



FINAL REPORT
of the
NATIONAL
WATERSHED
FORUM

JUNE 27-JULY 1, 2001
ARLINGTON, VIRGINIA



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EXECUTIVE SUMMARY

Despite the billions of dollars invested over the last several decades in reducing pollutants from point sources, many problems remain such as siltation, nutrients, pathogens, and metals, as well as critical habitat loss. Local citizens are increasingly forming partnerships to help address the complex problems affecting their water resources. The U.S. Environmental Protection Agency (EPA) estimates there are more than 3,000 local watershed groups nationwide. The proliferation of these groups is changing the nature of environmental protection. These watershed partnerships provide those people, who depend on aquatic resources for their health, livelihood, or quality of life, with a voice in decision making processes and a responsibility in the management of these resources.

The National Watershed Forum (Forum) was held June 27 – July 1, 2001 in Arlington, Virginia. It was an unprecedented event in which 480 community leaders and senior decision makers from around the country gathered together to give voice to the future of our nation's watersheds. Geographically, politically, and culturally diverse individuals shared their visions and explored new directions for cooperative action to sustain watersheds into the next century and beyond. The Forum was intended to forge stronger partnerships and collaboration, help empower communities to continue their progress in improving the health of their watersheds, and educate government agencies about the efforts of the growing watershed movement. Indeed, it did give local watershed partnerships, private sector and government leaders a unique opportunity to identify and start taking important steps together to improve the nation's waters.

The agenda for the Forum was organized in large part around nineteen issue-specific discussion groups. Delegates participated in facilitated dialogues within each discussion group to develop recommendations for local, state, regional, tribal and federal policies and actions to address issues of concern relative to their group's topic. The delegates focused on collaborative approaches – getting industry and environmentalists; local, state, tribal, and federal agencies; scientists; and local citizens to work together to identify and solve the problems facing our nation's watersheds. A diverse panel, comprised of leaders from the private sector, non-governmental organizations (NGO) and government agencies heard a summary of some of the Forum's wide-ranging recommendations on the afternoon of the second day.

National Watershed Forum Discussion Groups

- Funding and Technical Support
- Structure and Function of Watershed Groups
- Participation and Partnerships Education and Outreach
- Leadership and Facilitation
- Source Water Protection
- Instream Flows
- Data Collection, Monitoring, Research Needs, and Information Management
- Watershed Planning and Evaluation
- Smart Growth
- Habitat
- Endangered Species
- Jurisdiction and Coordination
- Total Maximum Daily Load

This Report highlights the Forum delegates' recommendations for advancing cooperative actions to sustain the health of our nation's watersheds. These recommendations address issues of concern identified by the Regional Watershed Roundtables that met over a two-year period prior to the Forum, as well as new issues identified by delegates at the Forum. The recommendations do NOT necessarily represent a consensus of all the delegates who participated in the Forum or in any particular discussion group. Every watershed faces a different set of opportunities and challenges. Each functions in the context of its own geographical and political setting. Therefore, recommendations contained herein represent a range of alternatives intended to help bolster capacity at the national, regional, state, tribal and local level to support the vital work of watershed partnerships. These innovative ideas represent the collective wisdom and successful strategies shared by Forum delegates and serve as a written history of a landmark event designed to foster collaborative watershed efforts across the nation.

The Meridian Institute compiled and organized this Report from the "*Discussion Group Proceedings*" and from the notes taken during the plenary sessions at the Forum. It was not possible to capture all the nuances and detail of the discussions that took place in a several day period in nineteen different discussion groups. We hope that there will be ongoing discussion through personal communication and electronic media to build upon the important work that was started at the Forum and to move the recommendations towards implementation.

Cross Cutting Recommendations

Of the multitude of ideas developed during the discussion group deliberations, a few surfaced repeatedly and among several discussion groups. They represent common themes from the Forum:

- Increased access to funding for the unique needs of watershed activities.
- Increased coordination among agencies and harmonization of regulatory program implementation.
- Improved access to information for all stakeholders.
- Ongoing coordination among watershed efforts across the country and the Regions.

The following eight cross cutting recommendations were highlighted during the plenary sessions, and/or were developed simultaneously in numerous discussion groups, and/or would need to be implemented in a coordinated manner by several organizations or agencies:

- A. Develop a flexible, integrated and diversified national watershed strategy/delivery system.
- B. Create a quasi-public (non-federal) Watershed Trust Fund/Endowment to be used for: restoration, protection, advocacy, education, management, facilitating local needs, research, and other priorities.
- C. Provide additional support for subsequent Regional Watershed Roundtables and future National Watershed Forums.
- D. Conduct a National Tribal Watershed Forum.
- E. Implement a national media campaign to highlight the importance of and foster general awareness of watershed issues.
- F. Establish a “clearinghouse” to provide one-stop shopping that would enhance the flow of information about watershed protection and restoration, technical assistance and funding, and other relevant data.
- G. Undertake a concerted effort to address the issue of defining “a healthy watershed”, encompassing chemical, biological, physical, hydrological, social, meteorological, elements, etc. and considering the interrelationships between all elements.
- H. Provide federal coordinators to assist local watershed partnerships.

Targeted Recommendations

The cross cutting recommendations highlighted above represent only a small fraction of the valuable and constructive recommendations developed by the Forum delegates. Additional recommendations are intended to assist Congress, federal agencies in general, specific agencies, state governments, watershed groups, tribes, and others. These recommendations are presented in the body of the report according to target audience within each discussion group. A summary of the discussion group deliberations is detailed in a companion document, the “*Discussion Group Proceedings.*”

BACKGROUND ON THE NATIONAL WATERSHED FORUM

The National Watershed Forum (Forum) was held June 27 – July 1, 2001 in Arlington, Virginia with 480 community leaders and senior decision makers from around the country. The Forum was an unprecedented event designed to give voice to geographically, politically, and culturally diverse individuals who shared their visions for the future of our nation's watersheds and explored new directions for cooperative action to sustain watersheds into the next century and beyond. The Forum was intended to forge stronger partnerships and collaboration, help empower communities to continue their progress in improving the health of their watersheds, and educate government agencies about the efforts of the growing watershed movement.

The Forum resulted in a tidal wave of energy and good ideas for protecting and restoring watersheds around the country and for supporting the work of local watershed initiatives. Delegates at the Forum developed recommendations to improve the success of watershed efforts across the country for a variety of audiences such as local, state, and federal agencies, non-governmental organizations, watershed partnerships, tribes, foundations, universities and businesses. The Forum also provided opportunities for the establishment of new networks and alliances among stakeholders from many sectors, and exchange of innovative tools for watershed protection and restoration. A description of innovative approaches featured at the Forum is included in Appendix F.

I. Need for the Forum

Despite the billions of dollars invested over the last several decades in reducing pollutants from point sources, many problems remain such as siltation, nutrients, pathogens, and metals, as well as critical habitat loss and endangered species. Improvements need to be made at the local, state, tribal, regional and national level by government, private industry, non-governmental organizations, and local citizens. Overcoming these complex problems requires the commitment of local people who have a stake in the creeks, rivers, lakes, estuaries, and groundwater flowing through their neighborhoods and their communities.

Local citizens are increasingly forming partnerships to help address the complex problems affecting their water resources. The EPA estimates there are more than 3,000 local watershed groups nationwide. The proliferation of local watershed partnerships is changing the nature of environmental protection and is providing those people who depend on aquatic resources for their health, livelihood, or quality of life a voice in decision making processes and a responsibility in the management of these resources. The Forum gave local watershed groups, private sector and government leaders a unique opportunity to identify and start taking important steps together to improve the nation's waters.

II. DELEGATES

The 480 delegates to the Forum were invited to the Forum because of their expertise and experience with watershed issues. They were drawn from community-based watershed initiatives; local, state, federal and tribal government; interest groups such as agriculture, forest products, mining, development, and fishing; environmental organizations; foundations; and academia. Delegates attended from every state in the Union. The delegate list is attached as Appendix B.

III. THE REGIONAL WATERSHED ROUNDTABLES

The Forum was the culmination of more than two years of effort by thirteen Regional Watershed Roundtables. The Roundtables were organized to stimulate dialogue and interaction among diverse watershed interests, identify barriers to watershed protection, and begin developing solutions for overcoming the barriers. The conveners of the Roundtables assembled diverse stakeholders from watersheds in their regions to identify and begin addressing common challenges.

The experience and findings of the Roundtables served as building blocks for the National Watershed Forum. A report summarizing the work of the Regional Watershed Roundtables was provided to all of the Forum delegates to help inform the Forum deliberations. The first morning of the Forum featured several of the Regional Watershed Roundtable conveners and other leaders in watershed protection, who described some of the important challenges facing watershed efforts in their regions.

