ Watershed Support Teams* consist of ADEQ personnel and are established for each Watershed Advisory Committee with the purpose of providing coordinated support to each committee in meeting their project objectives. The ADEQ watershed support team leader will regularly attend watershed advisory committee meetings, representing ADEQ's interests and communicating the needs of the advisory committee directly to ADEQ.

The *ADEQ Statewide Watershed Coordinator* is the central point of information from the ten watershed support teams. The Coordinator promotes communication among ADEQ watershed teams through regular meetings with team leaders, tracks progress for all watersheds, helps team leaders identify problems and solutions and serves as a liaison between the ADEQ watershed team leaders and the ADEQ section managers. The Coordinator also gathers information for all watersheds for use by the ADEQ Section Managers Round Table for workload and resource planning.

The *ADEQ Section Managers Watershed Round Table* provides management support and direction to ADEQ watershed support teams. Round Table membership may include the statewide watershed coordinator, Water Quality Division section managers, a representative from the ADEQ divisions, and possibly a representative from the U.S. Environmental Protection Agency. The Round Table directs division resources, projects staff and budget needs, briefs internal management and staff on a quarterly basis, identifies cross-media and cross-agency issues that need to be addressed in the watershed framework, provides policy leadership to adjust departmental procedures to accommodate watershed-based management activities, and guides transition of statewide efforts to the watershed approach.

Watershed plans are the final structural element of the Arizona watershed approach. They document the consensus-based process that identifies and prioritizes water quality problems and develops management strategies to address them. They guide agency partners and stakeholders in implementing resource protection activities, and are a reference for future iterations of the watershed management cycle. The overall goal of watershed plans is to promote understanding of management activities for specific waterbodies and regions, and consolidate information and fulfill reporting requirements for several programs and agencies into one central document.

Strategy Development - Response Summary

How was the groundwork laid? Where did the mandate, impetus, legislative authority, etc., come from?

The Arizona Department of Environmental Quality (ADEQ) began exploring the concept of the watershed process prior to 1995 through a grant from the EPA. The EPA was encouraging states to consider watershed-based implementation of their Clean Water Act responsibilities. Initial recommendations to management regarding the process were made by ADEQ personnel.

How were goals identified? What outreach activities were conducted?

Outreach programs played an important role in the shaping of the Watershed Framework. ADEQ personnel became involved in several local water-related groups and used these forums to

introduce the watershed management concept. They also used every opportunity to introduce the concept to sister state agencies, local governments, federal agency personnel, environmental and citizen's groups, regulated industries, water professional, regional water policy makers and anyone with whom the division had regular contact.

How were participants selected to participate in the process? What criteria were used?

Employees of the ADEQ communicated with many others both inside and outside ADEQ to produce the Arizona Statewide Watershed Framework, the backbone document for implementing the program. Existing water user groups were then identified to be "infiltrated" in order to plant the watershed seed and help parlay the success of such smaller groups into the watershed advisory committees.

What obstacles/issues remain?

Implementation of Arizona's 6-step watershed process will continue in two of the ten watersheds per year, so that available federal and state-based resources may be shifted around from watershed to watershed providing more equitable focus of available resources statewide, increasing opportunities for strategic water quality monitoring and the collaboration and cooperation of the stakeholders.

The Arizona Statewide Watershed Framework document states that establishing the six-step Watershed Management Cycle enables stakeholders and partners having an interest in a particular watershed to meet to pool resources for planning and implementing watershed management activities in a unified and mutually supportive manner. Once the transition is completed, all watersheds in the state would have some activity occurring, but each would be at a different point in the cycle. Arizona believes that the six steps for developing and implementing a regional watershed plan establish a consistent way to plan and manage water quality throughout the state, while still maintaining the flexibility to accommodate the unique character of each watershed. The six steps are as follows:

- **Stakeholder Outreach and Involvement:** This step involves identifying and bringing together potential stakeholders and enlisting their leadership and involvement in the decision making process.
- **Collect and Evaluate Data:** This step builds on existing information and, with local guidance, allows development of a strategic monitoring plan to efficiently generate sound scientific information needed to support policy decisions for that particular area.
- **List and Target Concerns:** On the basis of the results from Step 2, concerns regarding water quality can be compared. A local advisory group might lead this effort. The level to which these concerns should be ranked will vary, according to the needs of the individual watershed.
- **Develop Management Strategy and Measures of Success:** In this step, the watershed is considered as a whole and an overall strategy is developed to address targeted concerns in a rational, holistic manner.
- **Compile the Watershed Plan:** Results of the previous steps are documented in a plan which is ideally consensus-based. Budgeting assignments can be accomplished through agreements and commitments of involved parties to address specific concerns.
- **Implement and Evaluate the Watershed Plan:** Activities and strategies specified in the watershed plan are implemented in this step, along with evaluating their success to support continued progress in subsequent watershed

Did the strategy evolve from its initial iteration?

Still in its infancy, the Arizona program has not experienced any significant change in its structure.

What do you feel will be critical to successful implementation in the future?

To be able to point to some real life, concrete examples of success on a smaller scale will do more to "sell" the watershed approach to local communities than any implementation strategy that a government agency could ever come up with.

The sharing of watershed data is the basic building block of sound decision-making, because of the lack of information, spread of misinformation and politicization of information among the affected parties. But even more important is the polarization, general suspicion and lack of trust between government and the regulated community, developers and their customers, industries and their neighbors, federal and state governments, state and local governments and even between nations, along the Arizona-Mexico border. Community-based sharing of data, information, understanding and perspective is key to making sound environmental decisions that benefit the broadest number of interests with the least associated costs.

For additional information, contact:

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Website information:

http://www.adeq.state.az.us/water/mgmt

MONTANA

Watershed Strategy Description

Montana does not have a comprehensive watershed strategy in the sense that the state establishes priorities among watersheds and allocates resources accordingly. Montana makes use of a state water planning process that is a collaborative, consensus-building forum that recognizes a large number of federal, Indian, state, local, and even regional entities that have a role in managing Montana's water. The planning process also provides an opportunity for all these parties to work cooperatively with local water users and water interests in formulating and implementing policies, programs and strategies to resolve water resource conflicts and problems. The planning process is founded on community or local input. Communities have an opportunity to provide public comment and review as well as a chance to identify issues and develop solutions. The water planning process in Montana is continuous, operating generally on a two-year cycle, and can easily be updated in response to implementation experience and emerging problems and opportunities. The planning process for individual watershed issues may take considerably longer. This level of planning depends on the desires and needs of individual watershed groups and the complexity of the problems being addressed.

Additionally, twenty-three state, federal and local agencies came together in 1995 to sign a "Memorandum of Understanding Establishing a Framework for Cooperation to Sustain Ecosystems, Watersheds and Communities in Montana" (MOU). The purpose of the MOU was to create a general framework for participation, interaction, and coordination among the participants and build relationships among the agencies by sharing information, training and other resources. This framework establishes a coordinated, integrated approach for solving watershed problems and defines an approach for agencies to use in their decision-making processes that involves all stakeholders in a watershed and that takes into consideration the impact of any decision on the watershed as a whole. Another objective of the participants in the MOU was to forge new partnerships with local communities and other affected interests for achieving more successfully the common goal of developing and implementing sustainable management strategies within Montana's watersheds.

The Montana Watershed Coordination Council serves as a statewide coordination network for Montana's natural resource agencies and private organizations to share resources, identify and capitalize on opportunities for collaboration, and avoid duplication of efforts. The Coordination Council also promotes watershed planning and is developing a variety of ways to share information among groups as well as between agencies and groups. Local watershed committees are welcome to become members and participate in the Coordination Council. Most watershed committees do not send a representative to the Council. However, most watershed groups have members or advisors who participate in the Council.

Montana's approach to watershed planning is very flexible. Montana does not have a single watershed coordinator. Communities/basins have the option of forming watershed

committees and these committees may develop a basin plan for potential adoption as a section of the state water plan, although only one watershed committee has elected to do so at this point.

Strategy Development - Response Summary

Where did the mandate, impetus or legislative authority come from? What outreach activities were conducted? What goals were established?

The strategy for watershed planning and problem-solving in Montana evolved from a number of activities that began in the early 1980s. The Flathead Basin Commission was the first official watershed group formed in Montana and it was created in 1983 by the Montana Legislature in response to water quality threats to the Flathead basin. In 1989, the Northern Lights Institute organized a broad-based group of water users and interests in the Upper Clark Fork basin to address conflicts between the need for instream flow protection and water requirements for agriculture uses. After working together for about a year, this group evolved into the Upper Clark Fork Steering Committee.

The state water plan statute, passed in 1967, encouraged the formulation of the state water plan based on hydrologic divisions or watersheds. In developing the plan, the Montana Department of Natural Resources and Conservation (DNRC) began addressing statewide policy issues and watershed problems. Key components of the state water planning process were the active involvement of broad-based, grassroot participants and the use of a collaborative, consensus-based process. DNRC began providing assistance to watershed groups in the late 1980s.

Between 1990 and 1995, there was a ground swell of new watershed groups forming in many basins in response to water conflicts and problems that needed addressing. The U.S. Natural Resource and Conservation Service (NRCS), working with local conservation districts, helped facilitate the formation of watershed groups through its Coordinated Resource Management (CRM) process. NRCS provided staff support and assisted these groups to address water and land issues. In cooperation with NRCS, DNRC, the Montana Department of Environmental Quality and the Montana Association of Conservation Districts began to provide "capacity building" training to its field personnel. This training included methods for creating and empowering local watershed groups to solve natural resources problems.

The Montana Consensus Council, formed in 1995 and associated with the Governor's office, promotes fair, effective, and efficient processes for building agreement on natural resource and other public policy issues important to Montanans. The Council staff provides facilitation training and assistance to local watershed groups.

In June 1995, Governor Racicot helped legitimize watershed problem-solving by leading the charge in signing and implementing a Memorandum of Understanding entitled, "Establishing a Framework for Cooperation to Sustain Ecosystems, Watersheds and Communities in Montana."

Along with these activities, the Montana Watercourse, an adult and student water resource education program, began a community-based watershed education project entitled "Know Your Watershed" workshops in 1996. These workshops are aimed at improving citizen's capacities to address local water resource issues and to increase individual and community awareness and knowledge of Montana's water. A number of these watershed workshops have led to the formation of local watershed groups.

How were participants selected and objectives identified?

As noted earlier, the Memorandum of Understanding (MOU), which was initiated by a group of mid-level state and federal natural resource managers, took over two years to evolve before 22 state and federal natural resource agency directors and the Montana Association of Counties could achieve consensus on its content. The purpose of the MOU is to make natural resource agencies more effective and responsive in meeting their own legal mandates and in solving their natural resource based problems by providing educational, technical, and financial assistance to local watershed groups and communities. The MOU encourages the use of CRM and other collaborative, consensus-based processes that are driven by local watershed groups and not government agencies.

What type of agreement was reached as an outcome?

During this time period, the Montana Watershed Coordination Council (MWCC) was formed, and its purposes were described and legitimized in the MOU. The Operating Guidelines for the MWCC identifies three primary purposes:

1) building coordination among all entities involved with watershed activities in Montana;

In Montana, there are many different forms an agreement can take at the local level. In most instances, the agreement is tailored by the local watershed group to satisfy its specific needs. In the Flathead and Clark Fork basins, there are statutory agreements that were passed into law. However, most agreements are voluntary in that they encourage changes in behavior of local water users through education and the implementation of Best Management Practices (BMPs). In the Ruby River drainage, for example, the Ruby River Task Force formulated a binding agreement for the operations of Ruby River Reservoir that included a minimum dead storage volume and minimum releases downstream from the reservoir. Another example is the Bighole Watershed Committee which developed a Dry Year Plan to mitigate the impacts of drought. Although the Committee has no legal authority and the agreement is not legally binding, by signing the plan, participants agreed to promote the plan to their constituencies. Agreements can also be implemented by the local conservation districts, state agencies, and county governments. At times, a difficulty with implementing an agreement is the uncertainty that the signatories to the agreement will continually support and follow through with its implementation. The MWCC encourages and assists local watershed groups to identify the responsible parties for implementation and then seeks resources and staff needed to follow through with implementation.

2) providing a framework for improving cooperation and coordination of services to local watershed groups;
3) implementing educational outreach programs.

Council membership includes representatives of each of the signatories to the MOU, citizen representatives from local watershed groups, conservation districts, and other groups or persons interested in watershed planning and management. The MWCC is building a homepage that will identify the make-up, objectives, and accomplishments of local watershed groups; the availability of financial, technical, and educational assistance to local groups; and other relevant information to assist watershed groups and local governments. The Website address is: http://water.montana.edu/docs/watersheds/MTwtshds.htm.

What issues/obstacles remain?

Watershed legislation, based on the Oregon legislative model, was introduced in the 1997 Montana Legislature that aimed to institutionalize watershed planning and management. The bill failed because the legislature felt that local watershed groups were already successful in Montana and because the bill was initiated by a state agency without grassroot support. Another obstacle that DNRC and other state and federal government agencies have had to overcome was the general distrust of government by the Montana public. Through our collaborative, face-to-face discussions, however, a general sense of trust and understanding has been building.

There are a number of obstacles that remain. Finding funding to cover ongoing administrative staff support for the watershed groups is always a challenge. It is easier to find project funds than monies to cover general operational expenses. Another obstacle is to maintain the enthusiasm and efforts after the first major problem is solved. Presently, there are over 50 active and successful watershed groups in Montana. The MWCC is working to facilitate the exchange of information among these groups and in providing them with coordinated and effective assistance.

Another significant challenge is to tie the program dealing with Total Maximum Daily Loads (TMDLs) for resolving water quality problems on impaired streams to the existing watershed framework. The 1997 Montana Legislature gave the Montana Department of Environmental Quality (DEQ) the authority to mitigate point and non-point source impacts on impaired streams through the use of local watershed groups. The melding of DEQ's new statutory authority with the many ongoing watershed groups and activities is being worked out by the affected governmental agencies through the MWCC.

Did the strategy evolve?

In implementing the state water planning process in 1988, a spirit of distrust resulted from the fact that the process was planned and design primarily by DNRC. There was also considerable confusion over who should be making what decisions and at what point in the process. Members of the agricultural community did not feel that their interests were adequately represented. Too

much was attempted too quickly during the first year of the planning process, which limited public involvement and dispute resolution until after the draft plan sections were submitted to the public for review and comment. This experience resulted in an evolution in the state approach to emphasize more local leadership and control by the full range of stakeholders in defining the problem or problems, seeking possible solutions, conducting the necessary studies and then selecting the solution that has the greatest support and opportunity for implementation.

To begin the second biennial water planning process, the DNRC facilitated eight Community Dialogues to identify the issues that would be addressed. Representation on the State Water Planning Advisory Committee and the Steering Committees was carefully balanced to reflect all affected interests. The DNRC also played a more neutral role in facilitating the development of the plan sections. The planning cycle was extended to two years to allow additional time for research, negotiation, public involvement, and consensus building. During this time, the first local watershed groups, using the same basic collaborative planning process, began to experience successes. These successful efforts culminated in the MOU, and the passage of a bill by the 1997 Montana Legislature that encouraged the use of local watershed groups to address water quality issues associated with TMDL. In addition, the Legislature added $50,000 to DNRC's budget to support the administrative needs of local watershed groups.

What do you feel will be critical for successful implementation in the future?

The state water plan and local watershed planning and problem solving efforts have always keyed on implementation. However, at times, the lack of staff and financial support has make it difficult to implement some recommendations. Further, there needs to be a better system of accountability to ensure that the implementation of plan recommendations does occur. A strategy should also be developed to address new issues that emerge during any given planning cycle. Based on Montana's experiences, a successful state strategy should support watershed groups by helping to provide or facilitate:

1) a viable and consistent source of funding to cover administrative and other costs,
2) a belief that a real problem exists and a need to have a strong local commitment,
3) strong support by the governor, and from local, state and federal leaders and politicians,
4) strong educational outreach programs both in support of local watershed efforts and by local watershed groups with their local constituencies,
5) an acceptance by the citizenry that this is an effective governance and public process,
6) active involvement of community leaders in a watershed group as the power of the group rests with its individual members,
7) a facilitator where this is essential in moving a process toward a decision on very controversial issues,
8) building partnerships and trust between governments and local citizens,

9) having all the right players sitting at the table and the ability to break down the political barriers that divide them,
10) an agreed upon public process and ground rules that are fair and reasonable, and
11) building a strong technical understanding of the issue that needs to be resolved. This may include the use of GIS and other technologies.

There also needs to be an understanding and realization that as soon as the first water issue is resolved (that was the impetus for creating a local watershed group), there are likely other issues for a watershed group to resolve. However, it can be difficult to maintain the active involvement and enthusiasm of citizen members as they have other jobs and responsibilities. Local watershed groups can solve issues and conflicts that they identify, but they can also solve problems brought to them by local, state and federal governments. For example, Montana would prefer to mitigate impacts to endangered species by working with local watershed groups rather than through federal regulatory means. Government also has a responsibility to provide technical support, monitoring, and funding for implementing recommendations and for keeping a local watershed group functioning successfully.

The beauty of the Montana strategy or framework is its flexibility and responsiveness to local problems within watersheds. There is no one single formula for success.

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NEW MEXICO

Watershed Strategy Description

Although New Mexico does not utilize a statewide system that supports so-called "watershed" councils, it does use a process that is based upon "regional plans" that are formulated within the individual hydrological units. The Interstate Stream Commission strongly encourages regions to negotiate solutions to local water problems.

Elements of these regional water plans may contain relevant and substantive elements for use by the State Engineer in "public welfare" and "conservation" determinations in actions before the State Engineer within the regional planning area or affecting the area. Elements of regional water plans may not necessarily be determinative but rather part of a larger set of considerations that are applicable to a given action. Regions are also invited to propose changes to New Mexico water law.

Broad public participation is considered necessary in developing regional water plans, both to enhance their acceptance locally and to increase their potential contribution to state decision making in regard to "public welfare" and "conservation" determinations.

Water plans are based upon the assumption that all future needs must be met by the management of the water supply currently available. Water conservation is the first item considered among feasible water supply alternatives in the management of water to meet current and future water demands, and the regional water plan must demonstrate what portion of the future water demand could be met from projections of conserved water.

The Interstate Stream Commission is authorized to make loans or grants for the purpose of regional water planning.

Strategy Development - Response Summary

Where did the mandate, impetus or legislative authority come from?

The mandate for New Mexico's Regional Water Planning Program (NMRWPP) came from legislation developed and adopted in 1987 (N. M. Stat. Ann. 72-14-44, 1993 Cum. Sup.) pursuant to findings in *City of El Paso ex. rel. Pub. Serv. Bd. v. Reynolds, 563 F. Supp. 379 (D.N.M. 1983) and 597 F. Supp. 694 (D.N.M. 1984)* that if New Mexico wished to prefer its own citizens over an out of state appropriator, there had to be a showing of the supply of water available within the state of New Mexico (or a region), the water demands within the state of New Mexico, whether shortages existed within the state of New Mexico, and whether supplying water from particular sources was relevant of feasible. (See N. M. Stat. Ann. 72-12B-1, 1985 Repl. Pamp.)

While broad guidelines for water planning grants were set forth in 1987 by the regional water planning legislation, specific guidance as to plan content was not available until December of 1994 when the Regional Water Planning Handbook (Handbook) was developed by an Interstate Stream Commission (ISC) subcommittee.

Outreach activities have assumed the form of workshops for regional water planners sponsored by ISC, the New Mexico Regional Water Planning Dialogue (Dialogue), Western Network, and development of a newsletter for sharing water planning information through the Dialogue. Workshops have been held on program administration, public participation and local plan programs. Funding from yearly program appropriations has also been provided for population data and forecasting, steering committee formation, data acquisition, water study bibliographies, and conservation programs.

Approaches to efficient administration of the program continue to develop. Concepts being considered include budget management, enhancing public involvement strategies, a staff team to be available for project assistance and collaborative problem solving, and a plan acceptance procedure.

How are participants selected to participate in the process? What criteria are used?

The program was authorized by the New Mexico Legislature and results from the legislative process with opportunity for input and debate. The Legislature had available to it a report from New Mexico State University that contained certain recommendations regarding water planning.

How were issues identified?

The issues were identified and clarified in the legislative process, which included those issues set out in the report of the university, including:

A. the future water needs of New Mexico can best be met by allowing each region of the state to plan for its water future;
B. the state can assist the regions in planning future water use by implementing a state appropriation program to ensure an adequate supply of water for each region, as reflected by each region's water plan; and
C. the Interstate Stream Commission is the appropriate agency to implement such a program.

What do you feel will be critical to successful implementation in the future?

Several changes to the administrative procedures for NMRWPP are under consideration. These include development of a legal issues template, budget management, use of a staff team to collaborate with regional planners, enhancing public involvement, use of visioning activities by regions for their water future, use of GIS, and a procedure for accepting plans by ISC.

Funding for a framework state water plan is being requested. The framework state water plan program includes completing regional water plans and developing a complete assessment of New Mexico's water resources.

What other experiences, and perspectives could you share on a process of developing a successful state watershed strategy?

Creation of a state water resources plan to best manage New Mexico's water future, where regional water plan elements serve to document regional variables and provide for grassroot public involvement, is being pursued.

Regional water plan boundaries organized by watersheds or sub-watershed boundaries could serve to better manage water conservation and other water supply and demand issues. Currently, political considerations may be taken into account in determining regional water plan boundaries and this sometimes complicates management objectives.

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OREGON

Watershed Strategy Description

Introduction

Oregon's Watershed Strategy has undergone change since the early 1990s. In the early days of the program, the Strategic Water Management Group (SWMG) provided oversight and direction. SWMG consisted of the directors of natural resource agencies in Oregon as well as advisory members from a few federal resource agencies. In 1995, SWMG was abolished by the state legislature and responsibility for the watershed program was transferred to the Governor's Watershed Enhancement Board (GWEB), a grant making body, with representatives from major state and federal natural resource agencies. The major impetus for this change was concern on the part of local governments and watershed councils that the program was too top down under the direction of SWMG. Following is a history of SWMG and a brief description of Oregon's current strategy.

History-- Oregon's Strategic Water Management Group

(Please note that while this model is *not* what is currently being used in Oregon, there are valuable components of the SWMG framework worthy of mention. The description of SWMG is also important from a historical, contextual standpoint.)

In 1985, Oregon's Strategic Water Management Group was created by statute to coordinate activities affecting state water resources and encourage federal agency actions that are consistent with state water policies.[9] It included the governor and director or head of each of the state's major water-related agencies, or their designees. Oregon's Watershed Management Strategy was first outlined in a report prepared by a work group for the state's Strategic Water Management Group. Submitted on August 11, 1992, the cornerstone of the strategy was the establishment of watershed partnerships among local residents, state and federal agency staff, and other citizens interested in improving the management of a particular watershed.[10]

The purpose of the strategy was to facilitate coordination, integration and implementation of existing local, state and federal programs to protect, enhance and restore the state's watersheds, rather than create new programs. There were four major components of the watershed management strategy:

- a statement of goals and listing of objectives and principles;

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[9]Oregon Revised Statutes, 536.100-150.

[10]Strategic Water Management Group (SWMG) Policy Work Group, "Proposal: A Watershed Management Strategy for Oregon," August 11, 1992.

- criteria for identifying watersheds in need of enhancement, restoration or protection;
- a flexible process to guide planning and implementation activities at the watershed level; and
- a set of watershed management "tools."

Together, these formed the framework for the strategy. Each participating entity or partner retained its current authorities and responsibilities. A watershed partnership served as a vehicle to improve communication among state, local and federal resource managers and local citizens. Further, the partnerships served as a means of promoting implementation of complementary policies and actions to enhance the protection of natural resources, while also meeting the needs of local communities. The strategy did not shift responsibility for state programs or regulatory actions to the local level.

Goal Statement, Objectives and Principles

The Goal Statement guiding implementation of Oregon's Watershed Management Strategy was as follows:

Implement a consistent and integrated process to guide watershed-based resource planning and management to protect, enhance and restore the state's watershed ecosystems in order to optimize the natural resources of the state for all beneficial economic, environmental and social uses. Involve local, state, federal and private land and water managers and interested citizens in the development, implementation and monitoring of watershed action programs.

The Oregon SWMG identified the following categories of tools:

Organizational tools include improved coordination across agencies and interest groups, establishment of local watershed councils, and volunteer programs.

Descriptive and analytical tools include establishing an information clearinghouse within the watershed to facilitate data collection, management and transfer. Other related tools include increased use of geographic information systems (GIS), measurement and reporting of water use, long-term monitoring of streamflows in critical areas, as well as monitoring temperature and turbidity, and lastly an assessment of watershed conditions.

Implementation tools involve active efforts to address identified needs, such as:

1. improving water use efficiency and reducing waste
2. regulating and encouraging water right transfers
3. allocating a percentage of the water transferred to restoring instream flows
4. establishing a process to mitigate the negative effects of water transfers
5. enhancing water supply availability through increasing surface and ground water storage opportunities
6. better understanding and conjunctively using surface and ground water resources
7. facilitating establishment of voluntary conservation easements
8. more clearly linking costs and benefits of improving land and water management and better identifying beneficiaries

Protection tools include legal means to shepherd or protect from diversion, as appropriate, instream flows through a particular river reach or system, or the development of watershed management curriculum with the involvement of local school districts and the state Department of Education.

In order to accomplish this mission statement, the strategy involved the following objectives: (1) identify high priority watersheds; (2) prepare watershed action programs with well-defined goals and objectives; (3) implement innovative programs and coordinate and integrate local, state and federal planning activities, including data management, in order to improve the effectiveness and efficiency of resources management; and (4) identify and coordinate funding for action program development and implementation.

The following principles were to be applied to the implementation of the watershed management strategy:

- State resources should be targeted to high priority watersheds, identified on the basis of specific criteria, and related watershed action programs.
- The process should result in measurable progress towards identified goals and objectives early, with steps taken by the partners wherever possible to aggressively work towards solutions as problems are identified -- as opposed to simply producing a plan for action.
- Watershed action programs should make use of a full range of available management tools, which can be tailored to meet specific needs in individual watersheds.
- The best scientific information available should be used to identify problems and potential solutions.
- Early and full public participation involving all interest parties is essential, with each given an opportunity to help identify problems, analyze potential solutions and develop and implement watershed action programs.
- Participants should share information with other watershed partners and be encouraged to learn from each other's successes and failures.
- Watershed action programs should be on going and self-sustaining -- monitoring and evaluating progress towards goals and objectives -- making appropriate adjustments.

Identifying High Priority Watersheds

Using readily available information and the following criteria, the first step in the watershed management strategy was identification of high priority watersheds. This involved an interagency team conducting a reconnaissance-type assessment of the state's major river basins. However, high priority watershed units could be much smaller than a basin, probably a sub-basin. High priority watershed assessment criteria were categorized under: (A) watershed health; (B) the public interest; and (C) the likelihood of success.

(A) Watershed Health
- water quality, including point and non-point sources of pollution
- sensitive, threatened or endangered species
- water availability for both instream and out-of-stream uses
- the probability of additional degradation if no action is taken

(B) Public Interest

- state scenic waterway or federal wild and scenic river designation
- evidence of conflicts between existing land use plans and water needs
- existing/impending economic development/losses
- timeliness of action
- variety of resource issues and/or conflicts
- evidence of both local and statewide interests/values
- agency priorities

(C) Likelihood of Success

- evidence of support from local governments and landowners
- existing involvement of state and federal agencies
- opportunities to integrate on-going planning and management activities
- availability of funding and opportunities for cost sharing
- availability of data for program development

Local Watershed Councils

The next step, as part of the watershed management strategy, was the establishment of a local watershed council in each *high* priority watershed as a mechanism not only for public participation and comment, but for interested parties to play a meaningful role and make significant contributions towards improving management of their watershed and helping solve critical issues and shape future decision-making. SWMG agency staff were to meet with local officials to determine whether there was interest in forming a watershed management partnership between a local body and state and federal resource management agencies. If so, a local watershed council was formed to work toward the development of a watershed action program, in partnership and with the assistance and cooperation of the SWMG and federal agencies.

Local watershed councils were primarily made up of local citizens and government officials, and were designed to ensure a high level of participation by a broad range of interests in development and implementation of a watershed action program. The councils included representatives of new or existing organizations or some combination thereof, with members nominated by their respective organizations and appointed by an appropriate unit of local government, such as a city council, county commission or local council of government. Oregon's Strategic Water Management Group had to concur and accept the appointments, if the membership criteria were met.

Local watershed council members could include local governments, non-governmental organizations, private citizens, and state and federal agencies. Potential nominations could come from -- but not be limited to -- private landowners, industry and commercial representatives, public interest groups, Indian tribes, the academic, scientific or professional community, and local, regional, state and federal boards, commissions and agencies.

The duties and responsibilities of local watershed councils were to:

- foster communication and cooperation among all the various interests in the watershed
- provide a forum for problem identification, conflict resolution and decision-making
- ensure citizen involvement in all aspects of the process and use open public meetings
- prepare and implement a watershed action program
- seek and secure funding for program implementation
- monitor program implementation and evaluate its success
- recommend appropriate program changes as necessary

Watershed Partnerships and Coordination

Together the state, represented by the SWMG, and a local watershed council formed a watershed partnership to develop and implement a watershed action program. Oregon's watershed management strategy outlined a model process for defining state and local responsibilities and coordinating the respective partner's activities.

With respect to the state role, the SWMG identified and communicated state goals for the watershed, which are intended to "optimize the natural resources of the watershed for all beneficial uses." The SWMG provided opportunities for public input into the decision-making process, as well as policy oversight during program development and implementation. The state also provided and helped secure other sources of funding for both state and local activities. In Oregon, this included opportunities available through the regular state agency budget process and biennial water management program.

Further, the state coordinated state and federal agency participation, with responsibility for interagency communication and conflict resolution. The SWMG oversaw the appointment of a facilitating agency, which may be an appropriate state, federal or local agency. This agency served as a liaison responsible for coordinating agency actions and reporting to the SWMG.

The local watershed council was responsible for preparation of a watershed action program, as well as distribution of the draft program for public review and comment. The council was to hold public hearings in the local area, and thereafter could revise the draft program as appropriate in response to comments. The Council then adopted the program, which was also submitted to the SWMG for review and adoption. Again, the local watershed council implemented the watershed action program, as well as monitored and evaluated the results and periodically updated the program.

The local council appointed a watershed coordinator, reporting to the council, with responsibility for providing staff support, facilitating development of a watershed action program, serving as liaison with state and federal agencies, and actively seeking funding for program development and implementation.

Jointly, the SWMG and local watershed council appointed a technical advisory team to undertake a second assessment of watershed resources and management challenges and conflicts. This more detailed assessment was designed to more fully characterize the watershed and gather information necessary for the preparation of a watershed action program.

Watershed Action Program - Key Elements

First, a watershed action program presented its **purpose and goal**, which involved identification of critical issues and current and anticipated problems and an overview of long and short-term objectives.

Second, there was a **descriptive summary of the watershed**, including its location, general setting and water and other natural resources and the environment. Other information included current ownership and jurisdictions, a history of resource uses, factors contributing to past problems, any corrective actions already undertaken, and existing local, state and federal laws and policies affecting the watershed.

Third, there was a detailed **assessment of watershed resources** and conditions, including a review of pertinent available data and identification of any information gaps and needs for collecting additional baseline data.

The fourth element was an **analysis of limiting factors** from a watershed perspective.

Fifth, there followed a **geopolitical and institutional review**, such as defining sub-basin management units -- considering hydrology, physiographic and political boundaries, problem areas and critical issues -- identifying existing agency programs and any gaps, identifying and evaluating potential program elements, assessing obstacles to success, and selecting alternative courses of action.

The sixth element was a **public involvement and education** program.

The seventh and last element was **program implementation, monitoring and evaluation**, which also involved program funding, maintenance and a timetable for specific actions and events.

Current Watershed Strategy Description

Currently, in Oregon the watershed strategy revolves around the work of local watershed councils. Watershed councils work at the local level to assess watersheds and develop action plans to restore watershed functions. While plans are not reviewed or approved at the state level, in most cases watershed councils have technical advisory committees that include state and federal agency members.

The Governor's Watershed Enhancement Board (GWEB) coordinates direct funding assistance to local watershed councils. GWEB also organizes technical training sessions and outreach for watershed councils and is generally responsible for guiding the work of watershed councils. The 11-member board includes representation of the state, as well as federal agencies. The state has signed an MOU with ten federal agencies committing to better coordinate integration of financial and technical resources at the local watershed council level. In addition, the Oregon Plan for Salmon and Watersheds provides a strategic framework for federal, state and local entities to address ESA and CWA issues in Oregon.

Oregon currently has 80 watershed councils at various stages of development. The program lays out a suggested process for use by councils which begins with a watershed assessment of current and historical conditions, identification of desired future conditions, followed by development and implementation of a watershed action plan and monitoring program. Funding is available from GWEB ($20 million in 97-99 current biennium) for council support, assessments, planning, projects, monitoring and outreach and education. Requests for funding far exceed state resources. GWEB has five regional interdisciplinary, interagency review teams who review all grant applications.

Oregon Plan for Salmon and Watersheds

The Oregon Plan consists of two main components: The Healthy Streams Partnership which is a cooperative effort among landowners, government, and interest groups aimed at improving and preserving water quality in hundreds of water quality limited streams in Oregon. The second component is a salmonid restoration plan initially prepared to recover coastal coho to sustainable levels, expanded in 1998 to cover steelhead. The Oregon Plan for Salmon and Watersheds involves coordination between a wide range of conservation partners: federal, state, and local governments, non-government organizations and private citizens.

Strategy Development - Response Summary

How was the groundwork laid? Where did the mandate, impetus or legislative authority come from?

Oregon's Watershed Management Program officially began in 1993 with the passage of House Bill 2215. At the conclusion of the 1991 legislative session several water related issues remained unresolved. The Water Resources Department took the lead in bringing together the many diverse water interests in Oregon to identify priority issues for work in the interim between the 1991 and 1993 sessions. One of the priorities identified was creation of a watershed management program to address water resource issues using a more holistic approach.

How were participants selected to participate in the process? What criteria were used? How were objectives identified--what if participants in the process differed on objectives?

A task force was created, including representatives from a broad range of stakeholders interested in watershed management, to develop such a program and draft legislation for introduction in 1993. The task force presented their consensus report to the Strategic Water Management Group (SWMG) in August, 1992. The report became the basis for HB 2215. The legislation, because it had broad support from stakeholder groups, passed the legislature unanimously.

Key issues debated by the task force included whether or not watershed councils should have regulatory authority, how much in the way of standards and guidelines should be included in the legislation, as well as issues related to representation of stakeholders on councils and official sanctioning.

What issues/obstacles were confronted in implementing the agreement--how were they dealt with? What obstacles remain?

When this program began in 1993 oversight was given to the SWMG. Already in existence since 1987 was the Governor's Watershed Enhancement Board (GWEB), which was a board responsible for providing grant funds to landowners and organizations engaged in watershed restoration and education efforts. In effect the state had two entities with similar and overlapping responsibilities. This often created confusion for the public. In addition, some local resentment grew over the SWMG approval process for councils, as they tried to make sure that key stakeholders were represented on councils before funding was provided.

In 1995, HB 3441 resolved these issues. GWEB was given overall responsibility for the watershed management program, and council approval was moved from state hands to local government hands. SWMG was abolished in separate legislation. Once again a group of interested stakeholders drafted and supported this legislative change.

Oregon continues to struggle with issues related to the GWEB program. The state has provided the majority of funding for activities under this program. This will be difficult to do in the future and many councils are finding it difficult to keep themselves funded for much more than a year at a time. Local contributions have been relatively small.

Another issue, which came to light early on in the program, was the need to develop and provide technical tools and resources if councils were going to do a credible job with the tasks they were being asked to handle. The state is now beginning to catch up with this need through development of standardized watershed assessment and monitoring protocols. A starter kit for councils has been created, providing information on council formation, decision-making models, watershed protection and restoration strategies, and other topics.

In addition, most councils have formed technical advisory teams made up of local agency staff with expertise in a variety of "ologies". However this has led to a high demand on staff resources which are already in short supply. As a result, the state is looking at creating regional technical teams which would assist a number of councils in a region, rather than every council having its own team.

Did the strategy evolve from its initial iteration?

Yes, as described above and the state expects this program will continue to evolve over time.

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TEXAS

Watershed Strategy Description

The Texas Natural Resource Conservation Commission (TNRCC) is committed to implementing its watershed management approach through its existing water quality management programs. It envisions a dynamic, flexible framework for watershed management in which all interested programs and parties can participate. As opportunities arise, the TNRCC may integrate additional agency program activities. Participation and contributions to the watershed management approach by organizations or individuals outside the TNRCC will be continuously promoted.

The goals of the Texas watershed approach include:

- implementing a consistent method for establishing total maximum daily loads (TMDLs);
- increasing the flexibility of TNRCC operations to accommodate geographic differences in local/regional water resource priorities;
- implementing cost-effective solutions to water quality problems;
- increasing the scientific validity of water resource management decisions;
- improving the administrative efficiency of the TNRCC's water resource programs; and,
- improving public participation in water resource management.

The initial watershed management approach for TNRCC operations was designed with five core components based on extensive Office of Water Resource Management planning and the foundation established by existing surface water quality programs and statutes, including:

- geographic units which are the spatial basis for coordinating activities;
- a basin management cycle that coordinates key watershed management activities over time;
- a statewide basin management schedule that establishes a statewide calender and sequence for conducting key watershed management activities in each river basin;
- TMDLs that are now viewed as watershed action plans that identify responsible parties and specific actions needed to restore and protect water quality; and,
- stakeholder involvement that reflects a concerted effort by the TNRCC to involve stakeholders throughout the watershed management cycle to achieve greater understanding of water quality issues and support for implementing management strategies.