IV. NATIONAL WATERSHED FORUM AGENDA

The agenda for the Forum was organized in part around “tracks” pertaining to specific issues. Within each track there were one or more discussion groups addressing particular topics. In some cases there were two discussion groups discussing the same topic. Delegates selected a discussion group and over the course of the Forum participated in facilitated dialogue to develop recommendations for local, state, regional, tribal and federal policies and actions to address issues of concern relative to their group’s topic. The tracks and discussion groups were organized as follows:

Track One: - Resources

Funding and Technical Support (Two Discussion Groups)

Track Two – Watershed Partnership Effectiveness

Structure and Function of Watershed Groups (Two Discussion Groups)

Participation and Partnerships (Two Discussion Groups)

Education and Outreach (Two Discussion Groups)

Leadership and Facilitation

Track Three – Water Management

Source Water Protection

Instream Flows

Track Four – Information and Research

Data Collection and Monitoring, Research Needs, and Information Management

Track Five – Planning and Evaluation

Watershed Planning and Evaluation (Two Discussion Groups)

Smart Growth

Track Six – Ecosystem Management

Habitat

Endangered Species

Track Seven – Policy and Program Implementation

Jurisdiction and Coordination

Total Maximum Daily Load

The tracks were introduced the first morning of the Forum and key recommendations from the discussion groups were presented to senior governmental and private sector decision makers in a plenary session near the end of the Forum.

V. ROLE OF THE MERIDIAN INSTITUTE

The Meridian Institute, a non-profit organization focusing on collaborative process design and facilitation was selected to design, convene, and facilitate the Forum. Meridian Institute staff worked closely with a Forum Steering Committee to develop the Forum agenda, draft the background materials, and provide logistical support. In addition, a core team of Meridian facilitators worked along with a group of federal employees to facilitate discussion group sessions at the Forum.

VI. REPORT OVERVIEW

The body of this report provides a synthesis of the recommendations produced by the discussion groups. Each discussion groups' detailed issues of concern, recommendations and implementation strategies are provided in a separate document entitled "*Discussion Group Proceedings*." It should be recognized that every watershed is facing a different set of opportunities and challenges and functions in the context of its own geographical and political setting. Therefore, some of the recommendations will be very appropriate for some circumstances, and not in others. It is critical, however, that watershed partnerships understand the range of alternatives available to them and that information regarding successful strategies is shared.

SUMMARY OF KEY RECOMMENDATIONS AND FINDINGS

The Forum delegates developed recommendations to improve the health of watersheds across the country. Many of the recommendations focused on collaborative approaches – getting industry and environmentalists; local, state, tribal and federal agencies; scientists; and local citizens to work together to identify and solve the problems facing our nation’s watersheds. A diverse panel, comprised of leaders from the private sector, nongovernmental organizations (NGOs) and government agencies heard a summary of some of the Forum’s wide-ranging recommendations on the afternoon of the second day. These and other key recommendations identified by the discussion groups represent highlights of the extensive effort put forth by the Forum delegates and are summarized below. The recommendations do NOT necessarily represent a consensus of all the delegates who participated in the Forum or in any particular discussion group.

I. CROSS CUTTING RECOMMENDATIONS

Numerous themes surfaced from Forum deliberations. Regardless of the substantive topic area, delegates emphasized needs for:

- increased access to funding for the unique needs of watershed activities;
- increased coordination among agencies and harmonization of regulatory program implementation;
- improved access to information for all stakeholders; and
- ongoing coordination among watershed efforts across the country and the Regions.

On the final day of the Forum, the following resolution was offered by one of the discussion groups for consideration by the approximately 200 delegates who were in attendance at the time. There appeared to be unanimous support for the resolution from those delegates.

National Watershed Forum Resolution

The delegates to the National Watershed Forum have identified watershed planning, management, protection and restoration as essential building blocks for our quality of life, public health and welfare, and regional heritage.

We delegates recognize the need for a collaborative effort among local community members, tribes, foundations, businesses, and multiple government agencies in order to be effective.

We request the Environmental Protection Agency, the Department of Agriculture, and the Department of Interior to start a National Watershed Roundtable comprised of local watershed representatives within the next three months charged to:

- develop a national watershed framework/strategy,
- address problems within existing funding programs,
- explore the creation of a National Watershed Trust Fund, and report back recommendation within a year.

I. Cross Cutting Recommendations

The following eight cross cutting recommendations were highlighted during the plenary sessions, and/or were developed simultaneously in numerous discussion groups, and/or would need to be implemented in a coordinated manner by several organization or agencies:

- A. *Develop a flexible, integrated and diversified national watershed strategy/delivery system.*** Insufficient access to technical assistance and scientific support has limited the potential for success of many watershed efforts across the county. Delegates recommended that EPA take the lead on the strategic development (building on local support) of a national watershed strategy/delivery system. EPA should put together an advisory committee reflecting the diversity of local watershed movements, and get the buy-in and political support and participation of key legislators. Specific implementation strategies articulated by delegates to achieve this recommendation were to:
- define a national goal;
 - document what money is needed and for what areas;
 - build on local efforts/plans;
 - provide technical support and guidance;
 - define research priorities;
 - promote education/public awareness; and,
 - target education for foundations, the private sector, individuals, and government agencies (federal, state, and local).
- B. *Create a quasi-public (non-federal) Watershed Trust Fund/Endowment to be used for: restoration, protection, advocacy, education, management, facilitating local needs, research, and other priorities.*** A feasibility assessment of this concept should be conducted and supported by private foundations and/or government and the private sector - possibly funded from a variety of sources, (e.g., fines/penalties, corporations, bequests/individuals, permit/impact fees, the Highway Trust Fund, etc.).
- C. *Provide additional support for subsequent Regional Watershed Roundtables and future National Watershed Forums.*** The vast majority of the delegates weighing in on the value of the Regional Watershed Roundtables and the National Watershed Forum felt strongly that they have been a significant value for individual watershed efforts and the watershed movement nation-wide. Strong recommendations were voiced about the need to support future watershed Roundtables and Forums.
- D. *Conduct a National Tribal Watershed Forum.*** Tribal representatives in particular voiced concern about the lack of engagement from tribes, importance of tribal lands and waters and the need to recognize and support tribal watershed protection and restoration initiatives. They articulated the need to address the unique challenges on tribal lands by conducting a watershed forum targeted specifically at tribal watershed issues.

- E. Implement a national media campaign to highlight the importance of and foster general awareness of watershed issues.** Many of the delegates expressed support for a nation-wide education and awareness campaign targeted at the general public.
- F. Establish a “clearinghouse” to provide one-stop shopping that would enhance the flow of information about watershed protection and restoration, technical assistance and funding, and other relevant data.** Delegates encouraged the development of a strategy to institutionalize the dissemination of information about effective watershed management strategies by establishing such a nation-wide clearinghouse. EPA, National Oceanic and Atmospheric Administration (NOAA), and U.S. Geological Survey (USGS) should develop a Geographic Information Systems (GIS) website that watershed groups and local communities can access. Local, state and federal levels should then work together to fill in gaps. Training must accompany the clearinghouse to help people access and share data.
- G. Undertake a concerted effort to address the issue of defining “a healthy watershed”, encompassing chemical, biological, physical, hydrological, social, meteorological, elements, etc. and considering the interrelationships among all elements.** The development of the definition should build on the existing body of research and work. A wide variety of stakeholders need to contribute to the effort. Regional roundtables could come up with a definition of what they identify as “a healthy watershed” and bring the definition to the next national watershed forum. Groups as diverse as The American Association for the Advancement of Science (AAAS), individual landowners, and federal agencies should be involved in developing this definition, and full advantage should be taken of internet communications technology.
- H. Provide federal coordinators to assist local watershed partnerships.** Delegates in several of the discussion groups supported the idea of federal agencies (e.g., NOAA, USDA, EPA, etc.) working together to establish government coordinators that are in local/field offices, similar to the American Heritage River Navigator model. These coordinators would serve as a resource on a variety of levels including general information, technical assistance, funding and education, etc. An alternative perspective called for one federal coordinator at the national level to provide for greater efficiency and accessibility.

II. TARGETED RECOMMENDATIONS

The cross cutting recommendations highlighted in the previous section represent only a small fraction of the valuable and constructive recommendations developed by the Forum delegates. Additional recommendations summarized below targeted Congress, federal agencies in general, specific agencies, state and local governments, foundations, watershed groups, tribes, the private sector, and others.

A. Funding and Technical Recommendations

A. Funding and Technical Resources

A major thread in the funding and technical resources discussion was that funding priorities should include preservation, prevention, and restoration. Funding is needed to support watershed coordinators, watershed assessment and planning, interagency coordination, watershed group capacity building, ongoing management and maintenance of programs, Total Maximum Daily Load (TMDL) processes, and evaluation of progress. Local watershed groups need gap funding to assist in maintaining progress that has been made between major funding cycles/opportunities. In addition, timing issues need to be addressed. It can be very difficult for local watershed efforts to coordinate matching funds from private and public sources due to the time lag associated with federal and state funds. Reimbursement based grants/contracts can create problems if there is no opportunity to receive some portion of the cash up front. While the discussion groups recommended a number of ways of increasing federal and state support of local watershed efforts, delegates were concerned that such initiatives not add another layer of bureaucracy to the system.