River basins and stream segments have been historically used in Texas as the geographic units for water resource planning and management. The TNRCC and other water resource agencies identified limitations in the stream segment system that led to the adoption of a more hydrologically defined geographic unit, the watershed, that has readily identifiable boundaries which provide a functional geographic unit for coordinating management efforts. A common set of geographic units provides standardized means for locating, inventorying, exchanging, and assessing data relevant to basin hydrology and water quality issues.

The basin management cycle involves five steps: (1) **Scoping and re-evaluation** involves the conducting of public outreach and education followed by the formation of basin goals, watershed priorities and monitoring plans; (2) **Data collection** consists of the implementation of strategic data collection and monitoring plans as well as the compilation and maintenance of information and data; (3) **Assessment and Targeting** involves the analyzation and evaluation of information and data and the quantification of impacts and sources as well as the ranking of watersheds.; (4) During the **Strategy Development** stage, management strategies for priority watersheds are developed and documented.; (5) Finally, TMDLs, or watershed action plans, are finalized and the watershed management strategies are implemented during the **Implementation** phase.

The purpose of a TMDL, or watershed action plan, is to provide a consistent reference document that presents specific management strategies and corresponding roles for those responsible for implementing water quality restoration and protection measures. TMDLs document sources of water resource impairment, pollutant load allocations, appropriate management strategies and objectives, implementation schedules, and potential funding sources for the management strategies. These action plans will be updated on a five-year rotating schedule for each group of basins.

One of the TNRCC's guiding principles is ensuring meaningful public participation in the agency's decision-making process. The watershed management approach enables citizens and businesses to collaborate and participate with government by coordinating programs and services that lead to the desired environmental results, and the watershed management approach establishes a more consistent process for coordination between the TNRCC and stakeholders.

Strategy Development - Response Summary

How was the groundwork laid? Where did the mandate, impetus, legislative authority, etc., come from?

The Texas Natural Resource Conservation Commission's Watershed Management Approach has evolved from the Clean Water Act, as well as from 1991 legislation that created the Texas Clean Rivers Act (Senate Bill 818) that created a watershed-based water quality assessment program. The state legislation also included provisions for issuing wastewater permits on a watershed basis and established steering committees as a forum for public input.

The goal of the Clean Rivers Program is to maintain and improve the quality of water resources within each river basin in Texas through an ongoing partnership involving the commission, other agencies, river authorities, regional entities, local governments, industry, and citizens. The program will use a watershed management approach to identify and evaluate water quality issues, establish priorities for corrective action, and work to implement those actions.

How were goals identified? What outreach activities were conducted?

To establish goals and objectives that support this vision, the commission conducted an evaluation of its water quality program's functions, goals, and objectives and employed the services of the Cadmus Group, Inc., a consulting firm with extensive experience in developing watershed management frameworks, to create a guidance document. Additionally, between September 1995 and June 1996, the commission held a series of meetings with a diverse group of water resource stakeholders to evaluate the future direction of water quality management programs in Texas. The commission and regional authorities relied upon the counsel of local stakeholders to focus and prioritize planning initiatives and to ensure that local concerns are addressed and regional solutions are recommended.

How were participants selected to participate in the process? What criteria were used?

The Commission established goals in accordance with stakeholder recommendations to guide the short- and long-term direction of its water quality management programs, including surface water quality monitoring and modeling, the Clean Rivers Program, ecosystem research, toxicity evaluation, nonpoint source pollution, water quality standards, and wastewater permitting. In the future, other water resource management programs under the authority of the commission will collaborate to support the goals of the statewide watershed management approach, as appropriate.

- **Goal One:** Improve public participation in water resource management.
- **Goal Two:** Increase the scientific validity of water resource management decisions.
- **Goal Three:** Increase the flexibility of commission operations to accommodate geographic differences in local/regional water resource priorities.
- **Goal Four:** Improve the administrative efficiency of the commission's water resource programs.
- **Goal Five:** Implement cost-effective solutions to water quality problems.

What obstacles/issues remain?

Throughout the fiscal years 1997 and 1998, emphasis will be placed on synchronizing program work plans and outcomes with the statewide schedule for implementation (issuing wastewater permits by basin instead of individually), improving public participation through the Clean Rivers Program basin steering committees, and moving from assessment of water quality issues to developing management strategies for priority watersheds.

Did the strategy evolve from its initial iteration?

The commission is in its second year of the five-year basin management cycle and has not determined any needed changes to the Watershed Management Approach.

What do you feel will be critical to successful implementation in the future?

If a state watershed strategy is to be successful, local stakeholders must be informed on the various watershed objectives and issues. The Clean River Program steering committees are currently trying to reach a consensus on what the objectives and issues are and which management strategies are needed to address these concerns at the local level.

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UTAH

Watershed Management Strategy

A watershed approach in Utah is spearheaded by the Department of Environmental Quality, Division of Water Quality. It features a high level of stakeholder involvement, water quality monitoring, problem targeting and prioritization, and integrated solutions that make use of multiple agencies and groups. Other state and local agencies having similar responsibilities in "preventing, controlling, and abating" water pollution, join in partnership through the watershed approach to pool resources, thereby increasing the effectiveness of existing programs.

The state has been divided into ten watershed management units, corresponding to the basins defined in the state water plan. Management plans are developed, then implemented for each watershed on a five-year, continuing cycle.

Each watershed has a Steering Committee, the members of which are usually policy makers from the local, regional and state levels. Steering Committee members outline the process they will follow and the issues they will explore. A Technical Advisory Committee (TAC) provides staff support. TAC members provide scientific analysis, quantification of pollution levels, resource options, strategies, etc. TAC members paint a comprehensive picture for the Steering Committee to consider in its strategy development. Others who may be interested are invited to participate in the information gathering and implementation activities.

The Division of Water Quality, as well as the Division of Safe Drinking Water, are working through the Division of Water Resources to help develop a state water plan that includes all aspects of water development, water conservation, water quality, water demands and uses. Indeed, all state agencies with major, specific water-related missions are participating in the development of the plan, spearheaded by Water Resources. One of the plan's guiding principles is that state water quality standards should not be violated and designated uses should be maintained and protected. Water Resources hopes to have all eleven state watershed basin reports completed by 1999. Water Quality, in beginning its five-year cycle watershed program, is using essentially the same basins as Water Resources for purposes of their watershed activities. Water Resources hopes to highlight the Water Quality report in its year 2000 state water plan report. Water Resources feels that protection of water quality "will challenge the traditional water rights administration" particularly with regard to non-point source pollution by agriculture, cities and industry. An agency representative notes that "with the completion of both our basin reports dealing with water quantity and quality issues and their water quality watershed reports, significant information will be available to communicate with local, state and federal agencies as to the problems and how to cooperate with each other..."

This watershed approach relies heavily on active, local involvement. Participation by local governments, local health departments, and citizens ensures that those most likely to be aware of watershed conditions help identify the problems and shape the solutions. Stakeholder meetings aimed at achieving consensus between the technical resource managers and resident

stakeholders are held at key decision-making points. Stakeholders identify specific goals and objectives, then design strategies to achieve them. Whenever possible, strategies build on existing projects with demonstrated value.

The Steering Committee considers beneficial use, ecological value, severity of impact and degree of risk to human health or wildlife in setting its priorities. Resources are targeted based on cost, potential for success, degree of public support, and a combination of technical and administrative feasibility.

In the final phase, practical measures are taken to address the identified problems. This phase can include the support of ongoing water quality projects, issuance of permits with conditions reflecting plan provisions, voluntary pollution control actions, stream channel habitat restoration, and educational programs. A monitoring program is also implemented to measure success and guide future plan revisions.

Strategy Development - Response Summary

How was the groundwork laid? What was the impetus?

Utah had close ties with agriculture programs for soil and water conservation which use the Coordinated Resource Management Process (CRMP) which is akin to the watershed approach. This was reinforced by EPA's guidance document and Utah was able to get a small grant to help produce the Framework Plan. Utah wanted to work more closely with local groups and other agencies. Utah's Water Quality Act contained sufficient language and authority to reinforce the decision to make the transition to the watershed approach. (U.C.A. § 19-5-101 et.seq.)

A transition team was created within the Division of Water Quality (DWQ) to guide preparation of the Framework Plan and the CADMUS consulting firm was hired to help.

How were participants selected?

10 Watershed Management Units (WMU) were delineated corresponding to the state water plan hydrological units of the Utah Division of Water Resources. Existing local inter-governmental and inter-agency groups were canvassed to obtain a willing local sponsor to set up the Steering committees and technical advisory committees. Using existing structures brings groups together that are already matured in working together and have some administrative help in place to service them. It is felt that this local structure approach is the key to an effective watershed program.

Watershed teams are organized within DWQ for each of the 10 WMUs. Each team includes representatives from the Division of Drinking Water and the Dept. of Agriculture. This brings surface water, ground water, point source pollution, nonpoint source pollution, drinking water source protection and financing programs together. The Technical Advisory Committee includes representatives from the Natural Resources Conservation Service, Forest Service, Bureau of Land Management, State Wildlife Resources Division, U.S. Geological Survey, and others as needed on an ad hoc basis.

How were objectives identified?

An intensive monitoring system was begun that pulled about 60 sampling sites from an ambient system. Pertinent sister agency data was gathered and a series of GIS maps were produced. All of this gave additional data for assessment and building of TMDLs and brought the local groups along in the fact finding process relative to individual watershed units. Steering committees and technical advisory committees were involved from the beginning of the process putting data on the table as soon as it became available. The ramifications of the findings were discussed and then the group worked for consensus. Information was used that targeted the lay person audience, the steering committee and the general public. Well prepared GIS maps have greatly aided in presenting complicated interrelationships.

What issues/obstacles were confronted in the process? What obstacles remain?

Molding our own staff into a cohesive working group. It is felt that Utah is just turning the corner on this.

Did the strategy evolve from its initial iteration?

Utah has recognized that some WMUs require a more intensive, all-encompassing approach while others may get by with an abbreviated process. This helps in allocating DWQ's limited resources. Utah is maturing in this effort and has already seen the value in this approach.

What is critical to successful future implementation?

Being sure that both the lay and the technical participants have progressed through each stage of the process, understanding the issues, knowing the actions needed, and having participated in the consensus process. Utah wants clearly defined TMDL actions and outputs that are quantified. The hope is to keep local steering committees and technical advisory committees in place with continuing updates on projects and activities of all water quality related agency and individual programs. Showing progress will be critical.

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WASHINGTON

Watershed Strategy Description

The State of Washington's Department of Ecology (DOE) has divided the state into 23 water quality **management areas or units**, which are further subdivided into water resource inventory areas (WRIAs). Some of the considerations for establishing unit boundaries were geography, population areas and actual or potential growth, water quality conditions, the complexity of the system and pollution sources, common receiving waters and aquifers, staff resources, regional office boundaries, water availability and areas of shortage, water uses (both surface and ground water), septic systems and sewer loading, and the ratio of unpermitted to permitted activities. Some of the water quality management areas include the Upper Snake, Spokane, Okanogan, Wenatchee, Lower Yakima, Columbia Gorge, Cedar/Green and Western Olympic areas.

DOE has also established a **schedule of activities or basin management cycle** for each unit. While enforcement and compliance activities continue statewide, other activities such as scoping, planning, data collection and analysis, and permitting will be scheduled and focused on four targeted management units per year. By 1998, all wastewater discharge permits in the state will have reissuance dates scheduled by watershed within the same time frame in order to ensure equity, consistency and predictability. DOE will continue to respond to permit applications for new facilities and significant environmental issues outside the targeted watersheds. Otherwise, watershed priorities are established with consideration given the number of dischargers and permit workload, workload balance, CWA Section 303(d)-listed waters, completed TMDLs,

The state of Washington has recently passed legislation providing direction and funding for integrated watershed planning. 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. 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.

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. 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.

availability of ambient monitoring data, threats to beneficial uses, historical water quality initiatives, and existing and potential funding.

The likelihood of **stakeholder support** is also a key consideration. The watershed approach creates opportunities and requires meaningful participation from a broad range of stakeholders to be successful. The Dungeness River Management Team is a watershed council formed in May 1995 by Clallam County and the Jamestown S'Klallam Tribe to address management issues and provide a framework for coordination and cooperation among key interests. In addition to the County Commission and the Tribe, team members and groups represented include the Clallam County Planning Commission, the Mayor of Sequim, Washington Department of Ecology, Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Forest Service, riverside landowners, agricultural water users and sport fisheries.

A Five-Step Process

For the past five years, DOE has been using a five-step process for managing water quality issues across its 23 geographic areas. Originally, it was designed to manage wastewater discharge permits and determine water quality monitoring needs. It was an internal management tool to help DOE staff to gather existing data and set staff workload priorities. However, as other programs began managing their environmental protection activities by watersheds, interest grew in DOE's water quality management approach. DOE also realized local watershed groups could make valuable data available to help DOE set work priorities and partnerships with local groups could help accomplish DOE's tasks in protecting water quality.

Scoping and data collection and monitoring comprise the first of the five steps in Washington's watershed water quality management process. In the first year period, the state identifies known and suspected water quality problems within the watershed (scoping). Second, water quality monitoring and special studies are conducted. Beginning in year two, this information is used to determine the status of water quality in the basin, as well as trends. Further, it helps identify environmental stresses and their sources. Monitoring networks focus on a few basins at a time, improving cost effectiveness.

Fixed "core" stations are sampled monthly every year of a five-year cycle for basic physical, chemical and biological parameters. Rotating watershed stations are sampled for one year in the five year cycle. Biological samples are collected in mid-summer in year three, and lakes are sampled twice annually, near the start and end of the growing season. Compliance monitoring occurs in years two or three in the cycle. Intensive surveys and TMDL studies are initiated in year two and are completed in years three or four.

An **assessment** of the effects of pollution on water quality is the third step in year three. This involves a process of determining levels of water quality and ecosystem impairment and identifying sources and causes of impairment. Under CWA Section 305(b), states have been conducting assessments for years. This usually involves comparing data from monitoring

activities with state water quality standards to determine whether or not a waterbody's designated uses are being achieved. Moreover, statistical analysis may be undertaken to indicate whether water quality is improving or deteriorating over time. Such assessments are important as a basis for later evaluating the success of management activities and targeting resources and future efforts.

Recent state 305(b) assessments have focused on biological measures of ecosystem integrity in addition to chemical measures. This is consistent with watershed protection approaches and may be used by states in setting water quality goals, developing basin management plans and measuring successes.[11]

The fourth step in DOE's five-step process involves the development of technical reports summarizing water quality, areas of concern and strategies to respond to the concerns. The fifth step is the implementation of pollution prevention and control activities, such as the issuance of wastewater discharge permits, that respond to priority water quality issues. After the fifth step is completed, the process begins again. The following additional tasks are implied as part of the development and implementation of a water quality protection and watershed management strategy.

Setting priorities and targeting resources are essential tasks that may be thought of separately. Prioritization is the process of ranking concerns, while targeting is the allocation of resources to address priority concerns. With respect to water quality, water bodies in a basin may be ranked by priority according to the severity of the risk to human health or the environment, pollution or impairment of designated uses, and public values. Targeting involves allocating available resources -- primarily staff time and money -- on the basis of overall goals, the willingness of local stakeholders to participate, and the likelihood of success. Targeting helps states use limited resources to address priority ecosystem concerns by watershed. New priority watersheds or water bodies may be targeted during each management cycle.

Developing **a watershed management strategy** involves the arrangement and use of a number of different tools or mechanisms to accomplish clearly defined goals and objectives. Management strategies should take into account the uniqueness of individual watersheds, as well as limiting factors such as available resources, legal authority, stakeholders ability and willingness to participate, and the likelihood of success. A watershed management strategy may allow a state to address both large-scale problems and local issues simultaneously, using both basin-wide and local tools or mechanisms. For example, a strategy to address a non-point source pollution problem might involve a ban on the use of phosphate detergents or state incentives for riparian area protection, as well as improved local waste management practices for livestock operations. Effective strategies may also employ innovative alternatives such as pollutant trading, wetlands mitigation banking, and ecological restoration projects.

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[11]Environmental Protection Agency, "Watershed Protection: A Statewide Approach," EPA 841-R-95-004, August 1995, p. 2-12.

Specific management or action plans are critical. They present selected management strategies and tools, define stakeholder roles, document the process and serve as a point of reference for future modification of basin cycles and plans. In Washington, Water Quality Management Area (WQMA) leads are responsible for developing and updating plans. In addition to presenting clearly defined goals and objectives, plans specify how they will be achieved, by who, with what tools, on what schedule, and how success will be measured. Clearly defining the path for implementation separates watershed-based management initiatives from planning efforts only. Moreover, a formal commitment from stakeholders is critical before implementing a management plan.

Implementation of the plan follows its adoption. A periodic review, evaluation and modification of the plan after gaining experience with its implementation is also critical. Again, Washington employs water quality WQMA leads to implement the plan. A team leader is selected locally or designated by DOE, and serves to coordinate and facilitate implementation activities.

Strategy Development - Response Summary

How was the groundwork laid? Where did the mandate, impetus, legislative authority, etc., come from? How were goals identified? What outreach activities were conducted?

Washington's program was designed as an internal management tool to help DOE staff to gather existing data and set staff workload priorities. It was intended to manage wastewater discharge permits and determine water quality monitoring needs. The Washington state legislature provided impetus for the watershed approach through a review of Ecology's permit program efficiency. Also, a settlement agreement between Northwest Environmental Advocates and Region X of EPA called for a "North Carolina" state basin approach and a six month deadline for completion. It was structured to better organize and focus its Water Quality Program (WQP) resources geographically, to arrange its activities over time and space, and to add discipline to its scheduling, issue documentation, and resource allocations. The division of the state into 23 WQMAs and the five-year watershed cycle evolved as the operational model for implementation of the concept.

How were participants selected to participate in the process? What criteria were used?

DOE needs to identify where to apply its resources to resolve or assist in resolving priority water quality issues. The identification of these issues requires the development of a Needs Assessment for each WQMA. This document is developed during the scoping process in year one. The Needs Assessment is a compilation of early public outreach, the contents of briefing papers from all internal participants, and a scoping workshop. The WQMA "lead" is responsible for synthesizing all the input, conducting the workshop, and finalizing the Needs Assessment. The final document contains a review of concerns expressed by the community, ongoing activities within the WQMA, a summary of the water quality issues in priority, the agreed upon field activities (TMDLs, monitoring, studies, etc.), and the associated research and work needed

to develop priority issues. The process steps in constructing the Needs Assessment and the document itself are the protocols requisite to initial decision making within a WQMA. In year four of the approach, other decisions are made as to mitigation and permit strategies. The process and steps for developing strategies and a WQMA Action Report are the protocols for decision making at that point in the cycle. Strategies written in year four are implemented in year five of the approach.

The current Watershed Approach to Water Quality Management was not designed as an interactive public process with an objective of evolving a coordinated plan for each WQMA. Rather, its purpose was to sequentially identify and develop priority water quality issues within targeted waterbodies to be addressed within a WQMA cycle. The desired result was to improve the application of DOE's resources and efforts within a WQMA (see answer to question #1)

As indicated above the year one scoping process does include a public component. The purpose of this public outreach is to improve DOE's understanding of the issues, priorities, ongoing activities, and funded projects within WQMAs. Participants were identified because of their direct interest in water quality issues, availability of data, and/or their ability to enhance DOE's knowledge of the area and issues. Information gained through this component is summarized, presented to, and used within an internal scoping workshop for each WQMA. These workshops included public participants as part of the agenda.

How were objectives identified - what if participants in the process differed on objectives?

The program objectives for the watershed approach were identified as stated above. During the scoping process in year one of the approach, participants may differ on the identification and prioritization of issues, but there have been no differences on the objectives. Priority issues are those designated for tracking during a WQMA cycle. Differences on priorities are balanced by the availability of DOE resources to address these issues during the WQMA cycle.

What was the type of agreement reached as the outcome of the process of development?

Since the watershed approach is an internal management tool, there is no agreement resulting from the process (see responses to questions one, two, and four above). The Needs Assessment produced for each WQMA outlines the priority water quality issues to be developed and resources for tracking and eventual mitigation. The Year #4 WQMA Action Report provides the strategies to be employed and resolves the priority issues by permitting and mitigating polluted discharges.

Did the strategy evolve from its initial iteration?

The 1998 Washington Legislature passed HB 2514, which, although being partially vetoed, provides a framework for local planning groups to assess a Water Resource Inventory Area's (WRIA) water supply and use, and begin to address specific strategies that include meeting instream flow needs. The planning process is to be initiated by specific governments, within the

WRIA or watershed, including county governments, the largest city or town, the water utility obtaining the largest quantity of water, or tribes with reservations in the designated planning area.

The new law provides the Washington Department of Ecology with $3.9M to provide grants to support local efforts authorized under the bill. Initiating governments may apply for up to $50,000 per WRIA or $75,000 for a multi-WRIA management area in order to organize a local watershed planning effort. Organized planning units may receive up to $200,000 for conducting watershed assessments, and up to another $250,000 for developing a watershed management plan. Applications must include proposals for developing the water quantity related component of a watershed plan. Water quality and fish and wildlife habitat components are optional, but DOE is required by the new law to give preference to applications with all three components.

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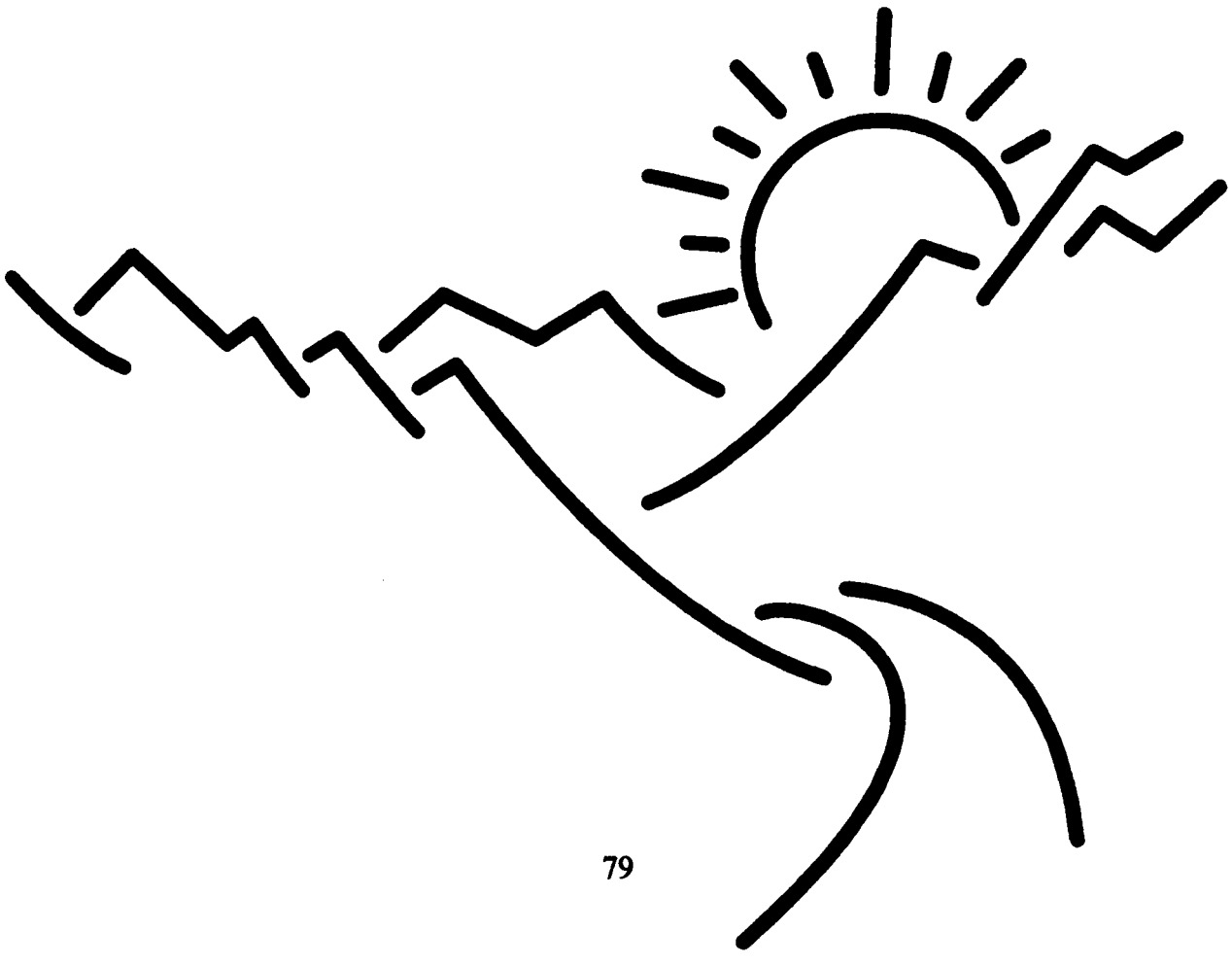
STATE RESPONSES

	AZ	MT	NM	OR	TX	UT	WA
Impetus; laying of groundwork - goal identification	EPA encouragement of watershed-based CWA implementation; ADEQ personnel recommendations based on public outreach activities	Evolved from a number of activities in response to water quality threats, water planning and water conflicts.	Developed pursuant to adverse court decision; groundwork done by N.M. legislature.	Use of a more holistic approach to address water problems was impetus; OWRD convened forum of diverse interests; legislation passed.	Evolved from implementation of CWA and Texas Clean Rivers Act; administered by the Texas Natural Resource Conservation Comm'n (TNRCC)	Desire to work more closely with local groups and agencies; transition team and consulting firm laid groundwork.	Need for better organization, structure and discipline; groundwork initially by internal managemen.
Participant selection	Recommendations developed by agency personnel, who consulted with outside interests.	Process initiated by mid-level state and federal natural resource managers.	Developed through legislative process.	Task group created from broad base of interests.	TNRCC solicited comments in public meetings, and relied on these to create program.	Transition team selected from within Dept. of Water Quality to formulate program.	Process developed within Dept. of Env. Quality. Public involved during year #1 scoping process.
Identification of objectives	By ADEQ with the help of Advisory Team.	By the Montana Watershed Coordination Council.	Outcome of debates involved in legislative process within context of NMU report.	Task group provided report which became cornerstone of state strategy.	Through agency evaluation assisted by consulting firm.	Intensive monitoring system gathered data; data assessed for needs.	Public scoping process identifies issues and objectives, based on "Needs Assessment."
Type of agreement, organic act, or document	Statewide Management Framework	Memorandum of Understanding involving 22 state and federal agencies.	State legislation and subsequent handbook with guidelines.	State statute embodying strategy.	Statewide Management Framework	Statewide Management Framework	Internal Management Approach
Remaining obstacles	Implementation of watershed process in all remaining watersheds	Funding for administration.	Changes to administrative procedures regarding planning process.	Funding ; developmen of technical tools and resources.	Synchronizing work plans with statewide implementation schedule; moving from quality to management strategies.	Improved DWQ staff orientation to watershed approach.	
Strategy evolution	No significant change	Balancing of committees to reflect affected interests; planning cycle extended to 2 years, more local leadership.	Approaches to efficient implementation continue to develop.	Less state oversight; expected to continue to evolve.	No change as yet.	Dept. has recognized that watersheds differ in resource needs, has led to more efficient allocation.	Legislation recently developed supporting local watershed groups, means concepts are changing and developing rapidly.
Things critical for success	Concrete examples of success that will help "sell" the program; sharing of watershed data	Shift from development of plans to implementation; consistent funding; strong state support.	Changes to administrative procedures; funding for a framework state water plan.		Informed stakeholders; steering committees are developing strategies to address this.	Keeping participants involved through the process and showing progress.	
Other experiences	Sharing of watershed data is the base building block.	May be difficult to sustain enthusiasm to look at additional issues.	Political considerations complicate management objectives.				

Chapter IV

FINDINGS AND CONCLUSIONS



The following findings and conclusions are drawn chiefly from the state experiences summarized earlier in Chapters II and III. They relate to common elements in these experiences in developing a state watershed strategy.

Impetus:

The impetus for the creation of a watershed management strategy may come from numerous sources: a court decision; a desire to develop state water plans which reflect the characteristics of the state; compliance with federal water quality or endangered species requirements; a desire to coordinate federal, state and local resources; reaction to some crisis situation; the need to resolve a local watershed problem; and/or, the failure of top-down water management schemes to remedy water problems.

Groundwork:

The groundwork for many of these watershed management groups has been laid through the interaction and dialogue among the interested groups. Memoranda of Agreement have often been prepared and signed. Framework plans have been drafted. The acquisition of funding has often been necessary to achieve the desired goals. Formation of a transition team has helped at least one state pave the way for introduction of a watershed management strategy. Some states have acquired the assistance of private, professional consulting firms in creating their programs. State legislatures, in some instances, have provided necessary authority through the passage of new laws.

It appears that it is almost always necessary for a dialogue to take place between state agencies, lawmakers and key stakeholders, to formulate the desired strategy. Legislation may be required to prevent any conflict with state constitutional or state water law provisions, and to provide a directing agency the appropriate authority to carry out the strategy.

Outreach activities:

Most states have conducted of public meeting, or a series of meetings, to acquire the input and opinion of the public and key interest groups in regards to developing a watershed management strategy. Publication of newsletters, the hosting of workshops, and identification of existing water groups to be included have helped states interface with their constituents.

Participant selection:

Some states sought input from interested stakeholders among the general public in creating their watershed management strategy. These stakeholders were encouraged to participate in a variety of contexts, including advisory teams or task groups. Recommendations were provided for consideration by the state agency in charge of organizing the strategy.

Other states seem to have limited the participants in the development of the strategy to state agency personnel. The general, overall strategy has been conceived through negotiation and

discussion among and between staff members, and in some cases, with the help of professional consultants. Public participation has been utilized mainly in the implementation phase.

Identification of objectives:

Objectives have been determined by one state through the assistance of a professional consulting firm and an internal evaluation of its functions and goals in conjunction with a series of meetings with water resource stakeholders to evaluate its future direction. Another state has set forth the objectives of its local units and has reduced these to writing in its guidebook. Objectives may thus be determined based on local consensus or state direction in response to an external dynamic such as an adverse court decision.

Decision-making protocol:

The use of steering committees and technical advisory committees has been employed by states in preparation of their watershed management strategies. Discussion of the ramifications of the findings of these groups was followed by the process of finding a consensus position upon which to build the strategy's foundation. Facilitation and mediation are sometimes used to aid the decision-making process.

Issues identification:

While various issues drive development of a state watershed strategy, issues also tend to emerge from the process itself. As the process of development gets under way, procedural and foundational issues arise which must be addressed. Many times, the general public will become concerned with the introduction of what they see as more oversight or "bureaucratic red tape." These fears must be addressed to ensure active public participation and overall success of the program. Others may take issue with the selection of participants or identification of objectives. As these issues emerge, they must be addressed in order to complete the development process. An appropriate forum for their resolution should be decided upon early in the process.

Strategy evolution:

Some states have indicated that their strategy has evolved over the course of its implementation. Such evolution may be essential to accommodate public participation, or to address new concerns. Most states have expressed the idea that a major asset of a watershed-based management strategy is, indeed, flexibility or adaptability.

Critical measures for successful future implementation:

The sharing of information and watershed data will help insure successful implementation of a watershed management strategy. States have expressed the importance of insuring that the lay participants are able to understand the process, the issues, and the actions needed. This sharing of information also leads to the building of trust between participants. The ability to set clear objectives will also be benefited by sharing of information and data. At least

one state has employed an individual as statewide "watershed coordinator" to promote communication, gather information for use by watershed groups, track progress, and identify problems and their possible solutions. Other states assume a similar responsibility under the auspices of a designated state agency.

Selling the benefits of a watershed management approach to state personnel may also be key to the successful implementation of the program. Appropriate outreach and training opportunities should be provided.

Funding is always critical to the life and the implementation of a successful program. Developing partnerships to share costs and to demonstrate actual progress is also seen as critical.

Conclusions

This guidebook began with the premise that the state can play a vital role in realizing the potential of the watershed approach in resolving complex water resource challenges. However, undertaking a state program to support a watershed approach will likely be time consuming and resource intensive. The watershed approach itself is still, in a sense, an experiment which will require sensitivity and reorientation to a new role for government. Nevertheless, experience to date demonstrate that embracing and supporting in a programmatic way local watershed initiatives can have several advantages.

Decision-making by state officials can be improved through the pooling of scarce resources, data, basin-wide monitoring and the focus on the overall objectives for an entire basin. A statewide watershed-based program can shift the focus in environmental protection programs from achieving a "number" to producing better overall environmental results.

The Arizona Department of Environmental Quality in its watershed framework document lists the following as contributing to the complexity of watershed management:

- The interrelated nature of the environment,
- Complex interrelationships between the environment and the economy (including consideration that our livelihood depends both on maintaining healthy ecosystems and balancing relative environmental and economic risks), and
- The fragmented nature of many of our environmental laws that are the legal authority for the very existence of the Arizona Department of Environmental Quality as well as every action that the department takes.

Existing program effectiveness may be enhanced as a result of the implementation of a statewide watershed approach. Coordination of monitoring efforts reduces travel time and staff hours. As another example, legal mandates can be more efficiently implemented through limiting the publication of documents and by coordinating the scheduling of public meetings and satisfaction of reporting requirements.

Coordination among state (and federal) agencies can be improved through the use of a statewide watershed approach. Further, data-sharing and coordinating properties of the statewide watershed approach allow resources to be focused in those areas where they will do the most good by identifying issues and concerns.

Consistency and continuity are encouraged by focusing on multi-year goals rather than operating in a reactive or crisis mode. Because all pollution sources are evaluated within the same time frame, consistent and equitable permit decisions are encouraged.

The ability to share information among affected parties can be greatly increased. Citizens, local and state agencies, and even federal agencies greatly benefit in gathering pertinent information by participating in the watershed forum.

Public participation may also be enhanced by providing a distinct, localized rallying point that encourages citizen involvement. The watershed approach brings water resource concerns home to the individual through workshops, hearings, and citizen monitoring. A better informed public also lends itself to increased legislative support for water programs.

Finally, the use of the statewide watershed approach encourages the development of innovative solutions to water problems that may be outside the scope of present regulations and programs, because such solutions are not limited to the authority of any particular agency, but rather encompass the entire range of stakeholders participating in the process.

A position adopted by the Western States Water Council in August, 1998 states:

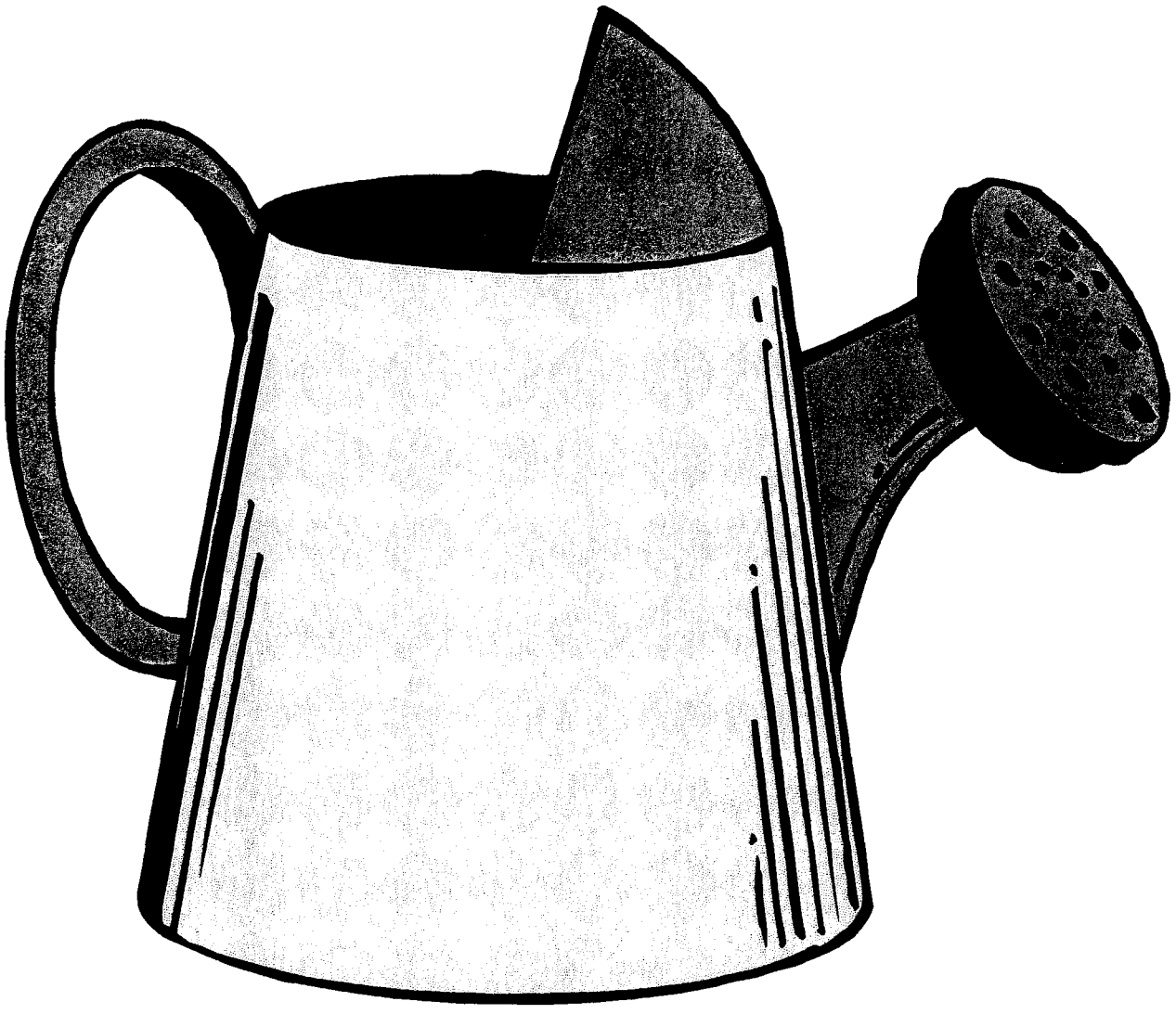
The watershed approach offers great opportunities. It allows focus on the most critical problems that affect the watershed while eliminating duplication and inconsistency between regulatory entities. It allows public involvement to be focused on a defined area where results can be measured. It has the potential to foster cooperative problem solving where the important players can help each other solve mutual problems in a way that can result in an improved environment at less cost. It provides a feasible means of developing an "ecosystem approach" relative to the protection of water quality and related values. To encourage these benefits the Clean Water Act (CWA) should embody the following principles:

1. States should be encouraged, but not mandated, to utilize a watershed approach for water quality and resources management.