Significant recommendations to address funding issues included:

Federal Agencies and Congress

- 1) Form a new national watershed program and interagency effort to promote technically sound watershed protection and restoration by providing better coordinated funding and information in support of watershed efforts, and create technical assistance grants and block grants for watershed groups.
- 2) Simplify; make more accessible, timely, flexible and transferable; and expand existing federal grant programs. Assess the effectiveness of similar existing programs (e.g., Community Development Block Grants) to determine what has worked well and how those approaches might be adapted for this purpose. Strategies recommended by the discussion groups included:
 - Lower funding matches to a minimum of 20% across the board.
 - Encourage pre-proposal concept papers for requests for proposals.
 - Establish micro-grants.
 - Allow 15-20% overhead in grants.
 - Make Transportation Equity Act (TEA) 21 funds more accessible and easier to obtain by watershed groups.
 - Encourage more states to allow a portion of Section 319 Clean Water Act (CWA) funds to cover administrative costs.
 - Address problems associated with local watershed groups obtaining Corps of Engineers funds.

- Find ways watershed initiatives can use Federal Emergency Management Agency funding, which is available during emergencies.
 - Utilize monies obtained through fines and penalties in support of watershed activities.
 - Explore opportunities for use of funds like those provided by the Conservation and Reinvestment Act in coastal areas.
 - Allocate monies in the Abandoned Mine Land Reclamation Fund back to the states so that it can be used in support of watershed activities.
 - Establish a Watershed Restoration Trust Fund similar to Superfund.
 - Allow local jurisdictions more room to maneuver in fulfilling drinking water source area protection priorities by building flexibility into programs like Community Development Block Grants, Appalachian Regional Commission's Revolving Loan Fund, Conservation Reserve Program, Economic Development Administration (EDA), Department of Transportation (DOT) programs, etc.
- 3) Provide watershed groups with financial support when they are asked to perform services, such as commenting on regulations or providing guidance or participation in projects, for units of government.
- 4) U.S. Department of Agriculture (USDA) and/or NOAA should establish a lead person in every local office (e.g. Extensions – land grant and sea grant, Resource Conservation and Development Councils (RC&Ds), conservation districts, etc.) responsible for working with watershed groups.

States

- 5) Implement programs such as the Clean Water Management Trust Fund in North Carolina where a specific allocation of funds are targeted for watershed efforts.
- 6) Provide funding to support watershed group involvement in state and local level policy making processes related to implementation of the CWA and other priorities.
- 7) Allocate a portion of construction funds from private developers and Clean Water State Revolving Loan Funds to education/communication efforts.
- 8) Implement a “Green Contractor” program certificate. A model for this exists in North Carolina. Developers who meet the criteria receive a decal to make visible that they are “green”.

A. Funding and Technical Recommendations

Watershed Groups

Watershed groups should improve their financial stability by creating business and strategic plans; collaborating with industry, foundations, agencies, nongovernmental organizations and citizens; implementing publicity, outreach, and education strategies; diversifying sources of funding and technical support; and improving fundraising skills. Many of the following recommendations directed to watershed groups speak to these needs:

- 9) Seek opportunities to collaborate with other watershed groups on funding strategies and approaches whenever feasible, in part to show foundations that groups are collaborating rather than competing for limited resources.
- 10) Educate foundations and the private sector as to the key role that watershed health plays in community health and welfare, and the economic significance of watersheds and why they should invest in these efforts.
- 11) Cultivate interest from wealthy individuals within communities, (e.g., target members to write bequests in support of watershed activities/organizations into their wills).
- 12) Target the development community and other private sector funding sources for a variety of types of assistance.

Foundations

- 13) Fund organizations like River Network that can coordinate funding as well as provide training and technical support to smaller organizations.
- 14) Foundations and private sector partners could develop/provide a common, user-friendly software to provide funding support and assistance for organizations.

Corporate/Private Sector

- 15) Leaders from the private sector who believe in watershed protection and restoration work should “push for the cause”.
- 16) Implement “Earth Shares” type programs that operate like United Way for nonprofits involved in watershed efforts— donating from each paycheck to a cause, with corporations matching employee donations.
- 17) Fortune 500, private corporations should participate in conferences like the Forum.

Local Governments

- 18) Collect impact fees from ‘sprawl development’ due to impacts to streams from impervious surfaces.
- 19) Tax developers when they file their Notices of Intent.

B. Structure and Function of Watershed Groups

All of the recommendations developed in the discussion group that focused on structure and function were directed at watershed groups.

Watershed Groups

- 20) Increase communication and facilitation skills in order to plan and conduct meetings in which meaningful decisions are made, for example by: identifying groups that are there to help, accessing training to develop internal communication and facilitation skills, and inviting other active established watershed groups to provide advice and assistance.
- 21) Develop a vision statement that represents diverse interests. In doing so, obtain skilled facilitators to manage the process, define the decision making process upfront needed to reach agreement, and communicate a vision statement.
- 22) Encourage all stakeholders to participate in identifying problems, taking actions, and monitoring impacts. Develop partnerships with and among community decision-makers and public and private organizations within the watershed. A number of strategies for involving diverse interests and building partnerships are detailed in the following Participation and Partnerships section.
- 23) Develop networking capabilities to benefit from one another's experience and to help promote credible processes, share models, facilitate information exchange, increase communication, support constituency building, and improve capacity for organizational effectiveness.
- 24) A watershed "circuit rider" position should be created and supported by public and private funding sources to help build the structure and capacity of watershed groups. Some strategies for implementing the circuit rider recommendation could include:
 - Looking at areas where a circuit rider exists and use them as examples of successes to fully implement a nation-wide effort.
 - Developing pilots to demonstrate benefits of the concept – successes in funding, goal achievement, outcomes, impacts, etc.
 - Developing an evaluation system to measure performance and effectiveness. Include watershed groups and funders in this process.
 - Looking to foundations and/or nonprofits to provide a national support mechanism to support training and capacity building for circuit riders.

C. Participation and Partnerships

C. Participation and Partnerships

The discussion on participation and partnerships focused on the overarching needs for watershed awareness and education, local capacity building, and technical assistance. Three key topics were identified that need to be addressed in order to make watershed initiatives successful: trust, structure and coordination of activities, and process. Public distrust in government is a key issue determining whether citizens participate in a watershed initiative. Building trust requires openness and commitment to accountability by all involved individuals and entities, including government agencies. Problems arising from top-down approaches to governing and the lack of coordination among the number of government programs relevant to watershed initiatives create an important need for coordination of activities among agencies and between agencies and watershed groups. Coordination is necessary for a number of reasons, including streamlining similar agency efforts and making resources more accessible to watershed groups. Watershed groups need to develop more effective processes to motivate and maintain participation by key stakeholders and help ensure more successful collaborative watershed efforts. If processes are poorly attended and time consuming, stakeholders may resort to legal procedures or political influence to secure their interests.

The key recommendations relative to participation and partnerships included:

Federal, Tribal, State and Local Governments

- 25) Provide “fast-track” training to an individual who will be a place-based, watershed coordinator (this would be a position comparable to existing River Navigator positions), whose role will be to identify and locate appropriate programs, information, technical assistance, funding and education and provide fast-track access to agencies and key decision makers.
- 26) Agencies should play an enabling role in supporting stakeholders to “own” their watershed initiative. They need to continually facilitate the involvement of local, grassroots initiators to stimulate the bottom-up process of community engagement in watershed issues. Agencies should look at existing successful examples and organizations such as AmeriCorps and VISTA National Service Programs and so-called “friends of” groups that provide local “sparkplugs” to support community engagement.
- 27) Supply sound cross-regional water science. Data need to be internally compatible, broadly accessible, and widely disseminated.
- 28) Move agency focus and resources to ongoing involvement in watershed efforts instead of relying on a project-based focus. Agencies should make working with watershed groups a performance criterion for staff.

Watershed Groups

- 29) Leaders of watershed initiatives need to build trust, which is the basis for establishing and maintaining successful watershed partnerships. Guiding principles for partnerships should be: transparency of participants' interests, objectives, values, outcomes, and needs; acknowledgement of all stakeholders' interests; and representation of the community's diversity.
- 30) Partnerships should define and make transparent their structure and processes, including the decision making processes.
- 31) Watershed groups need to develop a process that includes the following characteristics: goal-oriented, inclusive, informed, coordinated at all levels, and adapts to meet (changing) interests of all members. Strategies to develop an effective process include:
 - Meeting with stakeholders individually to learn about their interests and changes in interests.
 - Managing and communicating expectations, absolving blame, and setting ground rules and procedures early.
 - Showing successes and accomplishments.
 - Requiring participating organizations to vest decision making authority in their representatives to the watershed group.
 - Asking watershed group members to commit to specific terms and consistently participate.
 - Using MOUs to better define roles and obligations.
- 32) Most successful partnerships have a coordinator. The coordinator should exhibit a number of specific qualities, including: concern for natural and cultural resources; excellent communication skills; and, ability to motivate citizens to be stakeholders. The following actions can help stimulate participation and build partnerships:
 - Determine priority environmental issues to be remedied.
 - Identify quality of life issues, and use campaigns to encourage people to take ownership of their watershed.
 - Identify diverse participants and potential support groups.
 - Sponsor stream teams in the watershed that monitor local conditions.
 - Consider interests ("what is in it for them") of the corporations that are intimately tied to the water.
 - Sell successes – make sure people know about them, use the media.
 - Identify and use proper measurements of success.