2. States should be allowed to craft their watershed management to meet their needs, but they should clearly define the goals and the scope of such programs. In general, basin-specific goals and programs should be selected and prioritized on the basis of risk to quality-of-life, human health, and ecological concerns.

Chapter V

WATERSHED TOOLS



Introduction

This chapter of the guidebook provides an overview of tools accessible to watershed groups with an emphasis on those tools particularly relevant to building state watershed strategies. In building a state strategy, considering how to facilitate the most effective use of available tools will be vital. To this end, this chapter begins with an examination of the general advantages and disadvantages of various groups of watershed tools.[12] This is followed by a description of such tools and some examples of their applications. A summary table listing various specific tools follows.

A need which is relevant to the application of virtually all of the tools is funding. This subject is the focus of the final section of this chapter.

Watershed planning presents unique challenges. Issues involving land use planning, water rights, water quality, wildlife protection, and natural resources may all be found on the playing field at any given time. In addition, the watershed very often covers multiple governmental jurisdictions. And finally, laws and regulations are generally not written to address the watershed as a whole, but rather to address the individual problems found within the watershed.

In establishing an effective watershed-based strategy for protection, improvement, coordination, or planning purposes, interested states should be aware of all available resources including state staff and budgets, and other governmental agencies and organizations concerned with land use, wetlands, or water issues. This information, along with appropriate guidance and other assistance, should be provided to local groups who will likely find that using a combination of tools will be the best approach.

The available tools can be separated into the following seven groups:

- acquisition;
- regulation;
- planning;
- restoration and management;
- incentives and disincentives;
- technical assistance, education and outreach; and,
- research.

While these distinctions are drawn to organize this report, it is important to note that the groupings are not exclusive. Some of the mechanisms discussed below will also easily fit under

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[12]This section of the chapter draws heavily from a publication entitled *Statewide Wetlands Strategies*, prepared under the auspices of the World Wildlife Fund.

multiple headings. They should only be considered in relation to one another and in the context of the social, political and economical situation of the particular watershed of concern.

Many of these tools are found in programs within the various levels of government. Therefore, the seven groups can each be listed under the headings of federal, state, and local government. Private interests are also able to support programs that promote the use of some of these tools and therefore also deserve consideration.

Acquisition

Acquisition is a means of preservation that can be pursued by both public and private organizations. Although acquisition normally brings to mind the purchase of the property outright, it can also mean the purchase of anything from "fee simple" title to a "less-than-fee" interest in the property. Such an interest in property is usually in the form of a conservation easement. Acquisition may also happen by way of a donation or bequest.

In the context of watershed management, the acquisition of water rights is an important concept. Whether by private parties or by government agencies through mechanisms such as the "trust water right" acquisition is an important tool.

The benefits of acquisition might be:

- the management and protection of the area acquired is ensured;
- acquisition as a method is somewhat flexible; one can purchase anything from a conservation easement to the complete title to the property, depending upon the present needs;
- acquisition can avoid the hassles of political controversies and "takings" claims

The disadvantages of acquiring a piece of property could be:

- the expense of making the purchase;
- the acquired property may need extensive management and monitoring;
- it may be difficult to obtain the desired property;
- ownership does not guarantee protection from influences outside the boundaries of the property.

Regulation

Regulations are the statutory and administrative rules designed to protect the public's health, safety, and welfare. Watersheds are affected by regulations originating in federal, state, and local governments. These regulations may be directed at controlling resources

themselves, or at controlling activities that may influence a resource. Examples of regulations include: the federal Clean Water Act; a state floodplain regulation; and, a local zoning ordinance.

The use of regulations may be advantageous, in that:

- specific activities can be prohibited;
- regulations are associated with penalties--they have "teeth;"
- regulations can be promulgated at any of the levels of government for the optimal efficiency;
- they can be flexible in how they are crafted;
- regulations can promote better uses and practices.

The drawbacks of regulations can be that:

- they can be expensive to enforce;
- determining their scope can prove difficult;
- they may prove to be unpopular with a public that generally opposes regulation of their private activities;
- they are primarily reactive, not preventative;
- their use may lead to "takings" claims.

Planning

It seems to be a given that planning would be necessary part of any watershed effort, but it should also be considered as an important tool itself. Planning will generally consist of analyzing the needs of the watershed and then setting goals and priorities aimed at assisting the group in meeting those needs. Planning should consider the past along with the present, but most importantly, the future outcomes.

Planning, as a tool offers:

- adaptability to smaller, localized areas or larger, regionalized areas;
- better coordination among programs;
- a view of the "big picture" that accounts for cumulative impacts;
- better handling of development-versus-preservation conflicts;
- predictability and consistency in land-use decisions;
- stakeholder involvement throughout the process.

The challenges in dealing with planning may include:

- difficulty translating the plan into action;

- difficulty amending the plan;
- the planning process is time consuming and resource intensive;
- difficulty ensuring fairness in securing interest, participation, and agreement of the parties;
- leadership is in constant flux due to political changes during the planning process.

Restoration and Management

Restoration is often associated with certain regulatory programs such as requirements that offset the destruction of wetlands through development of riparian areas damaged by contamination, development or neglect. However, restoration programs of a non-regulatory nature are important mechanisms in creating watershed management strategies and may be vital in creating a balanced and manageable watershed. Their importance is also recognizable in ensuring that the watershed is maintained and improved over time.

Restoration and management can:

- be used to offset losses of valuable wetlands and waterway environment or habitat;
- regain or create multiple functions of the watershed, its waterways and wetlands;
- be used to target a specific area.

The drawbacks to the use of restoration and management include:

- it may require extensive technical expertise and/or research;
- it may require substantial funding for implementation and long-term management;
- involvement of multiple managers or agencies can make management difficult;
- these activities might disturb the already existing natural flora and fauna;
- the success rate of such programs is unclear.

Incentives and Disincentives

By offering landowners financial incentives such as a lower tax rate in return for preserving certain important features of a watershed, protection of the watershed as a whole is encouraged. Disincentive programs are just the opposite; they discourage destruction of critical watershed features by denying a landowner eligibility for certain government funds or programs. Not to be forgotten, awards and recognition programs acknowledge and promote praiseworthy land stewardship or conservation work.

The use of incentives and disincentives:

- can encourage watershed protection by making it more profitable to protect than destroy;
- are often very popular with the public;
- are more easily manageable than regulatory programs;
- are less coercive that regulatory programs.

The challenges associated with incentives and disincentives are that:

- they do not guarantee watershed protection;
- they may be costly
- they are sometimes misperceived as regulations.

Technical Assistance, Education, and Outreach

Included in this grouping of tools are inter-agency assistance and classroom education, as well as many other forms of outreach and education about issues affecting a watershed. Agencies might furnish direct assistance with a project, becoming intimately involved in its planning and implementation. Or, an agency might be more indirectly involved by supplying manuals, maps, visual aids, etc., in an effort to assist an organization reach its goals. Classroom education is a great example of education and outreach. This allows students to be exposed to the issues involved and creates a basis for future reference and understanding.

By implementing such programs, an organization can:

- tailor its message to focus on specific targets;
- tailor its efforts to reflect the available resources;
- build strong public or political support;
- increase the effectiveness of other watershed programs through increased public knowledge;
- encourage or increase voluntary participation in the program or protection of the watershed.

The difficulties that an organization may encounter in implementing these programs are:

- they are time-consuming and resource intensive;
- many times they are without visible or measurable results;
- they are often the first programs to be cut in times of a budget crunch.

Research

Research on values, functions and techniques provides important information on which to base watershed protection policies and programs. Government agencies at all levels conduct their own research as well as provide support to independent research organizations.

Sound research can:

- provide the necessary data to garner public and political support for other programs
- increase effectiveness of other regulatory and non-regulatory programs
- assist in setting priorities for protection of watersheds or for the evaluation of protection programs;
- heighten public awareness.

Difficulties faced in conducting research include:

- research is time consuming and resource intensive; immediate questions may take years to answer;
- it may be difficult to sort out the results;
- can't ensure that action will take place based upon the findings.

Following is a general description of the kinds of tools available through various levels of government, as well as the private sector. They are listed according to the categories of tools previously described.

LOCAL TOOLS

Acquisition

The acquisition of lands is an important complement to land-use regulations for local governments. It is the most direct and effective way for local governments to control the use or development of lands. The local government may acquire the entire legal rights to a parcel of property or a lesser interest, as in a easement prohibiting any undesired development.

Local governments may form land trusts as public or quasi-public entities to participate in the private real estate market as representatives of the public interest. Local governments may also acquire water rights.

In 1990, the city of Boulder, Colorado signed a contract with the Colorado Water Conservation Board deeding ownership of a portion of Boulder's senior water rights to the Board. The contract provides that the Board must use the water for instream flow purposes and it makes the City of Boulder the Board's agent for administering the water rights.

Regulation and Zoning

All states have delegated authority to local governments to regulate land use. A wide variety of regulatory mechanisms exist, including zoning, subdivision regulations, and mandatory cluster development. Zoning is the most frequently used mechanism for land-use regulation. It is used to control both the use of the land and structures and the characteristics of permitted uses, such as minimum lot sizes and location of structures on lots. Zoning also controls development aspects such as design, landscaping, public infrastructure, and mitigation of the impacts of development on natural resources.

Regulation and zoning can serve to control the development of floodplain areas, control the impacts of development on wetlands, riparian areas, lakes, and streams.

The use of impact fees is another way to ensure that development of necessary sewer and water services is supported. Impact fees are the assessment of the direct costs of additional necessary infrastructure.

Planning

Planning addresses social, economic, aesthetic, and natural resources concerns and designates how a local government will attain specific goals and objectives in each of these areas. The plan becomes an overall policy guide for land-use decisions.

Comprehensive planning includes planning for water resource development and preservation of areas associated with other water values, such as wetlands, lakes, rivers and flood plains. Two main approaches to comprehensive planning have emerged: land-use planning and policy planning. Land-use planning uses maps and traditional zoning approaches, while policy planning focuses on the quality or character of development.

New Mexico authorizes its Interstate Stream Commission to make annual grants or loans to regional water planning entities to formulate water plans. The water plans are submitted to the state engineer to assist him in understanding the values that each region places on water and what the projected water needs of each region might be. The regional plans become part of the state water plan, and the state engineer uses them in deciding whether to approve new water appropriations or transfers. Because communities within each region have a great deal of discretion as to what the plan should look like, the water plans have evolved into watershed plans, containing lifestyle elements not normally associated with a water plan.

Incentives and Disincentives

The implementation of use-value taxation and impact fees can assist local governments in managing watersheds. These mechanisms focus on controlling development. Use-value taxation reduces the tax burden on certain land uses that produce less income than other more intensive uses. The tax assessor, upon the request of the landowner, values a parcel solely upon the existing use, instead of the highest and best use which accounts for the full developmental value of the property. This reduced property tax burden may reduce the pressure on a landowner with a low-intensity use to convert the land to a more profitable and more intensive use.

The use of impact fees is an attempt to approximate the costs that a municipality will incur due to proposed development, and to place these costs directly on the developer. This acts as a disincentive for developers who might be faced with the costs of providing public utilities or the costs of increased pollution control, etc.

Technical Assistance, Education, and Outreach

Local governments normally constitute the "front line" of contact with landowners and the general public. Therefore, their role in providing information cannot be overlooked. Local governments also often provide on-site assistance as well as publications to promote landowner understanding and cooperation with regulatory programs.

STATE TOOLS

Acquisition

Although many states have no formal acquisition program, state agencies dealing with natural resources can acquire lands under their authority to preserve natural areas, maintain habitats, provide parks, etc. The state may also acquire interests in water rights for similar purposes. State acquisition can also take the form of a reservation from further appropriations and can be used to ensure an adequate supply of water for future development or to provide for instream flows. This can occur through express legislative authority or through administrative determinations in the public interest. Some states require that the state hold title to a water right for instream flows. Others allow private parties to hold water rights for instream flows. Utah provides that a water right can be transferred to instream use if it is turned over to either the Division of Wildlife Resources or Parks and Recreation. Arizona has granted instream flow rights to the Arizona Nature Conservancy, the Bureau of Land Management, and the Tonto National Forest. Oregon has special authority under their drought statutes to set up options to obtain water during periods of declared drought for special needs.

Acquisition of water need not be limited to the purchase of all legal rights associated with a "fee simple" purchase, but can also entail the procurement of a right to use the associated water under certain conditions and for prescribed periods. For example, agreements whereby irrigators agree to allow their land to lay fallow in favor of other uses during drought conditions are not uncommon.

Regulation

State regulations have the ability to define the specific area and activity that will be subject to them. They can be designed to address factors specific to each state. Because of their more localized nature, they can cover more activities or watershed areas than federal regulatory programs.

Specific state regulatory programs that should be mentioned here are water rights programs and state environmental policy acts (SEPAs).

Water rights programs control the creation, definition, and control of water rights regulated by

Under Montana's reservation statute, the state or any political subdivision of the state, including federal agencies, may apply to the Director of the Department of Natural Resources and Conservation to reserve water for both offstream uses as well as instream uses, including future irrigation, municipal growth, multipurpose storage, recreation, fish and wildlife, and maintenance of water quality. Applications must include a discussion of the purpose and an analysis of the need for the reservation, a quantification of the amount of water requested as well as the amount available, an analysis that the reservation is in the public interest, and a management plan.

state law. The process of making an application for a water right is set out is state law. Specific procedures must be adhered to in order to ensure that the water right is perfected under state law, and therefore recognized as senior to subsequent filings. Water right transfers are also subject to state authorization. Protection of third parties that could be adversely affected by the transfer and the public interest will generally be considered. Also, if dedication to instream flows is desired, state laws vary and must be carefully evaluated.

Most state water rights programs in the West include in their definitions the requirement that the water be put to a "beneficial use." State statutes normally also include provisions for abandonment or forfeiture of water rights if the right is not used or put to a beneficial use for a specified period of time. Virtually all western states also require the use to be in the "public interest." Such statutes may be of assistance to watershed organizations interested in increasing the supply of available water within the watershed for instream flows, future growth, wetlands sustenance, etc.

About one-quarter of all states have some form of a state environmental policy act (SEPA) which is modeled after the federal version--NEPA. SEPAs require an environmental impact statement for state public agency actions. Some states even require an EIS for local governmental actions or private actions that meet certain thresholds or require approval of a public body.

Floodplain Management Programs are found in a majority of the states. These programs require the adoption of local regulations that control activities in the 100-year floodplain in an effort to reduce damage caused by flooding. The state agency in charge also establishes standards, provides technical assistance, and monitors compliance of local regulations. In many states, if local regulations are not adopted, the state agency will step in and enforce the standards adopted by the state.

A number of states have adopted wetlands regulatory programs. Each of these programs differs according to the definition of wetlands and the activities that are subject to regulation. These wetlands statutes generally require permits for specified activities that have adverse impacts on wetlands. The amount of protection afforded by these wetlands acts is determined by classification and ranking systems, mitigation requirements, and minimum jurisdictional size of wetlands to be regulated. Most states exempt activities such as farming, ranching, timber, irrigation, and recreation from regulation.

Some of these states retain all wetlands regulatory authority, while others require local governments to adopt wetlands regulations that meet state standards. A few states retain the wetlands authority unless local governments want to gain certification to conduct their own permitting.

In addition to the federal Wild and Scenic Rivers Act, many states have enacted their own river protection programs, although these programs vary in the degree of protection that they

provide. Some states authorize the acquisition of land, prohibition of dam construction, and the establishment of minimum in-stream flows. The statute may also authorize the use of condemnation, or it may enable local governments to implement Special Area Management Plans to provide protection to wild or scenic rivers.

State Fish and Wildlife programs may also provide an important array of programs relevant to watershed protection and development.

Planning

Planning is normally an attempt to anticipate and address future needs and concerns. States have the power to legislatively create and fund programs that encourage protection of watersheds through management and planning. Although land-use planning is traditionally associated with local governments, several states have statutorily adopted statewide planning goals which promote, among other things, protection of natural resources.

Comprehensive planning mandated under various state laws includes planning for water resource development and preservation of areas associated with other water values, such as wetlands, lakes, rivers and flood plains.

Planning can link water resource development, wetlands, and water quality protection to land-use planning and helps ensure that state interests are protected at the local level through the adoption of local land-use plans consistent with state standards.

Greenway/River Corridor Plans serve to establish or retain open space created along a natural river corridor for recreational or protective purposes. A greenway plan establishes maintenance and responsibility plans for protection and use of the most important features of the corridor. They follow ecological boundaries and reflect the landscape of the

In the mid-1980s, the Oregon Legislature established a recreation resource management area for the Lower Deschutes River, due to excessive recreational use, litter, trespass, and congestion. This required the development of a recreation plan and the creation of a planning committee.

Soon thereafter, the river was designated a federal Wild and Scenic River requiring a federal planning effort. A joint planning committee was created with the primary purpose of developing a comprehensive management plan for the lower river.

After five to six years of work, a plan was adopted which addresses land acquisition guidelines, access issues, methodology on monitoring and power boat regulations. This plan has been accepted by the Bureau of Land Management in compliance with its Wild and Scenic Rivers requirements.

resource. They also can be coordinated with other programs related to purposes involving aesthetic, historic, habitat, and recreational values.

Incentives

States can create financial incentives for watershed protection which include grants, loans, reductions in taxes and construction of improvements, or through subsidy payments to landowners.

The use of pollutant trading within the context of the Clean Water Act (CWA) should also be included in the category of incentives. For example, pollutant trading provides industry, and other point source dischargers, with an opportunity to underwrite the clean up of non-point source pollutants in exchange for credit in the form of relief from environmental liability. The involved industry or municipality works with the appropriate oversight agency to remedy the pollutant flow. It then receives "credits" for the work, based on water quality benefits achieved and stream miles benefited.

Washington's water salvage/conservation program offers funds to irrigation districts and other public entities, to implement conservation measures. Water conserved by these measures then becomes a "trust water right" that is conveyed to the state Department of Ecology to increase the state's overall ability to manage water.

The amount of water previously beneficially used is the basis from which a trust water right is created, with the same priority date.

Cost-sharing for the implementation of CWA Best Management Practices is another example of the use of incentives. Most nonpoint source controls are installed on private property, yet the effects of these practices often do not directly benefit the landowner. Cost-sharing has been viewed as the most effective method of ensuring landowner cooperation in a voluntary pollutant control program.

The Coors Brewing Company, in partnership with the Colorado Department of Health, EPA and other stakeholders, is working on a pilot project to clean up a number of abandoned mine sites in the upper Clear Creek Watershed in Colorado by encouraging the adoption of these "orphan" sites in return for clean up credits. The Clear Creek Watershed Improvement Initiative has leveraged federal funds, largely from the EPA and the Forest Service, with matching funds from Coors to conduct the restorative work. The group sees the solution as offering the possibility of integrating water quality and ecosystem management.

Technical Assistance, Education, and Outreach

States can provide technical assistance to local governments and landowners. Such assistance might be in the form of data, maps, informational materials, and expert knowledge. Landowners can benefit from guidebooks, workshops, and personal

communications designed to educate landowners about resources and options. School aged children can learn from environmental curricula developed in public and private schools. The public at large can benefit from television commercials, radio announcements, editorials, reading materials, exhibits, lectures, tours, etc.

The Cooperative State Research, Extension, and Education Service (CSREES) provides information and recommendations on soil conservation and water quality practices to landowners and farm operators in cooperation with the State Extension Services and state and local offices of USDA agencies and Conservation Districts. In 1995, about 5 percent of extension education effort was directed to USDA's Water Quality Program activities, and 4 percent to sustainable agriculture.

The Washington Department of Ecology formed the Interagency Technical Assistance Team to support local committees seeking funding for watershed projects in the Puget Sound basin, which are required to prepare action plans for control of nonpoint pollution sources. The team consists of representatives from over 20 state agencies with expertise in:

-agricultural and forestry BMPs
-technical transfer to the agricultural community
-surface water quality monitoring and assessment
-groundwater protection
-storm water management
-shellfish protection
-public involvement strategies
-wildlife management, and
-habitat protection.

Several states are endeavoring to educate people within basins about challenges facing a particular basin or more generally about water management issues. At least one state assigns "co-extension service specialists" as a type of consultant to those within the basin. Educational programs and training sessions can lead to a better understanding of unique resource needs and concerns and also provide a forum for communications among individuals sharing a common geographic area. From the states' perspective, it is also useful to educate watershed participants of state policies and processes. This will aide them as they consider alternatives for achieving their objectives within the watershed.

Research

Research by universities, individuals, or private organizations is often funded by state grants. The research may be policy-related or scientific in nature.

The Water Resources Research Act of 1964 authorized a nationwide network of university-based water research institutes, usually located in the land grant institution of each state. Seven western institutes from the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming came together to form the Powell Consortium in the early 1970s to work on water resources problems of the Colorado River/Great Basin region and other areas of the West. The main research focus of this group is to analyze water law and policy as vehicles for finding creative solutions to water planning and management in the region.

FEDERAL PROGRAMS

For the purposes of this section, the seven categories are given with a listing of federal tools that fit within each category. Many of them are briefly summarized here. There follows a more extensive description of those judged to be of particular significance. These are designated with an asterisk in the listing below. This section should not be viewed as a comprehensive inventory of all relevant federal programs, but rather a listing of many of the most important related to water resources. For additional information, reference is made to two documents among others listed in the "Reference" section of this guidebook: namely, *Draft 1997 Directory of Programs for Watershed Protection*, U.S. Department of the Interior (1997), and *Water Quality: A Catalog of Related Federal Programs* (Letter Report, 6/19/96, GAO/RCED-96-173).

Many of these programs below could be listed in more than one category, as the descriptions indicate. The Clean Water Act, for example, is a comprehensive strategy, containing programs fitting within each of the categories below. Although somewhat arbitrary, therefore, the listing provides an assessment of the relevant programs' primary thrust, while their descriptions will point to other kinds of assistance.

Acquisition

*Emergency Wetlands Resources Act
(16 U.S.C. §§ 3901-3932 (Supp. 1991))

Land and Water Conservation Fund Act
(16 U.S.C. §§ 4601-4 to 4601-22 (1974 & Supp. 1991))

Pursuant to this Act, states and local communities can receive federal matching grants for land acquisition and recreation development. States are required to prepare State Comprehensive Outdoor Recreation Plans to qualify for grants. The information in these plans can assist states, local governments, and private groups in applying other watershed protection tools.

National Wildlife Refuge System (Fish and Wildlife Service)
Numerous legislative authorities, including National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee)

The program features acquisition of the minimum interest needed to conserve habitats of migratory birds, endangered species, and anadromous fish. Cooperative extension agreements and challenge, cost-shared arrangements, on and off Service lands, provide an opportunity for private landowners and local organizations to cooperate and contribute to accomplishing conservation goals.

Regulation

*Clean Water Act

NPDES, Pollution Trading, Water Quality Certification, TMDLs, grants, etc.

Coastal Zone Management Act

(16 U.S.C. §§ 1451-1464 (1985 & Supp. 1991))

Under the Coastal Zone Management Act, coastal states may voluntarily participate in the federal coastal zone management (CZM) program by preparing comprehensive CZM plans, which provide for the conservation and environmentally sound development of coastal resources. For federal approval, state plans must demonstrate that they provide enforceable standards for the protection of specific coastal resources.

*Endangered Species Act

*Federal Power Act

Federal Energy Regulatory Commission Hydropower Licensing Program

*National Environmental Policy Act

Safe Drinking Water Act

The Safe Drinking Water Act is the primary statute for protection of our nation's public drinking water supply. The 1996 amendments emphasize comprehensive public health protection through regulatory improvements, increased funding, prevention programs, and public participation. Funding is significantly increased through higher state drinking water program grants and a new multi-year, multi-billion dollar Drinking Water State Revolving Fund (DWSRF) for infrastructure improvements for water systems. In addition, new state prevention initiatives were created and funded.

Planning

Conservation Planning/Coordinated Resource Planning Process (Natural Resources Conservation Service)

The Natural Resources Conservation Service (NRCS) helps develop, implement and evaluate conservation plans for individuals and area-wide conservation plans or assessments for groups within watersheds or other defined areas. Technical assistance regarding implementation of on-farm conservation practices is also provided. The coordinated resources management process is one that has been used for planning, problem solving, and conflict resolution. The process emphasizes local ownership of the resulting plan and is emphasized as such in developing area-wide conservation plans. It may include a variety of stakeholders that can address a multitude of resource related problems and opportunities.

Environmental Infrastructure Planning

(U.S. Army Corps of Engineers)

(Authorized by the Water Resources Development Act of 1992, Public Law 102-580, Section 219.)

Studies and technical/engineering support for planning and design of water-related environmental infrastructure are conducted.

General Investigations Program

(Bureau of Reclamation)

(Authorized by the Reclamation Act of 1902, Public Law 102-575, Title 16.)

Under the General Investigations Program, studies are conducted to meet current and future water quality, quantity, and environmental needs through the management of water supplies by structural and nonstructural means. Feasibility studies require 50 percent cost-sharing from a nonfederal entity. Technical assistance to states can be provided without cost-sharing.

General Planning Studies

(Bureau of Reclamation)

(Reclamation Act of 1902, 43 U.S.C. § 371 *et seq.*)

Involves Reclamation's participation in special studies requested by other natural resources agencies and management overview of these activities.

Habitat Conservation--Project Planning

(U.S. Fish and Wildlife Service)

(Authorized by the Fish and Wildlife Coordination Act, August 8, 1956, Chapter 1036; Federal Water Pollution Control Act, as amended, Public Law 92-500; Federal Power Act, as amended, June 10, 1920, Chapter 285.)

The program is designed to provide opportunities and cooperative efforts with other government agencies and private partnerships to protect, restore, and enhance fish and wildlife habitats; provide technical assistance to the private sector to maximize wildlife conservation in wetlands, associated uplands, and riparian areas; and advocate conservation and enhancement of fish and wildlife resources and habitats that may be affected by energy and water resource development. Technical assistance and advanced planning/consultation services are provided.

*National Estuary Program

*Wild and Scenic Rivers Act

*Watershed Protection and Flood Prevention Act

River Conservation and Management

(National Park Service)

(16 U.S.C. §§ 1271-1287 (1985 & Supp. 1991))

The National Park Service provides assistance in river conservation planning and management to state and local governments, private groups, and landowners. This assistance applies to rivers within and without the Wild and Scenic Rivers system. Two common projects are statewide river assessments and river corridor planning.

Resource Conservation and Development Program

(Natural Resources Conservation Service)

This program was authorized by Public Law 97-98. It provides technical and limited financial assistance for the planning and installation of approved projects in authorized resources, conservation, and development areas in order to encourage and improve the capability of state and local units of government and local nonprofit organizations in rural areas to plan, develop, and carry out programs for resource conservation and development and community sustainability.

Restoration and Management (Listed by agency)

Bureau of Land Management

Riparian-Wetland and Watershed Management

Federal Land Policy Act of 1976, Watershed Protection and Flood Control Act of 1954, Water Quality Act of 1987, Water Resources Development Act of 1974.

Assists in restoration, maintenance, and management of riparian-wetland areas and watersheds on BLM lands in cooperation/partnership with private, state, and other federal agencies.

Farm Programs/U.S. Department of Agriculture

Wetlands Reserve Program

(16 U.S. C. §§ 3837a-3837f (Supp. 1991))

This program provides financial incentives for restoration and protection of up to one million acres of wetlands if producers agree to long-term easements. Priority is given to producers willing to establish permanent easements.

Conservation Reserve Program

(This program was authorized by Public Law 99-198, the Food Security Act of 1985, as amended; Federal Agriculture Improvement and Reform Act of 1986.)

Its purpose is to improve soil and water quality by reducing soil erosion and sedimentation and establish wildlife habitat, among other objectives. Assistance provided with limitations, as well as direct cost-share payments, annual rental payments, and technical/engineering support. Cost-share payments are limited to up to 50 percent of the cost to establish groundcover for erosion-reduction purposes, and annual rental payments are capped at $50,000 per applicant, per fiscal year.

U.S. Fish and Wildlife Service

Wildlife Restoration

(Federal Aid in Wildlife Restoration Act of 1937, 50 Stat. 917 as amended; 16 U.S.C. 669.669i.)

Designed to support projects to (1) restore or manage wildlife populations and the provision of public use of those resources, and (2) provide facilities and services for conducting a hunter safety

program. Provides formula grants, 50% on the basis of land area of the states and 50% on the basis of paid hunting license holders.

Incentives and Disincentives

Efficiency Incentives Program

(Reclamation Reform Act of 1982, Title II, Public Law 97-293)

Provides partnership capability for Reclamation and its customers, in cooperation with states and other entities, in seeking solutions to water-use efficiency problems. Technical support and assistance to districts in planning, evaluating, demonstrating, and implementing efficiency measures as part of Reclamation's Water Conservation Field Services Program.

Environmental Quality Incentives Program (EQIP)

Created by the 1996 Farm Bill, EQIP is a voluntary USDA conservation program for farmers and ranchers who face serious threats to soil, water, and related natural resources. It provides technical, financial, and educational assistance primarily in designated priority areas. Nationally, half of the funding for EQIP is targeted to livestock-related natural resource concerns and the remainder to other significant conservation priorities. The program is available in every state, with an emphasis on either state-identified priority areas or significant statewide concerns. In general, priority areas are defined as watersheds, regions, or areas of special environmental sensitivity or having significant soil, water, or related natural resource concerns. Priority areas are determined by a process that begins with local work groups.

Stewardship Incentive Program

U.S. Department of Agriculture

This program was authorized by the Food, Agriculture, Conservation and Trade Act of 1990. It encourages private landowners to manage their forest land in ways that improve water quality, including tree planting and the implementation of best management practices for stream crossings and streamside management. Direct payments, technical/engineering support, and education are provided. The federal cost share cannot exceed 75% of the total cost, with a maximum of $10,000 per applicant, per fiscal year.

Swampbuster

Under the Swampbuster program, farmers are denied crop subsidies and other agricultural benefits if they:

- drain or otherwise convert wetlands for the purpose of (or to have the effect of) making possible the planting of agricultural commodity crops after November 28, 1990; or
- plant commodity crops on wetlands converted after December 23, 1985.

Research and Technical Assistance (Listed by agency)

Bureau of Reclamation

Construction Program

(Authorized by Reclamation Act of 1902.)

To provide funding and assistance for the implementation of structural and operational measures to improve water and water-related resources management.

Technical Assistance to States

(Reclamation Act of 1902.)

Provides Reclamation with the capability to assist states or state-chartered agencies with data collection and analyses for management of water and related land resources, such as instream flows, groundwater, and water quality problems.

Waste Water Reuse Program

(Authorized by Public Law 102-575, Title XVI, as amended.)

To investigate and identify opportunities for the reclamation and reuse of municipal, industrial, domestic, and agricultural wastewater; for the design and construction of demonstration and permanent facilities to reclaim and reuse wastewater; and to conduct research for the reclamation of wastewater and naturally impaired groundwater and surface water.

U.S. Fish and Wildlife Service

Fish and Wildlife Management Assistance

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-j); Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*)

Provides technical information, advice, and assistance to federal agencies, other nations, states, and Native Americans on the conservation and management of fish and wildlife resources and the prevention of introduction and spread of nonindigenous aquatic nuisance species.

Partners for Wildlife

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-j); Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*)

Provides technical and habitat restoration assistance to private landowners for the direct benefit of declining species and contributes to the conservation of biological diversity. Also provides technical assistance to USDA agencies involved in the implementation of several key Farm Bill conservation programs.

National Wetlands Inventory

Emergency Wetlands Resources Act of 1986 (P.O. 99-645) and amendments

Digital wetlands data are being used extensively throughout the nation in myriad applications for ecosystem and watershed management. Paper maps are produced as composite overlays on 7.5 minute USGS topographic maps.

U.S. Geological Service

Federal-State Cooperative Program

Technical assistance program in which half of the funding is provided by state and local governments for projects of joint interest. Examples of funded projects are collection of water resources data; hydrologic research; surface water and ground water studies; water quality studies; water use program which compiles data by watershed nationally.

Water Data Program

(Appropriations legislation.)

Water data stations at selected locations throughout the nation are used to obtain records of stream flow and height, reservoir and lake stage and storage, ground water levels, well and spring discharge, and the quality of surface and ground water. The activity provides the information needed by federal, state, and local agencies and the private sector for the development and management of water resources.

National Park Service

Rivers, Trails, and Conservation Assistance

(National Wild and Scenic Rivers Act Section 11; National Trails System Act; Outdoor Recreation Act)

Helps citizens conserve rivers, establish trails, and provide outdoor recreational opportunities. The National Park Service, in partnership with citizens and state and local governments, is involved in the early phases of projects in setting up goals, resolving difficult issues, and reaching consensus about the future use and protection of important land and water resources, generally on non-federal lands.

Water Resource Management Plans

(National Park Service (NPS), Water Resources Division and individual NPS units)

Development and implementation of water resources and watershed management plans for the use and protection of National Park Service water resources.

CLEAN WATER ACT

33 U.S.C. §§ 1251-1387 as amended (1987)

A. Clean Water Act Initiative and Action Plan

The Clean Water Action Plan was announced by President Bill Clinton in February 1998 to chart a course that would fulfill the original Clean Water Act goal of achieving "fishable and swimmable" waters.

The Action Plan relies on "a new cooperative approach to watershed protection in which state, tribal, federal, and local governments, and the public, first identify the watersheds with the most critical water quality problems and then work together to focus resources and implement effective strategies to solve those problems."

The Action plan proposes $500 million in fiscal year 1999 for its implementation. Key elements of the approach include: (1) watershed assessments that will be used as a vehicle to identify watersheds that will be targeted to receive new FY99 budget resources, and those pristine, sensitive, or threatened watersheds that demand extra protection; (2) watershed restoration action strategies, which will identify causes of water pollution and actions needed to remedy those problems, set milestones to measure progress, and target federal agencies' funding under the FY99 Clean Water Initiative to help implement specific actions; (3) watershed pollution prevention, which encourages states, tribal, and federal agencies to bring core programs and existing resources together to keep waters clean; and (4) watershed assistance grants, which will be available from federal agencies for local organizations that want to take the lead in building up local efforts to restore and protect watersheds.

President Clinton also announced that he is requesting from Congress $2.3 billion over the next five years to implement the Action Plan. This funding is to "increase direct support to states and tribes to carry out a watershed approach to clean water; increase technical and financial assistance to farmers, ranchers, and foresters to reduce polluted runoff and enhance natural resources on their lands; fund watershed assistance and partnership programs and grants to help local communities and citizens take leadership roles in restoring watersheds; accelerated progress in addressing critical water quality problems on federal lands, including those related to roads, abandoned mines, riparian areas, and rangelands; and expand/coordinate water quality monitoring programs.

More information on the Initiative and Action Plan are available at EPA website. The internet address is: www.epa.gov/cleanwater.

B. Other Provisions/Programs

The Clean Water Act constitutes the most comprehensive federal regulatory protection against activities that degrade water quality.

Water quality certification authority under Section 401 of the Clean Water Act grants states the right to certify that proposed federally permitted or licensed activities comply with state water quality requirements, and to impose conditions to assure such compliance. States are encouraged by the EPA to define protection of water quality broadly in order to include protection of aquatic life, wildlife, aquatic habitat, vegetation, and hydrology required to maintain the aquatic system.

Section 402 establishes the National Pollution Discharge Elimination System. It provides the basis for programs dealing with point-source pollution control, water quality monitoring, and water quality certification. It authorizes the issuance of permits that regulate the discharge of pollutants into the navigable waters of the U.S.

Section 404 regulates the discharge of dredged or fill material into the waters of the U.S. The Army Corps of Engineers and the U.S. Environmental Protection Agency both administer Section 404. The Corps may issue permits for the discharge of dredged or fill material after notice and opportunity for a public hearing are given, and provided that the activity to be permitted complies with environmental guidelines found in Section 404(b)(1). The EPA is responsible for reviewing and commenting on the permit applications that are being reviewed by the Corps. The EPA may veto a permit application for the discharge if it would have an unacceptable effect on municipal water supplies, fisheries, shellfish beds, wildlife, or recreational areas.

Clean Water Act features which are particularly relevant to building a state strategy for watershed planning and protection are: water quality standards; the Wastewater Treatment Plant State Revolving Funds (SRF); the National Pollutant Discharge Elimination System (NPDES); Total Maximum Daily Loads (TMDL); nonpoint source programs; the National Estuary Program; and the Section 404 permitting program.

Water quality standards are based upon three elements: the designated use of the waterbody; the water quality criteria necessary to maintain the integrity and protect the uses of the waterbody; and an antidegradation policy to ensure continued enjoyment of a high-quality waterbody.

In 1987, State Revolving Funds were established with seed money provided from the federal government to help states and local communities fund the construction of sewage treatment facilities. A state may first satisfy any sewage treatment needs and then, depending on state law and practice, may use revolving funds for other activities such as nonpoint source activities.

The NPDES system requires that each point source of wastewater obtain a permit regulating that facility's discharge of pollutants. The 1987 Amendments placed special emphasis on identification and control of waters that remain impaired by toxic pollutants even after application of technology-based requirements.