D. Education and Outreach

D. Education and Outreach

While government may carry the initial responsibility for developing and funding educational programs, to varying degrees, all stakeholders share some responsibility for education. Education should be broad-based for the more general public, as well as targeted to specific audiences. There need to be different messages for each, but both are very important and hard to find funding for. Focus on the delivery of education rather than the development of educational tools (enough tools exist already).

Federal Agencies

- 33) The key recommendation relative to education and outreach was that the EPA should lead a multi-agency effort, working with an advisory committee from the Forum, to fund and implement a national media campaign to promote awareness of water and watershed related issues. Education and Outreach discussion group members offered to form an Education and Outreach Committee, to help guide the campaign and provide assistance with message development, strategy, and rollouts to regions, states, and locales. It was recommended that a public relations/marketing firm be hired to design a media campaign and craft a message that has the potential for impact similar to that achieved by the “Got Milk?” campaign (e.g., “Got Water”). Part of the national media campaign should be the designation of May as Watershed Month. Also the campaign could be integrated into the 30th anniversary celebration of the CWA.
- 34) Implement a public education program about the Endangered Species Act (ESA).

Organizers and Participants in the National Watershed Forum

- 35) An important aspect of education and outreach is the follow-up from the Forum. The Forum results need to be broadly disseminated to key players. For example, the Interagency Watershed Coordinating Team needs to transmit the recommendations to decision makers in federal agencies and a letter should be sent to the National Governors Association. Forum delegates need to work through their networks (e.g., Regional Roundtables, local watershed groups, etc.) to contact governors, members of Congress etc., asking them to endorse/support the national media campaign and designation of May as Watershed Month.

Watershed Groups

- 36) Education and communication strategies need to be incorporated into the fund raising process. Only in this way will potential funding sources understand the very important role played by watershed initiatives.
- 37) Create and utilize opportunities to celebrate rivers, watersheds etc. (e.g., National Watershed Day)
- 38) Educate targeted audiences on the benefits of drinking water source protection activities, (e.g. protecting and restoring riparian buffers and wetlands). Education and awareness should further include the importance of water; characterize how degradation occurs and the negative effects of using poor quality water sources; how watersheds function, basic hydrology; etc.

E. Leadership and Facilitation

There are a number of challenges and issues that hinder efforts to lead and facilitate watershed initiatives. It is difficult to convene and sustain a volunteer based watershed effort, especially in places without much money. There is often not enough time for leaders/public officials to work on issues or build support. Lack of trust is apparent in many watershed initiatives, (e.g., when there is a perception that the process is driven by outsiders who lack credibility). One strategy for addressing trust issues is neutral facilitation by someone who has the ability to elicit input, draw everyone in, provide meeting structure, deliver time management, set ground rules, bring the information down to an appropriate level of understanding, etc.

In addition to utilization of neutral outside facilitators, there is a need to train facilitators within watershed groups to help run efficient meetings. However, this type of training is expensive and many groups cannot afford or take the time to attend long training sessions.

The key recommendations relative to leadership and facilitation included:

Federal, Tribal, State and Local Governments

- 39) Build sustainable, local capacity by funding leadership and facilitation training using the following strategies:
 - Use of trained agency conflict resolution specialists to support watershed initiatives.
 - Establish a toolbox that provides methods, techniques, materials, approaches, etc., for developing and delivering facilitation skills and training.
 - Create a web-based list of names and resources for facilitation.
 - Allow collaboration and facilitation training to be an expense in applications for federal grants.
 - Work with universities and colleges to establish collaborative education programs that address watershed issues. (Bureau of Land Management (BLM) may be an appropriate agency for this initiative).
- 40) Empower agency representatives who work with watershed groups to make decisions and commitments and to clarify what decisions they can and cannot make.
- 41) The Council on Environmental Quality (CEQ) should establish an ombudsman to work with foundations, agencies and tribal governments on watershed issues.
- 42) Provide training for local officials and staff in the areas of watershed management, leadership and facilitation.

E. Leadership and Facilitation

- 43) The Corporation for National Service should establish a watershed initiative with VISTA and AmeriCorps. This will cultivate the next generation of leaders.

Universities and Colleges

- 44) Universities should provide students with training on how to facilitate. They should promote or require internship programs for these purposes.

Watershed Groups

- 45) Watershed groups should coordinate with other groups in their area to have facilitation training together. Trained people from watershed groups should train other members of their group.

F. Source Water Protection

The discussion on source water protection focused on three key needs: integration of existing Acts and other source water protection efforts, education of all levels of stakeholders about source water protection, and provision of incentives to stakeholders to take part in watershed protection activities. Delegates also recognized the need to improve drinking water source assessments prepared by states to help make the quality, completeness, and accessibility of the assessments more uniform. Targeted education of stakeholders will help to increase awareness at all levels about the need for drinking water protection. Better integration of existing Acts, including the Safe Drinking Water Act (SDWA) and the CWA, and other source water protection efforts will aid in streamlining and coordinating watershed protection activities and make them more effective. Developing a range of incentives targeted at different stakeholders will further enhance efforts to protect source water.

One of the key recommendations from the group on source water protection was to “develop and implement education approaches targeted to motivate behavior change related to drinking water source protection for targeted populations.” While government may carry the initial responsibility for developing and funding educational programs, to varying degrees, all stakeholders share some responsibility for education. Specific recommendations to promote source water protection through education are detailed in the previous section on Education and Outreach.

Other key recommendations relative to source water protection included:

Federal and State Agencies

46) In establishing TMDLs and waste load allocations, EPA and the states should incorporate source water assessment data and should ensure protection of current and future sources of drinking water.

Congress

47) Agencies and organizations that are involved in drinking water source assessment and protection and water quality and watershed restoration and protection should talk to each other and find ways their programs and efforts compliment one another or may be modified and expanded to compliment one another. If laws are passed to force such an exchange (this has been the case in some locations, especially those that cross national boundaries), a mechanism to facilitate this exchange must also be provided.

48) Utilize tax incentives for landowners to protect public drinking water source areas (e.g., land trusts, inheritance tax, etc.)

F. Source Water Protection

States

- 49) In setting or revising standards for surface waters, states should incorporate source water assessment data and ensure that their water quality standards and criteria will protect current and future sources of drinking water.
- 50) Encourage water suppliers to get involved and protect and conserve drinking water source areas.

Watershed Groups

- 51) Promote the notion that an ounce of prevention is worth a pound of cure (i.e., preserve or restore a drinking water source area and avoid future water treatment costs)

Local Government

- 52) Educate local people on the value of various zoning tools and allow flexibility as appropriate, (e.g., cluster development, transfer of development rights, large lot developments, overlay districts, etc.).

G. Instream Flows

Instream flows are a critical priority throughout the United States. Instream flow protection to maintain or restore water quality is not just linked to water quality issues, but is also associated with channel maintenance, water resources management and sustainability, aquatic species protection, recreation, aesthetics, navigation, and socioeconomic benefits. However, instream flow is not considered equal to other types of water uses. Legal and other limitations vary from state to state, and there is no explicit federal mechanism to address instream flows. The Instream Flow Discussion Group suggested giving instream flows legal standing across the country.

The key recommendations relative to instream flows included:

Federal Agencies and Congress

- 53) Congress or the federal government should provide adequate funding to states, tribes, and watershed organizations to accomplish review and analysis of flow protection laws, and the development of mechanisms to enforce effective implementation of the laws for water bodies subject to state control and other waters of interest.
- 54) EPA, U.S. Department of Interior (DOI), DOT, USGS, U.S. Bureau of Reclamation, U.S. Department of Housing and Urban Development, USDA, NOAA, Department of Energy (DOE), U.S. Department of Defense (DOD), the CEQ and all other federal agencies and organizations that have oversight of or use water should form an inter-governmental group or caucus to provide assistance to state, tribal, local government, and private watershed interests for protecting instream flows and insuring that the federal government has abided by existing laws and regulations associated with instream flow protection.

Federal, Tribal, State and Local Governments

- 55) Federal, tribal, state, and local agencies should conduct a review and analysis of implementation and application of existing federal, tribal, state, local, and international instream flow protection laws, regulations and policies to identify inconsistencies and gaps. The federal government should play a leadership role and set an example by initiating this review and analysis, and developing and implementing a plan with a timetable and resources to address and correct gaps and inconsistencies. The results of these analyses should be used to develop and implement mechanisms to enforce effective implementation of existing laws, regulations, and policies. If needed, new legal, extra-legal or regulatory mechanisms should be developed and executed to fill the gaps and correct inconsistencies.

G. Instream Flows

- 56) Correct fragmented instream flow protection approaches by enabling the development of holistic watershed plans by:
- Empowering watershed councils with federal, tribal, state, local, private or corporate funding and legislation.
 - Authorizing agency developed, multi-issue plans working with other federal agencies, tribal entities, states and other stakeholders as necessary.
 - Honoring the credibility of grass roots organizations and including them in larger scale efforts.