"Pollution trading" is an important, and relatively new, concept. Pollution trading involves any agreement between parties contributing to water quality problems on the same waterbody that alters the allocation of pollutant reduction responsibilities among the sources. Trades are broken down into five different categories:

1. Point/Point Source Trading;
2. Intra-plant Trading;
3. Pretreatment Trading;
4. Point/Nonpoint Source Trading; and
5. Nonpoint/Nonpoint Source Trading.

These categories are broad and might not reflect all possible trading combinations.

The CWA requires that TMDL's be established for waterbodies where water quality standards cannot be met after all technology-based controls are in place. TMDL's are the "loads", or amounts of pollutants, including an extra margin for safety, that a waterbody can assimilate and still meet water quality standards. The TMDL process is a five-step process which includes: (1) identification of water quality-limited segments; (2) priority ranking and targeting; (3) TMDL development; (4) implementation of control actions; and (5) assessment of water quality-based control actions.

Nonpoint source programs, established under Section 319 of the 1987 Amendments, require each state to submit (1) an assessment of state waters not expected to meet water quality standards due to nonpoint source pollution, and (2) a management program for controlling nonpoint source pollution. Many of these programs can be sponsored by Section 319 grants.

In response to erosion and pollution in Otter Creek, located 200 miles south of Salt Lake City, Utah, the Utah Division of Water Quality and the Utah Department of Agriculture set up the Otter Creek Steering and Technical Committees. The Steering Committee consists of local landowners while the Technical Committee includes representatives of federal and state environmental agencies.

Funding sources included grants provided under section 319 of the Clean Water Act and the Agricultural Conservation Resource Program.

The Steering Committee has been able to use these monies to complete several demonstration projects involving stream bank stabilization and rangeland improvement. Because the Steering Committee has been able to demonstrate to landowners how they would be benefitted by maintaining the watershed, landowners have participated enthusiastically in the processes.

The CWA also encourages steps to ensure that groundwater resources are not adversely impacted by surface water programs. Section 319 nonpoint source management programs must demonstrate that their water quality best management practices are at least pollution neutral in terms of their impacts to groundwater.

The National Estuary Program adopts a watershed approach by planning and implementing water quality management activities for an estuary and its entire drainage area. When an estuary is selected, a management conference is convened by the EPA with stakeholders from all interested groups to more fully characterize the estuary's problems and to seek solutions.

The Section 404 permitting program is the primary regulatory tool to protect wetlands. Courts have broadly construed its reach. The Corps of Engineers must authorize proposed dredge and fill activities and EPA has veto authority in the event it finds unacceptable adverse environmental impacts.

EMERGENCY WETLANDS RESOURCES ACT

(16 U.S.C. §§ 3901-3932 (Supp. 1991))

This act promotes prevention of serious loss of wetlands by the identification and acquisition of wetlands and other essential habitat.

Regional Fish and Wildlife Service offices prepare Regional Wetlands Concept Plans that include lists of "priority" sites for acquisition. The Act authorizes acquisition of wetlands with Land and Water Conservation Fund monies. Such "priority" acquisitions focus on declining wetland types within an ecoregion, and are subject to identifiable threat of loss or degradation.

ENDANGERED SPECIES ACT

(16 U.S.C. §§ 1531-1544 (1985 & Supp. 1991))

The Endangered Species Act (ESA) requires federal agencies to conserve endangered and threatened species. It also prohibits any person from "taking" endangered or threatened species.

If any proposed activity would be detrimental to an endangered specie's critical habitat, the ESA serves to prevent such activity. However, it only protects habitat to the extent that preservation is critical to the endangered or threatened species, and thus is narrowly focused. However, the ESA has been used as a catalyst for watershed basin management and protection efforts which go beyond species protection.

The Endangered Species Act is also enforceable through citizens' suits authorized by the Act itself. Both citizens acting to protect an endangered species and citizens who believe that federal agencies are overreaching their bounds in enforcement of the ESA may sue under the Act.

After three years of collecting and reviewing date, the governors of Utah, Wyoming, and Colorado, along with the Secretary of the Interior, signed a Cooperative Agreement creating the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin.

This agreement is the result of cooperative discussion between water and power users, environmentalists, the Department of the Interior, and the three states. Discussion began when biological opinions declared four species of fish as endangered, which threatened to embroil all interested parties in a confrontation between resource protection and resource development. The agreement created an Implementation Committee (IC) which meets several times per year to review work plans and make policy decisions. The Management Committee manages day-to-day operations under authority of the IC, and has formed several technical advisory committees.

Although there is significant local opposition to specific projects, the Recovery Plan has strong support from the state governors.

EPA WETLANDS PROGRAM-- STATE DEVELOPMENT GRANTS

These grants are available to states to use for development and/or enhancement of wetlands protection programs. They can be used to improve the ability to apply other tools or programs in protecting wetlands. The funding that they provide has been important in the support of various state wetlands efforts.

FEDERAL POWER ACT

16 U.S.C. §§ 791-823 as amended (1988)

Among other things, the Federal Power Act (FPA) established the Federal Energy Regulatory Commission (FERC) and gave it authority over private hydropower development. Intended to establish comprehensive planning and management of navigable rivers, FERC requires applicants to consider state plans in decisions, Because the FERC process is a quasi-judicial one, it hasn't historically lent itself to furthering watershed partnerships. At the same time, if federally licensed hydropower projects need relicensing or if proposals exist for new facilities, the FERC process will have a strong influence on what is possible and how partnerships need to proceed. Further, a new alternative process that relies on a consensus process among stakeholders has been developed by FERC.

> The Wisconsin Electric Power Company, along with state and federal officials and conservation groups, negotiated a cooperative watershed agreement prior to the start of the federal relicensing process. The agreement calls for the removal of 3 dams, increases in minimum flows for fish and recreation, installation of fish barriers at all hydro project intakes, protection of 22,000 acres of pristine and riparian project land, as well as development of a canoe trail with wilderness camp sites along the Menominee River, etc.

NATIONAL ENVIRONMENTAL POLICY ACT

(42 U.S.C. §§ 4321-4375 (1977 & Supp. 1991))

NEPA requires that environmental impacts be considered in federal decision making. Major federal actions that significantly affect the quality of human environment require the preparation of an environmental impact statement (EIS). An environmental assessment (EA) is first made to determine whether a full EIS is necessary.

NEPA requires full consideration of environmental impacts for all major federal actions and extensive public and agency comment on an EIS during the preparation and on drafts. But NEPA does not prevent adverse effects--it merely requires that all possible impacts are considered fully.

WATERSHED PROTECTION AND FLOOD PREVENTION ACT

(16 U.S.C. §§ 1001-1009 (1985 & Supp. 1991))

The Act provides financial and technical assistance to local organizations for planning and carrying out projects in watersheds not larger than 250,000 acres in size. The purposes of this program are to promote flood prevention, agricultural water management, recreation, municipal and industrial water supply, and fish and wildlife development.

The 1990 Farm Bill amended the watershed protection program to allow cost sharing (federal funding of 50 percent or more) for acquiring perpetual wetlands or floodplain easements for conservation or flood prevention. Loans and funding advances may also be available for other projects. Eligible organizations include Indian tribes, state or local governments, soil or water conservation districts, flood prevention or control districts, nonprofit water users' associations, and similar organizations that can carry out and maintain improvement projects.

The Natural Resources Conservation Service operates the Small Watershed Program. The purpose of the program is to provide technical and financial assistance to state agencies and units of local government in planning and carrying out works of improvement to protect, develop and utilize the land and water resources in small watersheds. This includes total resource management and planning to improve water quality and solve problems caused by flooding, erosion, and sediment damage, conservation, development, utilization, and disposal of water.

Any state agency, political subdivision of a state, or tribal organization may receive assistance in the form of studies, monitoring, loans, cost-share grants, and technical assistance for the installation of land treatment measures. Cost-share rates depend on the type of measure (land treatment--structural or nonstructural) and, for structural measures, the purpose to which the cost is allocated.

NATIONAL WILD AND SCENIC RIVERS ACT

16 U.S.C. §§ 1271-1287 (1968)

The Act assists state and local governments and communities in conducting Wild and Scenic River studies, preparing Wild and Scenic River management plans, and (in a few cases) implementing these management plans. Some management plans include broad watershed protection among their objectives.

Assistance includes evaluation of resources, developing management plan alternatives, preparing Environmental Impact Statements, coordinating federal agency reviews, and monitoring federal agency actions and plans. Planning is conducted with a community-based, public process.

PRIVATE TOOLS

Acquisition

Private acquisition techniques complement public land protection measures and provide effective protection measures for areas not adequately protected through regulation. Some of the most important private mechanisms include: conservation easements; donations or bargain sales of both fee-simple and less-than-fee interests; options to purchase property; rights of first refusal to purchase property; and, preacquisition and resale of property to a public agency. Private parties may also play an important role in the acquisition of water rights to be used for instream flow purposes.

The Oregon Water Trust is a non-profit corporation founded in 1993 to acquire consumptive water rights from existing users and convert them to instream flows. The Trust is currently funded primarily by foundation grants and "mitigation payments"--monies obtained through other groups as a result of legal challenges to water withdrawals.

As of January 1997, the Trust had 25 water rights transactions in various stages of completion. The Trust's first permanent acquisition was for 0.16 cfs or water in Sucker Creek. This was purchased from a riparian property owner for $8,800. Although the water right is one of several on the creek, it has an early priority date of 1857, and may represent the difference between flow and no flow for several miles of the creek during dry months.

Regulation

Although regulation is carried out exclusively by governments, private organizations and individuals play a vital part in the process. Influencing the formulation of laws, litigation, and watchdog activities are vital to the implementation and enforcement of all sound governmental regulation. Creation of a watershed council is one way to provide a forum for the expression of ideas and concerns, the discussion of needs, problems and objectives, and the facilitation of projects and activities that will influence the shaping of laws through the involvement of the stakeholders.

The Henry's Fork Watershed Council was founded in 1993 as an alternative to the conflict and polarization that had marked resource management and regulation debates in the basin for decades and had grown especially intense in the early 1990s. The Council is a grass-roots, consensus-based forum composed of diverse interests seeking to advance the ecological health of the basin and the economic sustainability of its communities. Participants include farmers, conservationists, agency and community representatives, elected officials and others who "reside, recreate, make a living and/or have legal responsibilities" in the basin.

Planning

The private sector provides the input, vision, and priorities that mold a comprehensive plan and ensure its success. It is essential that the community participates in comprehensive planning as resource protection often results from efforts of

citizens to bring such issues to the attention of local government officials. Private organizations and individuals can contribute to the planning process by: attending public hearings; seeking appointment to the local planning commission; undertaking a natural resource inventory using private funds; and, developing literature and other media.

Technical Assistance, Education and Outreach

Environmental education is another area where private individuals and organizations can play an important role. They are able to develop materials that can be used by school districts and educators. Many private organizations are also involved in other forms of outreach as well, as in newsletters, workshops, newspaper editorials, and TV specials.

The Water Education Foundation is a nonprofit, impartial, tax-exempt organization. Its mission is to develop and implement educational programs leading to a broader understanding of water issues and to resolution of water problems. The Foundation's programs are largely supported by the development and sale of water-related educational materials, including the bi-monthly magazine Western Water.

Private organizations also provide funding to promote watershed education. The National Fish and Wildlife Foundation has invested over $1 million in federal matching funds toward formal and informal watershed education programs for youth, teachers, and other community members. The National Environmental Education and Training Foundation uses federal funds to award one-year competitive challenge grants for environmental education projects that help people make the connection between their water source and their water faucet.

To assist in the educational process, materials such as the Sourcebook for Watershed Education by the Global Rivers Environmental Education Network may prove useful and informative. Guidebooks, catalogues, videos, websites, and brochures are available from many private sources on a wide variety of watershed- related topics, all of which can prove to be extremely useful in educating participants, and thereby creating support for the watershed effort.

Save Our Streams, operating out of Gaithersburg, Maryland, provides technical assistance on stream restoration and volunteer monitoring techniques to local watershed groups through workshops, guides and a 1-800 number. This group encourages the formation of partnerships with federal and state agencies, as well as private sector sponsors, which allows some groups to get enough outside funding to conduct stream restoration projects with as little as $500-$1,000 of their own money.

Research

Private organizations are great sources of technical assistance to both private and governmental groups interested in watershed management and planning. Various private research institutes are involved in providing funding for water resources research, including pilot projects. The private sector can be actively involved in research funded by government agencies or other private organizations. They might be in a place to provide information not otherwise available to local and state agencies. Private organizations are heavily involved in research as a component of a larger project, post-project evaluations, policy research, and scientific research.

WATERSHED TOOLS

	FEDERAL	STATE	LOCAL	PRIVATE
ACQUISITION	Emergency Wetlands Resources Act Land and Water Conservation Fund Act National Wildlife Refuge System (U.S. Fish and Wildlife Service)	Reservation of waters from appropriation Instream water rights Fee simple purchase of land or water Easements	Local acquisition of land as a complement to land-use regulation Easements Land trusts or quasi-public entities that participate in the local real estate market	Private fee simple acquisition Conservation easements Options to purchase Acquisition of water rights
REGULATION	Clean Water Act NPDES, Pollution Trading, Water Quality Certification, TMDLs, grants, etc. Coastal Zone Management Act Endangered Species Act Federal Power Act FERC Hydropower Licensing Program National Environmental Policy Act Safe Drinking Water Act	State Environmental Policy Acts Water rights administrative programs Forfeiture/abandonment Floodplain management programs Wetlands regulatory programs State river protection programs State Fish and Wildlife programs	Zoning, subdivision regulations, mandatory cluster development Impact fees	Influencing formation of regulation and litigation Other watchdog activities
PLANNING	Conservation Planning/Coordinated Resource Planning Process (NRCS) Environmental Infrastructure Planning (U.S. Army Corps of Engineers) General Investigations Program (BOR) General Planning Studies (BOR) Habitat Conservation -- Project Planning (U.S. Fish and Wildlife Service) National Estuary Program Wild and Scenic Rivers Act Watershed Protection and Flood Prevention Act River Conservation and Management (National Park Service) Resource Conservation and Development Program (NRCS)	State mandated comprehensive planning Greenway/river corridor plans Drought contingency plans	Comprehensive local planning Land-use planning Policy planning	Active participation in the public segments of the planning process
RESTORATION/ MANAGEMENT	Bureau of Land Management: Riparian-Wetland and Watershed Mngmt Farm Programs/U.S. Dept of Agriculture: Wetlands Reserve Program Conservation Reserve Program U.S. Fish and Wildlife Service Wildlife Restoration			Development of outreach materials Publication of newsletters Production of workshops, editorials, TV specials, etc.
INCENTIVES/ DISINCENTIVES	Efficiency Incentives Program Environmental Quality Incentives Program (EQIP) Stewardship Incentive Program Swampbuster	State grant/loan/tax reduction programs for watershed protection Pollutant trading under the CWA State cost-sharing for Best Management practices	Use-value taxation Impact fees	

\Continued	FEDERAL	STATE	LOCAL	PRIVATE
RESEARCH AND TECHNICAL ASSISTANCE	Bureau of Reclamation Construction Program Technical Assistance to States Waste Water Reuse Program U.S. Fish and Wildlife Service Fish & Wildlife Management Assistance Partners for Wildlife National Wetlands Inventory U.S. Geological Service Federal-State Cooperative Program Water Data Program National Park Service Rivers, Trails, & Conservation Assistance Water Resource Management Plans	Data, maps, informational materials Expert knowledge of state personnel Public school educational programs Research by universities, individuals, private organizations funded by the state	Best source of public information to promote understanding and cooperation with regulatory programs On-site assistance	Provide funding for water resources research Government-funded research Private sector may be source of information not otherwise available to government agencies.

Chapter VI

FUNDING

To provide a complete listing of all funding options goes beyond the scope of this work. Moreover, materials already exist that provide guidelines for estimating, locating and obtaining necessary funding. The following is a brief description of some of these materials. Those interested in the watershed approach will find them to be valuable references.

Healing the Watershed. A Citizen's Guide to Funding Watershed and Wild Salmon Recovery Programs.

The Pacific Rivers Council has put together an extensive compilation which should prove very useful to local watershed groups as well as government agencies and others. This guide is not limited to listings of possible funding sources such as grants, loans and trust funds, but offers guidance on determining whether or not funding is necessary, what watershed restoration may entail, and on how to calculate the amount of funding that is necessary. Also included are options for creating new, independent funding mechanisms and important considerations for evaluating new revenue options.

Finally, this book lists many of the available sources of funding for watershed projects. These include federal grant and loan programs, federal trust funds, federal and state tax incentive programs, and examples of state financial assistance programs for watershed projects from four western states.

The telephone number for the Pacific Rivers Council is: (503) 345-0119.

Watershed Tools Directory: A Collection of Watershed Tools.
http://www.epa.gov/OWOW/watershed/tools

EPA's Office of Wetlands, Oceans, and Watersheds maintains a listing at the above web site of available tools or mechanisms that may provide assistance in watershed planning and management. Included is a section on financial assistance tools with information on various grant programs and financing possibilities.

Funding Source Descriptions According to Topic

Coastal Waters

- Department of Commerce
  - Coastal Service Center Cooperative Agreements
  - Coastal Zone Management Administration/Implementation Awards
  - Financial Assistance for Ocean Resources Conservation and Assessment Program
- EPA
  - National Estuary Program

Conservation
- Federal Emergency Management Agency
  - Flood Mitigation Assistance Program
  - Hazard Mitigation Grant Program
- Department of Agriculture
  - Conservation Reserve Program
  - Emergency Conservation Program
  - Resource Conservation and Development Program
  - Wildlife Habitat Incentives Program
- Department of the Interior
  - Cooperative Endangered Species Conservation Fund-Grants to States
  - Partners for Wildlife Habitat Restoration Program
  - Wildlife Conservation and Appreciation Program

Economic Development
- Department of Agriculture
  - Water and Waste Disposal Systems for Rural Communities
- Department of Housing and Urban Development
  - Community Development Block Grant Program
- EPA
  - Brownfields Economic Redevelopment Initiative
  - Sustainable Development Challenge Grants
  - US-Mexico Border XXI Grants Program

Education
- Department of Agriculture
  - Sustainable Agriculture Research and Education
- EPA
  - Environmental Education Grants Program

Environmental Justice
- EPA
  - Environmental Justice Community/University Partnerships Grants Program
  - Environmental Justice Grants to Small Community Groups
  - Environmental Justice Though Pollution Prevention Grants Program

Fisheries
- Department of Commerce
  - Fisheries Development and Utilization Research and Development Grants and Cooperative Agreements Program
- Department of the Interior
  - Administrative Grants for Federal Aid in Sport Fish Restoration Program
  - Sport Fish Restoration Program

Forestry
- Department of Agriculture
  - Cooperative Forestry Assistance
  - Forestry Incentives Program

Mining
- Department of Interior
  - Abandoned Mine Land Reclamation Program

Pollution Prevention and Control
- Department of Agriculture
  - Environmental Quality Incentives Program
  - Watershed Protection and Flood Prevention Program
- Department of the Interior
  - Clean Vessel Act Grant Program
- Department of Transportation
  - Surface Transportation Program
- EPA
  - Capitalization Grants for Clean Water State Revolving Fund
  - Capitalization Grants for Drinking Water State Revolving Fund
  - Hardship Grants Program for Rural Communities
  - Nonpoint Source Implementation Grants (§ 319 Program)
  - Pollution Prevention Grants Program
  - Superfund Technical Assistance Grants for Citizen Groups at Priority Sites
  - Water Quality Cooperative Agreements

Wetlands
- Department of Agriculture
  - Wetland Reserve Program
- Department of the Interior
  - Coastal Wetlands Planning, Protection and Restoration Act
  - North American Wetlands Conservation Act Grant Program
- EPA
  - Wetlands Protection Development Grants

Catalog of Federal Funding Sources for Watershed Protection
http://www.epa.gov/OWOW/watershed/wacademy/fund.html

The EPA Office of Water has developed this catalog to inform watershed partners of Federal monies that might be available to fund a variety of watershed protection projects. Also included in this webpage is a listing of private, non-profit sources of possible funding, as well as other federal catalogs and funding guidebooks.