Plans should include:

- Multidisciplinary science-based assessment and planning.
 - Objectives to prevent or minimize degradation of instream flows in addition to focusing on flow restoration.
 - Objectives to quantify and protect dynamic flow regimes that are in equilibrium with channel geomorphology.
 - Accessibility of information and development of a toolbox to protect adequate instream flows, address water resource management and related land use issues.
 - Sufficient funding to quantify, acquire, protect, monitor, and enforce instream flow regimes and lake volumes.
 - Identification of and development of coalitions among agencies, watershed groups, professional organizations, and nongovernmental organizations and other watershed stakeholders who share the objective of protecting instream flows.
- 57) Develop, on a regional basis, a mechanism to improve public, private and, government understanding of the relationships between land use, water use, flow and ecosystem function and health by:
- Creating an outreach strategy.
 - Identifying sources of funding for education.
 - Maximizing use of existing tools.
 - Defining the target audiences and associated message formats.
 - Developing an incentive-based program to award water conservation and environmental efficiency.

States

- 58) All states should include flow criteria that protect biological resources in their water quality standards. In order to encourage such action, regional conferences should be held on instream flow protection, science and policy.

Watershed Groups

- 59) Watershed groups with an interest in instream flow protection should participate in the assessment of existing instream flow protection laws, regulations and policies to identify inconsistencies and gaps.

- 60) Watershed organizations should support implementation of mechanisms developed to enforce effective implementation of existing laws, regulations, and policies crafted to manage water flow.
- 61) Promote instream flow protection values and education to the Western Governors Association, International Association of Fish and Wildlife Agencies, Interstate Water Council, Western States Water Council, Interstate Council on Water Policy, Association of Western State Water Engineers, and traditional conservation nongovernmental organizations.

H. Data Collection and Monitoring, Research Needs, and Information Management

Major themes in the discussion on data collection and monitoring included challenges with access to data; issues with data quality, consistency and completeness; volunteer monitoring; and funding to support data collection. The discussion on research needs focused on obtaining the kind of information necessary to characterize “healthy watersheds”; more extensive, longer-term databases; filling data gaps; modeling; and methods of evaluating data to measure progress on improving watershed conditions. In the discussion on information management, delegates identified the need for increasing access to training on better data management methods (e.g. GIS); better access to information on data, data gaps, and tools, through a centralized information system; and the need to address concerns about confidentiality.

The key recommendations relative to data collection and monitoring, research needs, and information management included:

Federal, Tribal, State and Local Governments

- 62) Address the myriad of issues associated with volunteer/citizen data collection and monitoring, including acceptability and credibility of data by implementing the following suggestions:
- Encourage the development and implementation of performance-based methods for data collection. Provide flexibility in the methods for regional variation. Establish standards for modeling.
 - Use circuit riders to train volunteers at the local level.
 - Agencies should contact local watershed groups when sampling in their area.
 - EPA should identify a staff person to be an active “part of the team” at the regional or state level to provide support and guidance and to advocate for citizen stewardship.
 - Develop state-specific handbooks and guidelines that address issues such as protocols, data elements (more than chemical monitoring), and the role of traditional ecological knowledge.
 - Develop a technical support center to assist volunteer monitoring efforts in producing quality data that states can use. The Adopt-a-Stream train the trainer program is a model.
 - Increase resources available for volunteer data collection and monitoring.
 - States need to create a system for evaluating data so that data collected by volunteers is not automatically discarded.
 - Create an on-line clearinghouse that links together data from various sources and provides an opportunity to share data. Training must accompany the clearinghouse to help people access and shared data.

- Diversify partnerships in collection to include agriculture and business. Provide incentives for schools, looking for support, to become involved in processes to improve citizen monitoring.
- 63) Clearly define the purpose(s) of data collection and monitoring, and correlate them with decision making systems. Consider a spectrum of purposes from awareness to support for legal actions with each point along the spectrum correlating with different data collection and monitoring approaches.

Research Community

- 64) Pursue an agenda that addresses research needs at multiple levels: data consolidation, applied and basic research.
- 65) Universities and colleges should assist volunteers with data collection and monitoring.

I. Watershed Planning and Evaluation

A key theme in the discussions about watershed planning and evaluation was that if planning is to be effective, it is imperative that plans are linked and coordinated on all levels - local, state, tribal and federal – both within agencies and organizations and across jurisdictions. Participants felt strongly that planning needs to begin at the local level and involve a diverse set of stakeholders, but that federal agencies and officials and Congress should support local level planning efforts by providing funding, technical assistance and guidance. Additional assistance should be provided by enacting enabling watershed oriented legislation and regulations.

The key recommendations relative to watershed planning and evaluation included:

Federal Agencies

- 66) USDA, EPA and DOI should provide a government coordinator as a point of contact for watershed issues (like the River Navigators provided to local communities for the American Heritage Rivers initiative).
- 67) Federal agencies should coordinate their efforts with state and local agencies to achieve consistent plans, standards and regulations. A structure should be established to ensure this happens. The Water Resource Planning Act of the 1980s helped to link plans through river basin compacts (interstate compacts between state and federal government). If used, this model would need to be reevaluated to encompass water quality in addition to quantity. Coordinated Resource Management is another example that is currently working well in California to coordinate plans on different levels. The National Estuary Program (NEP) is yet another model. The best characteristics should be taken from these three models and applied on a national scope. Delegates noted that the model used must clearly state which elements are mandatory and which are voluntary. It is essential that efforts to coordinate plans do not stifle local efforts; flexibility must be preserved.
- 68) EPA should work with Regional Roundtables to collect and disseminate existing, successful planning and evaluation models from universities, NEP, Cooperative Extension, NEMO oceanographic data server, Natural Resource Conservation Service (NRCS), Watershed Restoration Action Strategy Model, California Water Resources Planning Act, etc.
- 69) Using existing, successful models, EPA and/or the Regional Roundtables should conduct trainings/workshops on evaluation. A pilot course could be taught in FY 2003. Members of the Watershed Planning and Evaluation Discussion Group L-2 from the Forum request that pilot courses be taught in their local areas so that they can provide feedback.

- 70) The federal government should expand the use of the Brownfields Program for contaminated watersheds, expand the use of AmeriCorps Volunteers in watershed planning and continue to contribute to the Center for Watershed Protection and Watershed Assistance Grants.

States

- 71) State watershed coordinators should be appointed and funded jointly by federal agencies, states and local jurisdictions. These coordinators would be responsible for: a) developing state guidelines for watershed plan framework; b) identifying resources and disseminating data; c) helping to prioritize problems and resources at the state level; d) making policy recommendations; and, e) providing coordination. There should be a close connection to the Total Maximum Daily Load process where possible.

Regional Watershed Roundtables

- 72) Regional Watershed Roundtables should distribute successful models for watershed planning and evaluation to their local watershed organization members for comment. Based on evaluation of models and comments from local watershed efforts, a preferred model should be recommended for use, or a new model should be developed using the best elements from existing models. This could be done either at the regional level or nationally.
- 73) Regional Watershed Roundtables should put together an inventory of agency people by the date of their next meeting and report back to local watershed coordinators with a user's guide.

Foundations

- 74) Recognize that change in watersheds can take time and that evaluation will be incremental. Evaluation should take place in the short term and more precise metrics (water quality parameters) should be included in longer-term evaluation. Watershed groups ask funders to reflect this in their funding cycles.

J. Smart Growth

The Smart Growth Discussion Group included many diverse viewpoints that resulted in some contradictory recommendations. However, there was a consistent theme in the discussion about the importance of linking growth and water quality. Among the challenges facing smart growth initiatives are: the fact that smart growth tools and innovative techniques are available, but not widely known across the country; there is tremendous diversity in how growth and development are handled across the country (this can be an opportunity as well); and, it is hard for the average person to “stand up” to sprawl.

In general, the delegates focused on the need to: raise the awareness/availability of existing smart growth tools, identify gaps, and work to fill those gaps; promote economic incentives for smart growth; and, promote decision making that integrates economic, environmental and social concerns through watershed efforts.

The key recommendations relative to smart growth included:

Federal Agencies and Congress

- 75) EPA should make tools and training concerning smart growth more widely available to the watershed community. These tools need to assist in integrating smart growth and watershed planning and implementation. Specifically, development of web pages and links to existing pages of smart growth tools would be useful.
- 76) Federal agencies should assist in educating the public about the value of conservation easements and the economic and water quality benefits of these easements.

National Association of Counties (NACO)

- 77) NACO should work with EPA to make tools and training concerning smart growth more widely available to public officials and the watershed community. A compendium of tools should include: 3-D visual tools, models for conducting cost benefit analysis of smart growth techniques, success stories, and a presentation that could be used by local officials. A handbook for local officials on natural resource valuation, highlighting trade-offs should be developed.

States and Local Governments

- 78) Make sure that watershed goals are considered in visioning processes and in growth management plans overall.

- 79) Clarify data and level of detail needed to support smart growth decisions. Utilize and monitor benchmarks/baseline and community demographics. Use and/or develop predictive models that help decision makers see more clearly the long-term and secondary consequences of development on land and water resources. Consider trends and “what ifs”. For example, “if you develop 30% of the watershed, you can expect these types of loadings and this kind of impact of water quality”. Make use of integrated multi-scale information systems.
- 80) Promote economic incentives for smart growth through the following methods:
- Update codes to accommodate smart growth. If clustering regulations are written appropriately, the incentive is built in because the developer makes more per acre.
 - Streamline the permitting and approval process for smart growth projects.
 - Use Transferable Development Rights (TDRs), storm water fees, and rainwater recapture credit to encourage smart growth.
 - Put a dollar value on a clean stream, a functioning wetland, etc.
 - Encourage the use of private conservation easements as a mechanism for watershed protection.
- 81) Ensure an appropriate role for the general public to participate in decision making processes regarding land use decisions and protected lands. Utilize processes that are open, inclusive, coordinated, political, participatory, and engaging. Develop a flow-chart of the decision making process, including how and when scientific, ecological and socioeconomic data and decisions are incorporated.
- 82) Include flood potential in all local zoning ordinances and permitting procedures.
- 83) Determine logical connections between transportation planning and smart growth.

Watershed Groups

- 84) Take a critical look at the relationship of sprawl to problems in watersheds. Answer the question: “if we control sprawl, is our watershed healthy?”
- 85) Encourage the use of private conservation easements as a mechanism for watershed protection.

Private Sector and Non-governmental Organizations

- 86) The Association of Homebuilders, the American Planning Association, the Center for Watershed Protection, the Urban Land Institute, state transportation associations and large organizations such as KMART, etc. should work with EPA to make tools and training concerning smart growth more widely available to public officials and the watershed community. These tools need to assist in integrating smart growth and watershed planning and implementation.

K. Habitat

While many techniques exist to protect and/or restore habitats, the Habitat Discussion Group focused on three primary factors that prevent or hinder habitat protection as part of ecosystem management: regulatory and institutional barriers; lack of information; and, understanding and communication. Delegates emphasized the need to remove regulatory and institutional barriers (e.g. conflicting statutes) by providing training in ecosystem management, revising policies to remove barriers, and providing incentives for restoration. The Discussion Group felt that use of a common set of habitat indicators at the watershed, state, regional and national level would be useful, provided they incorporate and characterize the full range of natural conditions for the region or locality. This would enable stakeholders at all levels to measure, assess and share information to understand habitat ecosystem functions. Finally, group members stressed the need to be proactive in identifying and protecting existing habitat functions first, while understanding that 'after-the-fact' restoration is not the sole solution to ecosystem management. People should be educated about the cost incentives for maintaining existing functions.

The key recommendations relative to habitat included:

Federal, Tribal, and State Government

- 87) Provide training in ecosystem management principles for regulators and natural resource managers to provide skills in determining management objectives, habitat evaluation and other related tools so that increased understanding can lead to better decision making and less emphasis on single-species management.
- 88) Commission a study convened by an objective, non-federal entity to review existing laws and regulations that deal with habitat and evaluate where conflicts exist. The study should include input by those charged with administering and implementing projects at the regional, state and local levels. Next, recommendations should be developed for amending statutes to solve existing conflicts and conflicting purposes in statutes.
- 89) Design a national database template - with public input by user groups - of habitat monitoring methods in use by federal, tribal, state and local governments and private organizations. The federal government natural resource management agencies should initiate this with the EPA or the National Water Quality Assessment under the USGS as the lead, along with private entity partners engaged in monitoring habitats.
- 90) Form a task force to create a national repository of information which is scale dependent (states have a large repository), among DOI, USDA, EPA, NOAA, U.S. Army Corps of Engineers and DOT, etc.

- 91) Model the effort to develop habitat indicators after the current efforts to measure and report on criteria and indicators for sustainable forest management led by the U.S. Forest Service (USFS) and the Roundtable on Sustainable Forests.
- 92) Conduct broad scale ecosystem assessments with the goal of identifying and protecting existing habitat functions that fall within the range of natural conditions for a specified landscape. Create a study to catalog and characterize cost savings of habitat protection (e.g. less costs to repair flood damages).
- 93) Missions, jurisdictions and regional boundaries for agencies should be modified to match ecological boundaries (e.g., Bailey's ecoregions), which may also cross watershed boundaries.
- 94) State, federal and tribal governments that administer the CWA should include riparian plant, animal habitats and physical conditions of stream channels as important components of water quality.
- 95) Provide financial and other incentives for people to protect habitats (e.g. the new Farm Bill, and local, state and federal tax incentives).

Congress

- 96) Within a one to three year timeframe, Congress and EPA should revise the CWA to require integration of physical habitat health into state standards under Section 305(b) and states should work to comply with revised standards for measuring and reporting habitat conditions. EPA will need to regain authority to enforce habitat protection by modification to the CWA (e.g. to avoid the ruling under the National Wildlands V. Browner case). Allocate funds to EPA's Office of Wetlands, Oceans and Watersheds to develop guidance and to provide dollars to the states for training and implementation.

Watershed Groups

- 97) Develop criteria and indicators to provide for a common language to measure habitat and ecosystem functions, which incorporate the natural range of conditions for the region and locality.
- 98) Develop partnerships with other groups, such as anglers, birders, commercial fishermen, hunters and other habitat conservation organizations to expand public interest in habitat (e.g. by offering regular field trips for the public and promoting general hands-on involvement in watershed issues through programs such as 'Adopt-A-Stream').

K. Habitat

- 99) Storage and dissemination of information locally should be achieved through existing regional repositories (e.g. the eastern Coal Region Repository at Canaan Valley Institute).
- 100) Recognize how habitats are linked to quality of life by linking effects of lack of protection or management planning (e.g. increased flooding due to wetlands loss) to decrease in life quality.
- 101) Promote and encourage restoration that utilizes native species and communities and identifies and focuses efforts to control invasive species.
- 102) Promote team problem solving in order to reduce the dangers of leaping to the identification of solutions that, for some restoration projects, may not always address the true causes of the problems or may not incorporate the ecological needs of the broader landscape.
- 103) Define restoration needs on a watershed or sub-watershed level to promote effective implementation and reduce overall costs in order to hasten implementation of specific projects. At the same time, ensure that the scale of the project addresses the needs of the ecosystem and its dependent species as well as the impacts to the resource. For example, if the scope of area to be addressed is too small, normal ecosystem disturbance processes and ecological patterns may be missed.

L. Endangered Species

The Endangered Species Discussion Group acknowledged numerous challenges to protecting endangered species. Often, endangered species protection is seen as a barrier to individual rights, property rights, and economic gain. Therefore, it is essential that protection includes effective incentives and addresses obstacles to species protection, management, and restoration. Because federal, state and local authorities and funding mechanisms are not easily integrated across programs, it is difficult to use funds effectively and efficiently to accomplish cross-programmatic restoration and protection on a watershed basis. In addition, there is a need to make the ESA more effective to address concerns about several aspects of how species are listed, timing of listings, and challenges with ESA implementation. Biological Opinions are often incomplete because of limitations in the data and the analysis of the data. It is also difficult to balance the use of resources with the goal of achieving sustainability.

In general, protection of threatened and endangered species needs to be made more proactive and integrated in the management and protection of species habitats and ecosystems and involve multiple stakeholders by:

- Integrating and leveraging ESA related inventory, assessment, monitoring, and planning into appropriate, comprehensive, watershed-wide assessments and/or evaluations of overall ecosystem functionality. This should happen around the country on a regional or local ecosystem/landscape basis.
- Emphasizing the “non-hammer” sections of the ESA.
- Encouraging and empowering locally led proactive planning on a regional or watershed level focusing on species conservation.

The key recommendations relative to endangered species included:

Federal and State Agencies

- 104) Concerted efforts should be undertaken to be proactive in species conservation by, for example: using the Coordinated Resource Management Plan (CRMP) process to focus on species conservation; training federal employees on the proactive parts of the ESA; modifying best practices to include proactive elements, and conducting and publicizing case studies that demonstrate effective proactive approaches.

L. Endangered Species

- I05) U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service and other appropriate agencies should modify the existing process for developing Biological Assessments and developing and implementing Biological Opinions on national, regional, and local levels by:
- Ensuring that Biological Assessments include information derived from local expertise and experience based culture and traditional knowledge in addition to scientific data, and include long-term and cumulative effects in so much as they can be reasonably determined both spatially and temporally.
 - Modifying the Biological Opinion process to include public input and an appeal process when agencies or the public feel the unsupported conclusions have been included in the Biological Opinion.
 - Including peer review of scientific data when there are differences in interpretation of scientific data used in decision making.
 - Instituting requirements that Biological Opinions include binding commitments for follow-up monitoring and subsequent adjustments and corrective actions.
 - Conducting comprehensive Biological Assessments leading to Biological Opinions independent of limiting political and economic influences.
- I06) Develop statewide conservation plans and implement multi-state ecosystem planning such as that done in the Southern Appalachians, Great Basin, Colorado, etc.
- I07) Develop guidelines to ensure that actions are taken with adequate, but possibly incomplete information. Develop educational materials to convey the limits of interpretation of scientific data as a basis for decision making.

M. Jurisdiction and Coordination

The Jurisdiction and Coordination Discussion Group emphasized the need for federal, tribal, state and local agencies to support flexible and inclusive mechanisms for locally led watershed planning and management programs. Facilitating and encouraging government agencies, private and nongovernmental organizations, and the public to work collaboratively within and across political boundaries in a watershed would help to accomplish this effort. There is a need to educate the public about the need and value

of regulatory changes to facilitate collaboration. The discussion around permitting emphasized the need for increased efficiency of the permitting process. In addition, state and local governments must respect the uniqueness and independence of local watershed groups composed of those who live, work and play in the watershed.