The Environmental Finance Program: Environmental Financial Tools.
http://www.epa.gov/efinpage/efptools.htm

The EPA also maintains a webpage dedicated to providing information on available financing mechanisms to improve the environment generally. Accessible from this page are

guidebooks on financial tools, publications on environmental financing, reports on alternative financing mechanisms, information on financial incentives and financing strategies, and state contacts for state revolving funds.

1997 Directory of Programs for Watershed Protection (DRAFT)
U.S. Department of the Interior

The Department of the Interior is currently preparing a comprehensive listing of Interior programs of use to watershed planning efforts. It includes descriptions of many grant and partnership programs that can be of assistance to state agencies and local watershed efforts, as well as the pertinent contact information. Contact Judith Trost at (202) 208-4442.

Directory of Funding Sources for Grassroots River and Watershed Conservation Groups (1996)

This directory provides profiles of private, corporate and federal funding sources for river and watershed groups, including name, address, phone number, contact name, deadlines, and a brief description of each source's particular interests. In addition, this document contains a section on how to write grant proposals and a bibliography of state and local foundation directories. This document is available for $45 from the River Network, P. O. Box 8787, Portland, OR 97207-8787 (telephone: 800-423-6747; email: rivernet@igc.apc.org). One can order the document over the Internet at http://www.teleport.com/~rivernet/rivernet/pubs.htm.

The Guidebook of Financial Tools (1997)

The Guidebook of Financial Tools is a reference work compiled by EPA intended to provide an overview of a wide range of ways and means that are useful in paying for sustainable environmental systems. It is divided into 10 sections, presenting outline information on over 250 financial tools. The first five sections present comprehensive tools that include traditional means of raising revenue, borrowing capital, enhancing credit, creating public-private partnerships, and ways of providing technical assistance. The next five sections present the tools that are, will, or might soon be, available to address significant environmental priorities. This Guidebook is available on the Internet at: http://www.epa.gov/efinpage/guidebk/grindex.htm.

State and Local Funding on Nonpoint Source Control Programs (1992)

This EPA document outlines particularly effective state and local nonpoint source (NPS) programs and the methods used to fund them. In all but two of the studies presented the NPS programs are funded primarily or exclusively by state and local resources. Methods presented include stormwater utility fees, EPA's SRF monies, and the use of special fees and taxes. This

document (Document No. EPA 841-R-92-003) is available from the National Center for Environmental Publications and Information (NCEPI) (telephone: 513-489-8190/800-490-9198; fax: 513-489-8695).

A State and Local Government Guide to Environmental Program Funding Alternatives (1994)

This EPA booklet is directed to state and local government regarding innovative alternatives to traditional funding. Traditional funding includes taxes and bonds. The booklet provides a brief discussion of state revolving funds, leases, grants, public-private partnerships, taxes, bonds, pollutant trading, and other mechanisms. The focus is on nonpoint source pollution, but funding sources and mechanisms can be applied to environmental programs in general. This document (Document No. EPA 841-K-94-001) is available form the National Center for Environmental Publications and Information (NCEPI) (telephone: 513-489-8190/800-490-9198; fax: 513-489-8695).

A Guide to Funding Resources (1995)

This USDA guide reviews governmental and private funding sources that are available to local governments, small business, organizations, associations, groups, and individuals. Information contained in this publication includes available funding, information on the grant-seeking process, analyses of grant-making programs, tips for proposal writing and presentation development, and bibliographies of additional resources. This document is on the Internet at http://www.nal.usda.gov/ric/ricpubs/funding/fundguide.html. The Rural Information Center (RIC) can be contacted by telephone (800-633-7701), email (ric@nal.usda.gov), or mail (Rural Information Center, National Agriculture Library, Room 304, Beltsville, MD20705-2351).

Western Drought Coordination Council. http://enso.unl.edu/wdcc

A catalog of federal assistance programs and tools to assist in the development of drought contingency plans.

REFERENCES

Listed below are materials which will provide information and assistance in establishing or continuing a watershed management program. This list is not intended to be exhaustive, but rather, to provide a sampling of the many sources available.

Arizona Department of Environmental Quality. "The Arizona Statewide Watershed Framework." May 1997 (Draft). Approx. 100 pp.

Details Arizona's approach to statewide watershed management.

Conservation Technology Information Center's 5-part "Know your Watershed" series. Tel: (765) 494-9555.

Source of help for new organizations just getting started.
Getting to Know Your Local Watershed, 7 pp.
Building Local Partnerships, 11 pp.
Leading and Communicating, 7 pp.
Managing Conflict, 7 pp.
Putting Together a Watershed Management Plan, 15 pp.

National Fish and Wildlife Foundation, Fish and Wildlife Service, Phillips Petroleum, Management Institute for Environment and Business. "Conservation Partnerships: a Field Guide to Public-Private Partnering for Natural Resources Conservation." 1993. 39 pp.

A three-part guide to all aspects of conservation partnerships. Covers topics from finding partners to funding partnerships and troubleshooting. Contact the U.S. Fish and Wildlife Service at (703) 358-1711 or the National Fish and Wildlife Foundation at (202) 857-0166.

Natural Resources Law Center, University of Colorado School of Law. "The Watershed Sourcebook." 1996. 340 pp. Tel (303)492-1286

Overview and description of watershed approaches from 76 different cases throughout the western U.S.

Natural Resources Law Center, University of Colorado School of Law. "The State Role in Western Watershed Initiatives." (Research Report No. RR-18) 1998. 91 pp.

History and evolution of state role in water management, description of new intergovernmental principles and arrangements, and recommendations to states for assisting watershed groups. Copies are available for $15, plus postage and handling, through the Center's publication desk (303) 492-1272.

Oregon Watershed Health Program. "Guidelines for Watershed Councils." August, 1995. 78 pp. Contact the Governor's Watershed Enhancement Board, (503) 378-3589, ext. 831.

Deals with topics such as the duties of a coordinator, watershed action plans, complying with regulations, watershed condition assessments, monitoring plans, alternative dispute resolution, and funding. Although written specifically for Oregon programs, it provides a brief checklist for anyone interested.

Pacific Rivers Council. "Healing the Watershed: a Citizen's Guide to Funding Watershed and Wild Salmon Recovery Programs." June 1994. 111 pp. Tel: (541) 345-0119.

Provides a detailed listing of funding sources for watershed activities, including grant programs, loan programs and incentive programs. Summary of funding programs in Oregon, California, Washington, and Alaska is included.

Pacific Rivers Council. "Healing the Watershed: a Guide to the Restoration of Watersheds and Native Fish in the West." July 1996. 220 pp. Tel (541) 345-0119.

Although focused on restoring native fish populations, stresses watershed analysis and tools for restoration.

Society for Range Management. "Coordinated Resource Management Guidelines." June 1993. App. 300 pp. Tel: (303) 355-7070.

The processes of coordinated resource management are described in detail. Also provides examples of materials used.

Texas Natural Resource Conservation Commission. "The Statewide Watershed Management Approach for Texas." March 1997. Approx. 90 pp. P.O. Box 13087 Austin, Texas 78711-3087

Describes the Texas plan for watershed-based management.

The Wetlands Conservancy. "The Citizens' Regional Watershed Handbook." May, 1995. 78 pp. Tel: (503) 691-1394.

Also written specifically for Oregon "friends of watersheds" groups, this publication has chapters on advocacy, working with volunteers, effective use of the media, as well as four case studies.

U.S. Environmental Protection Agency

"Adopt Your Watershed!" October 1997. http://www.epa.gov/sur/adopt

Describes EPA's campaign to encourage greater stewardship in the protection of the nation's water resources and to celebrate 25 years of progress under the Clean Water Act. Highlights useful tools for groups and students interested in "adopting" their watershed. Provides opportunity for new and existing groups to join national catalog watershed partnerships, accessible on EPA's "Adopt Your Watershed" homepage.

"Agriculture and the Environment." August 1993.

A folder containing four fact sheets that address watershed management and nonpoint source pollution in agricultural areas.

"BASINS: A Powerful Tool for Managing Watersheds." http://www.epa.gov/ostwater/BASINS/.

BASINS is a multipurpose environmental analysis system for use by regional, state, and local agencies in performing watershed- and water quality-based studies. This new software is designed to make it possible to quickly assess large amounts of point source and nonpoint source data in an easy to use, easy to understand format. BASINS installed on a personal computer allows the user to assess water quality at selected stream sites or throughout an entire watershed. It integrates environmental data, analytical tools, and modeling programs to support development of cost-effective approaches to environmental protection.

"Catalog of Federal Funding Sources for Watershed Protection." Contact: Contact: EPA-Office of Water at (202) 260-7074 FAX: (202) 260-7024. http://www.epa.gov/OWOW/watershed/wacademy/fund.html

The catalog includes numerous funding source descriptions, indexed by department/agency, statute, and title.

"Compendium of Tools for Watershed Assessment and TMDL Development." May 1997.

Summarizes available techniques and models that assess and predict physical, chemical and biological conditions in waterbodies.

"Designing an Information Management System for Watersheds." May 1997. http://www.epa.gov/owow/watershed/wacademy/its.html

Introduces information management responsibilities and challenges facing watershed groups. This document reviews the fundamentals of identifying information management needs, integrating different data bases, evaluating hardware and software options, and developing implementation plans.

"Draft Final Index of Watershed Indicators." June, 1997. 50 pp. plus attachments. Tel: (202) 260-1314.

A description of the condition and vulnerability to stressors of the 2111 watersheds in the lower 48 states.

" Draft Framework for Watershed-based Trading." May, 1996. Approx. 85 pp. plus appendices. Tel: (513) 569-7186.

A source for information on pollution trading. Includes overview of water quality standards, effluent guidelines, total maximum daily loads, and anti-backsliding requirements.

"Ecological Restoration: A Tool to Manage Stream Quality." November 1995. http://www.epa.gov/owow/NPS/ecology/html

Explains and clarifies Clean Water Act authorities for restoration and examines linkages between selected restoration techniques and parameters that are often addressed in state water quality standards. It also presents a decision making guide to determine when to pursue restoration as a management option and provides information on the cost effectiveness of restoration.

"EPA Headquarters Ecosystem Tool Inventory." Contact: Moses John at (202) 260-5333.

This document contains a collection of Ecosystem Protection Tools that have been developed by and are available from EPA Headquarters offices. The purpose of the document is to assist EPA's Ecosystem Protection Task Force in its characterization of the present state of the Agency's ecosystem protection efforts and to inform managers and staff throughout EPA about the ecosystem tools available. There are 180 tools listed and each listing contains a description of the tool, the intended users, a tool development section, identified special requirements, intended media of use, point of contact, and information on how to obtain the tool.

"The Lake and Reservoir Restoration Guidance Manual (2nd Ed.)" August 1990.

Written by EPA to inform citizens who are interested in protecting, restoring, and managing lakes. Focuses on four areas: identifying lake problems, evaluating management practices for addressing problems or for protecting water quality, developing a site-specific management plan, and implementing and evaluating lake management plans. Includes a hypothetical case study, point source techniques, best management practices, and state and provincial lake management programs.

"Monitoring Consortiums: A Cost-Effective Means to Enhancing Watershed Data Collection and Analysis." May 1997.
http://www.epa.gov/OWOW/watershed/wacademy/its.html

Addresses coordination in watershed monitoring. Also, includes four case studies that demonstrate how consortiums can stretch the monitoring dollar, improve cooperation among partners, and increase sharing of expertise as well as expenses of data collection and management.

"NonPoint Source Management System (NPSMS) Software." Contact: Dov Weitman (202) 260-7088 FAX: (202) 260-7024.

PC-based software application developed to facilitate data input and reporting by States conducting watershed programs funded under the Section 319 (CWA) National Monitoring Program. System is currently limited to stream system, and handles project background, implementation plans for NPS controls, monitoring designs, and data summaries for chemical, physical, and land treatment data.

"The Statewide Watershed Management Course." Contact: Greg Currey at (202) 260-1718 FAX: (202) 260-1460.

The Statewide Watershed Management Course is designed to acquaint participants with key elements of a framework for integrating natural resource programs into a comprehensive, watershed management approach. The course draws heavily on the experience of several states that are developing or implementing a statewide watershed approach and emphasizes the ability to adapt the scope and details of this approach to the unique circumstances of each state, tribe, territory or region. The course is intended for all natural resource agency staff and management who are interested in evaluating application of a statewide approach to their state, tribe, territory or region.

"State Watershed Management Facilitation." September 1997. http://www.epa.gov/OWOW/watershed/wacademy/its.html

Addresses statewide watershed management and the process of facilitating the development or reorientation of statewide watershed programs. Part I describes the facilitation process. Part II summarizes the experiences of 13 states in statewide watershed management framework development and implementation.

"Top 10 Watershed Lessons Learned." October 1997. http://www.epa.gov/owow/lessons

Developed in partnership with over 100 watershed practitioners, this document describes the top 10 lessons (positive and negative) learned in working to restore and protect watersheds across the nation. Includes examples to illustrate each lesson and key contacts and resources for networking.

"Toward a Watershed Approach: A Framework for Aquatic Ecosystem Restoration, Protection and Management." January 1997.

Describes basic watershed management concepts, problems and solutions. Presents examples of federal and state frameworks promoting watershed protection. (23 pp.) Available only from Coastal America. Telephone: (202) 401-9928

"Watershed Protection: A Project Focus." August, 1995. Approximately 100 pp. Tel: (513) 489-8190.

Gives a description of the EPA's approach to watershed protection. References, processes, a few case studies, and a list of support programs are included.

"Watershed Protection: A Statewide Approach." Contact: (513) 489-8190.

A common framework for a statewide watershed approach focuses on organizing and managing by a state's major watersheds, which are called basins in this document. In this statewide approach, activities such as water quality monitoring, planning and permitting are coordinated on a set schedule within large watersheds or basins. Involvement of other natural resource agencies is actively sought to achieve water quality ecosystem goals.

"Watershed Academy Catalogue of Watershed Training Opportunities." May 1997. http://www.epa.gov/OWOW/watershed/wacademy/catalog.html

Lists training/educational courses on watershed protection offered by EPA, other federal agencies, and other groups. Target audience includes water resource/watershed managers and technical staff in local, state and federal agencies and tribes, EPA Regions, and other public and private sector practitioners of watershed management.

The Academy offers the following courses:

Watersheds 101: Principles of Watershed Management--Course was developed to train participants in the core principles and key elements of the watershed approach and the framework for integrating natural resource management programs on a watershed basis. Several key topics in the areas of watershed science, effective communications, and organizational management are addressed. Course draws on experiences of several state and local programs.

Watersheds 102: Statewide Approach to Watershed Management--Course was developed to train participants in the principles of the watershed protection approach and the framework for integrating natural resource management programs on a watershed basis. Course draws on experiences of several states that are developing such an approach for statewide program management.

Watersheds 103: Outreach and Communication in Watersheds--The module is intended to provide watershed organizations and state and local agency staff a framework to develop and implement successful outreach programs in their watersheds.

Watersheds 104: Executive Overview of the Watershed Approach--Course was developed to help executives explore the rationale for implementing statewide watershed management and a conceptual framework for carrying out the process of integrating natural resource management programs on a watershed basis. Several key topics in the areas of watershed science and effective communications

are introduced, and the elements of watershed-based organizational management are emphasized.

Watersheds 105: Watershed Management Tools Primer--Course provides introductions to a number of tools that can help practitioners carry out the watershed management process. Tools are related to key steps including watershed characterization, estimating ecological risk, prioritizing issues, evaluating management options, targeting management actions, measuring success, and managing information.

Watersheds 106: Watershed Partnership Seminar--This two-week course emphasizes the establishment and maintenance of watershed-based partnerships among water quality professionals and citizens representing the diversity of interests necessary to build successful; community-based restoration, maintenance and protection programs. It provides an overview of basic ecological principles related to watershed management and describes the benefits of watershed management. The course focuses on individual skills useful to all participants in successful watershed projects. The course blends consensus building skills, technical knowledge and ways in which representatives of various interests can work effectively together.

"Watershed Tools Directory: A Collection of Watershed Tools."
http://www.epa.gov/owow/watershed/tools

Provides one-page summaries of 250 watershed tools. Each summary includes key information such as a description of the tool, contact names and phone numbers, and information about intended users. Categories include:

Data collection/measurement/assessment tools
Database tools
Economic analysis tools
Environmental goal setting tools
Financial Assistance tools
Modeling tools
Organizational/institutional/programmatic tools
Policy and planning tools
Reference reports and studies

"Wetlands Mitigation Banking." Contact: 1-(800) 832-7828.

Wetlands mitigation banking is the restoration, creation, enhancement, or in certain circumstances, preservation of wetlands expressly for the purpose of providing compensation in advance of proposed or future wetlands impacts. A wetlands mitigation bank is created when a government agency, corporation or non-profit organization, under a formal agreement, acquires a long-term interest in a degraded wetlands or an appropriate upland area and restores or creates the site into a functional wetland ecosystem.

U.S. Department of the Interior. "1997 Directory of Programs for Watershed Protection (DRAFT)." Contact: Judy Trost at (202) 208-4442.

Contains a complete listing of all Dept. of Interior programs that may be useful to both states and local watershed groups. Each program is outlined in a 1-page summary that includes contact information.

Western Governors' Association. "The Federal Role in Watershed Partnerships. Prepared by Frank Gregg and Jo Clark. 1998. Tel: (303) 623-9378. http://www.westgov.org

Discusses the history of the federal role in water management, evolving trends in governance with emphasis on watershed approaches and makes recommendations on how federal agencies can best assist such initiatives.

Western Governors' Association. "Watershed Partnerships: A Strategic Guide for Local Conservation Efforts in the West." February, 1997. Tel: (303) 623-9378.

Resource for starting watershed partnerships. Covers topics such as foundations for starting, how to organize, what to think about, and external factors.

World Wildlife Fund. "Statewide Wetlands Strategies: A Guide to Protecting and Managing the Resource." 1992. 268 pp. Tel: 1-800-999-1780.

A guide to federal, state, local, and private mechanisms for protecting wetlands.