The key recommendations relative to jurisdiction and coordination included:

Federal, Tribal and State Governments

- 108) Reorganize federal and regional watershed coordination teams along state boundaries instead of federal and regional boundaries.
- 109) Identify and remove barriers to interagency coordination.
- 110) Promote cross-jurisdictional collaboration by:
 - Changing laws, policies, and procedures that are barriers to collaboration.
 - Identifying and disseminating successful techniques for collaboration already in use.
 - Interpreting water resource policy and regulations in a manner that balances the need for consistency and certainty with the need for responsiveness and flexibility.
 - Supporting policy dialogues for urban and rural communities to jointly discuss how to protect watersheds.
- 111) Federal natural resource agencies and tribes should work collaboratively to develop a process to achieve coordination through inter-regional and interagency teams to address ecosystem problems that extend beyond ecosystem boundaries and agency jurisdictions. The Tribal Watershed Forum is one way to begin this process, which should also be extended to the local and regional level.
- 112) Provide “one-stop-permit shopping” to remove regulatory disincentives to habitat protection and restoration projects, by developing a clearinghouse for permit processing while avoiding a one-size-fits all approach. This is not designed to result in fewer permits, but rather in a central coordination body where permits can be sent and reviewed efficiently. This has been done in several regions among federal agencies for certain projects but this approach should be institutionalized.

M. Jurisdiction and Coordination

- I 13) Seek programmatic approvals to provide regulatory relief for restoration.
- I 14) Establish interagency/inter-jurisdictional technical review teams to assist in early project design to streamline approval.
- I 15) Establish mechanisms such as pilot projects and adaptive management areas for creative solutions.
- I 16) Reaffirm tribal policies (all federal agencies) and create a training curriculum for interaction with tribes and disseminate to all federal agencies.

Local Government

- I 17) Protect and preserve landowner's rights after they sell, buffer or develop land rights. Landowners fear that if they sell the riparian corridor it will result in recreational users lobbying because the sight of logging, farming or other agricultural practices offends them. They also fear voluntary programs becoming mandatory.
- I 18) Promote the development of watershed advisory committees where such groups do not already exist.
- I 19) Provide resources at the local level to support cooperation and "navigation" through the bureaucracy.

Watershed Groups

- I 20) Highlight the role of private landowners as legitimate and valued decision makers in watershed planning and implementation. Specific suggestions for action items focused on:
 - Providing incentives to landowners to encourage conservation management practices that have public benefit (and asking them about incentives because they are the best people to identify which incentives would work for them).
 - Rewarding good land stewards, through programs such as the Chesapeake Bay Clean Bay award for farmers.
 - Increasing communication with landowner groups to explain and educate them about benefits of good landowner stewardship, find out their concerns and encourage them to participate in watershed planning.
- I 21) Create opportunities to encourage landowner stewardship through the permitting process. Specific action items included:
 - Develop incentives.
 - Provide technical assistance.
 - Provide exemptions from permitting fees.
 - Develop procedures to limit liability.
 - Develop public education tools on regulatory requirements.

N. Total Maximum Daily Loads (TMDLs)

The TMDL Discussion Group made a point of recognizing that major progress has been made toward improving water quality through the implementation of TMDLs under the CWA in the last decade, particularly through the reduction of point source discharges. However, major challenges still exist from predominately nonpoint sources. As such, the methods for continued progress would need to be tailored toward nonpoint source sector audiences, such as farmers, ranchers and entities responsible for urban runoff. The focus should be on developing priority strategies for achieving continued success and clear improvement in implementation and regulation of TMDL's. A major challenge is the inconsistent interpretation and implementation of TMDL's among the states (and regions and federal agencies to a lesser degree), included issues associated with inconsistent standard setting, regulation interpretation and implementation, and listing of impaired water bodies. There are also inconsistencies within the states associated with the lack of integration between water quality standard setting, and TMDL's. The Discussion Group identified the effort to develop EPA's "*Draft 2002 Consolidated Listing Guidance*" as a unique near-term opportunity that would potentially have long-term and far-reaching impacts on improved consistency among the states. The Discussion Group explicitly recommended that EPA work with stakeholders to develop the "*Draft 2002 Consolidated Listing Guidance*" to improve the process of listing impaired water-bodies.

Another important theme among the recommendations the group identified was the need for a watershed approach to the implementation of TMDL's. TMDLs are widely being implemented in ways that are counter-productive to watershed management.

Also a re-occurring theme was the need for more proactive alternatives to TMDL's for addressing impaired water quality (e.g., through development of watershed management strategies, best management practices, tools and requirements for improving our waters BEFORE they are added to the 303(d) list and require that a TMDL be developed).

The key recommendations relative to TMDLs included:

Federal Agencies and Congress

- 122) Develop criteria, protocols and methodologies to create a consistent/compatible scientific approach to listing and de-listing among states. Develop consensus around criteria for prioritizing water bodies to include on national 303(d) lists.
- 123) Establish minimum levels of information needed to list and de-list impaired water- bodies. Include explicit plans for obtaining data for watersheds without sufficient information.
- 124) Develop agreements and methods to deliver a unified (one source) message to the public, grass roots watershed groups, and landowners regarding TMDLs.

N. Total Maximum Daily Loads (TMDLs)

States

- I25) Incorporate the TMDL development and implementation processes with overall watershed management approaches, farm plans, monitoring and other state-led activities. Coordinate watershed management activities using a rotating watershed approach and emphasize adaptive management approaches and require agencies to actively seek local stakeholder input early and often in the TMDL development and implementation process.
- I26) Focus on strategically addressing water quality problems and provide early warning systems to identify water bodies that are deteriorating so that preventative actions can be taken prior to listing.
- I27) Consider Third Party TMDL's as an innovative alternative to help address the backlog of TMDL's required and decrease potential for lawsuits. Promote third party TMDL development through flexible funding mechanisms.
- I28) Strengthen water quality standards to help improve the TMDL process.

Watershed Groups

- I29) Foster collaborative partnership approaches from the outset of TMDL development to improve the outcome, (e.g., implement collaborative team approaches by federal, state, and local agencies that coordinate TMDL development and implementation).
- I30) When communicating to the general public, articulate information about TMDLs in terms of "clean water". Many people are confused about TMDLs, their purpose and their role in restoring impaired waters. The public, however, understands "clean water."
- I31) Provide a clearinghouse and communications network for stakeholders interested in information relevant to TMDL development and implementation.

ACRONYMS

AAAS - American Association for the Advancement of Science
AML - Abandoned Mine Land
APA - American Planning Association
ARC - Appalachian Regional Commission
BLM - U.S. Bureau of Land Management
CARA - Conservation and Reinvestment Act
CDBG - Community Development Block Grants
CEQ - Council on Environmental Quality
CNS - Corporation for National Service
CWA - Clean Water Act
CRMP - Coordinated Resource Management Plan
DOD - U.S. Department of Defense
DOE - U.S. Department of Energy
DOI - U.S. Department of the Interior
DOT - U.S. Department of Transportation
EDA - Economic Development Administration
EPA - U.S. Environmental Protection Agency
ESA - Endangered Species Act
ESRI - Environmental Systems Research Institute
FACA - Federal Advisory Committee Act
FEMA - Federal Emergency Management Act
FTE - Full-time employee
FWS - U.S. Fish & Wildlife Service
GIS - Geographic Information Systems
HUD - U.S. Department of Housing and Urban Development
IFIM - Instream Flow Incremental Methodology
IJC - International Joint Commission
IPM - Integrated Pest Management
MOU - Memorandum of Understanding
NACO - National Association of Counties
NAS - National Academy of Sciences
NEMO - Non-Point Education for Municipal Officials
NEPA - National Environmental Policy Act
NEP - National Estuary Program
NGA - National Governor's Association
NGO - Non-Governmental Organization
NOAA - National Oceanic & Atmospheric Administration
NOI - Notice of Intent
NPDES - National Pollutant Discharge Elimination System
NRCS - Natural Resources Conservation Service
NAWQA - National Water-Quality Assessment Program
OMB - Office of Management and Budget
OSM - U.S. Office of Surface Mining

A. Acronyms

PHABSIM – Physical HABitat SIMulation
QA – Quality Assurance
QC – Quality Control
RC&D - Resource Conservation and Development Council
RFP – Request for Proposals
RLF - Revolving Loan Fund
SCWD - Soil Conservation and Water Districts
SDWA – Safe Drinking Water Act
SPARROW - SPAtially Referenced Regressions On Watershed Attributes (USGS)
STORET - Short for STORage and RETrieval. A repository for water quality, biological, and physical data and is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, etc.
TDR - Transferable Development Rights
TEA-21 - Transportation Equity Act for the 21st Century
TMDL – Total Maximum Daily Load
UDAG - Urban Development Action Grants
USDA - U.S. Department of Agriculture
USFS – U.S. Forest Service
USGS – U.S. Geological Survey
WAG – Watershed Assistance Grants
WIN - Watershed Information Network
WQS - Water Quality Standards
WRDA – Water Resources Development Act

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REMARKS OF LINDA FISHER
Deputy Administrator of the U.S. Environmental Protection Agency,
at the
National Watershed Forum
Arlington, Virginia
June 28, 2001

Good morning, everyone, and welcome to the National Watershed Forum.

I'm delighted to be back at EPA, working for a President and Administrator who are committed to improving environmental quality and raising the quality of life for all Americans.

One of the best things about my job is that it allows me to meet people like you, people who are working hard, giving their personal time and energy, to make a real difference in their own communities and neighborhoods. You are already putting into practice some of the most important environmental principles of our new Administration.

Today I want to thank you, encourage you, and promise my support in the years ahead. You are living examples of what President Bush, Governor Whitman, and I believe is the best hope for our environmental future. Let me tell you why.

A few weeks ago I was sitting with my children leafing through some old photo albums. And I was struck by how many of them included some kind of water. Kids splashing in the tub, swimming in a lake in Michigan, canoeing on a river, the ever present squirt guns. It reminded me once again of the critical importance of clean water in our daily lives. Not just in terms of our health, but as an integral part of what brings us joy and happiness, and what makes life worth living. And I used the opportunity to explain to them one more reason why I want to return to EPA, to help protect our nation's precious water resources so that every family – today and in the future – has the opportunity to enjoy clean water in all its many uses.

Because of my earlier career at EPA, I thought I knew the Agency and its issues fairly well. In fact, when I was invited back to become Deputy Administrator, I thought my EPA experiences would make my new job a lot easier. Yet when I got back I was

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surprised to discover how much the world has changed, and how much I would have to scramble to catch up.

This conference, and the way people like you protect watersheds today, are excellent examples of the kind of constructive, hopeful change I see at EPA . Ten years ago, when we thought about protecting water quality, we looked at the major sources of specific pollutants, the uses of particular rivers and streams, and the requirements of federal water quality law. All that is still important. EPA is very proud of that fact that over the past 30 years we've put in place a strong foundation of pollution control, particularly for industry and wastewater treatment facilities. We're proud of the accomplishments that flow from federal law. But as you well know, the problem is a lot bigger than that. It includes sewage sludge and industrial grease and oils and heavy metals, to be sure. But it also includes habitat loss and fragmentation, suburban sprawl, invasive species, air deposition, the concentration of population along shorelines, the proliferation of home septic systems, and many other issues we were barely aware of ten years ago.

In the years that I've been gone from the Agency, you all have made remarkable progress in redefining the problems plaguing watersheds in this country, and expanding the range of solutions. You're thinking more holistically than we did back in the 1980s. You clearly understand a fundamental premise that too often gets lost in the Agency's daily grind to put out rules and regulations and enforce the law. That fundamental premise is this: the environment is a delicately interconnected web of life, and the web is greater than the sum of its parts. So to protect any particular part of that web, you always have to consider the web as a whole. The watershed is the web of life. The watershed is greater than the sum of all the individual streams, lakes, wetlands, and groundwater that flow through it. And to protect any part of the watershed, everyone who affects any part of it has to be involved. You understand that well. And because of your understanding, your knowledge, your commitment and hard work, you're providing all of us with a lot more hope for the future of America's water.

Since I've been back, I've noticed another big change in the way the environment is protected these days, another change that's evident in this room today, another change that the President and Administrator strongly support. And that's the extensive, roll-up-your-sleeves involvement of state and local governments, communities, businesses – in fact, everyone who has a stake in the health of a watershed. The federal government, and federal laws, are necessary, but they're not sufficient. By themselves, they will never

be enough to protect all the watersheds, in all their differing circumstances, across this great country of ours.

Those of us who work in Washington simply don't know enough about the complex problems facing our watersheds, problems that are rarely the same in any two places. But you do. Not any one of you, but all of you taken together, and others like you. You represent every imaginable perspective within a watershed – from agriculture and forestry and mining to state and local governments and environmental groups. You bring a collective perspective to the job that no federal agency could hope to bring. They say that many hands make for light work. When it comes to watersheds, many eyes make for clear vision. And you have demonstrated your clear vision many times. The grass roots watershed movement that has sprung up across the country, the grass roots movement that is so clearly present in this room today, is making great things happen. And you're making more things happen more effectively than the federal government ever could, no matter how big our budget.

Over the past decade you're changed the face of our national watershed protection and restoration efforts. According to EPA's Adopt a Watershed data base, there are now more than three thousand local groups working to protect their communities' streams, rivers, and lakes. These productive partnerships include local governments, local businesses, and local environmental groups united to protect watershed health. These grassroots watershed partnerships are democracy in action. They're the lifeblood of our democratic system. That's why I think it's no exaggeration to say that your grassroots partnerships not only improve the health of watersheds, they strengthen democracy itself.

As you know, both President Bush and Governor Whitman came to their current jobs from state government. They both believe that the federal government does best when it encourages and supports those closest to environmental problems to have a big hand in designing solutions. They both want to see more authority shifted to state and local governments, and they both want to see much-expanded partnerships among government, business, and environmental community groups. They both want to see the work of grassroots watershed partnerships expand. This is not to say we're abdicating the federal role. Far from it. We're going to do everything we can to make your job easier. We're absolutely committed to tough federal enforcement, for example. We're developing nutrient criteria that can be applied in every watershed. We're working with

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USDA, states, leading academic experts, and other stakeholders to develop better ways to protect watersheds from animal wastes. We've joined with state and local governments to control pathogen and nutrient pollution from septic systems and other onsite sewage management. And we're working across the board with all stakeholders to assure effective implementation of the Clean Water Act's TMDLs, which provide the technical underpinning for our mutual efforts to protect watersheds.

And in all our watershed protection activities at EPA we're going to take advantage of the growing environmental expertise found at the state and local levels. We intend to give you more flexibility to pursue our shared environmental goals in the ways that you think are best. There's another role that the federal government – particularly EPA – can play, a role that the President and Governor Whitman are committed to strengthening. And that's the collection, aggregation, and distribution of environmental information. The great thinkers who founded this country knew that knowledge is a fundamental prerequisite for a democracy, just as the free flow of information is a fundamental prerequisite for a free market.

At EPA, we believe that complete, accurate, and easily accessible information is unquestionably the bedrock of effective environmental protection. So we're putting in place new and innovative technologies that are revolutionizing the way environmental data is collected and disseminated.

This is another remarkable difference between EPA today and ten years ago. And it's a difference that will make your job a lot easier. For example, EPA has modernized STORET, the nation's largest data base on water quality, so that citizen groups can readily access the data. This data base makes it easier for everyone to understand local water quality– whether they're government officials, community activists, a high school biology class, or girl scouts working to earn their water drop patches. It makes it easier for everyone to know what they can do to protect it.

EPA and our federal partners are also developing a new internet-based Watershed Information Network. It is accessible by the public and provides consolidated information about programs and resources available to help you. This network links users to financial, technical, and hands- on assistance available from EPA and other federal and non-federal partners.

Another thing: EPA and our partners are working to improve publicly-accessible information about the quality of the nation's surface waters through the development of the Watershed Assessment, Tracking, and Environmental Results information system, called WATERS. WATERS displays geographic water quality information and allows citizens to quickly identify the water quality standards, impaired waters, and TMDL status of surface water across the country. We're doing all this, and more, so that you have more tools to do your job. Information is power, and in the years ahead you'll have more and more power to take the actions necessary to protect the water that flows through your neighborhoods.

You've come here to Washington to discuss the barriers that impede watershed protection and restoration efforts across the country. That's an admirable goal, and I look forward to hearing about your findings. I intend to consider them carefully as EPA designs its own watershed agenda for the future. Under Governor Whitman, EPA will make every effort to ensure that our work at the federal level dovetails with yours. We will continue to do the job entrusted to us by the American people.

We will still take the lead in many of our traditional areas of responsibility. But the real leaders on the ground, and along the shoreline, are you. So we're counting on you to form the partnerships and tailor the actions to meet you unique local circumstances. We're counting on you to share your experiences at conferences like this. We're counting on you to learn from each other, draw information and strength from each other, so all of our efforts are smarter and more effective. We're asking a lot from you, but I'm confident you'll deliver. Because of you, I'm confident that some day my children will sit with their children on their knees and look back with smiles and wonder at all the blessings that clean water has brought to their lives.

Good luck over the next few days, and thank you very much for inviting me.

APPENDIX D – INNOVATIVE APPROACHES

NATIONAL WATERSHED FORUM SHOWCASE OF INNOVATIVE APPROACHES/CASES

TITLE: **AMD&ART: A CASE STUDY OF INNOVATIVE FUNDING FOR WATERSHED RESTORATION**

PRESENTED BY: T. Allan Comp, Ph.D., Office of Surface Mining

ORGANIZATION: AMD&ART, Inc.

AMD&ART is a non-profit organization that is artfully transforming environmental liabilities into community assets in the coal country of southwestern Pennsylvania. The AMD&ART process is one that combines public art, environmental improvement, and community engagement in treating abandoned mine drainage (AMD), the most widespread environmental, economic and social problem of the Appalachian region. With multidisciplinary intervention and wide public participation, AMD&ART has created a holistic approach to recreating places, incorporating recreational elements, artful spaces, educational opportunities, historic reminders and restored wildlife habitat into designs for passive AMD treatment systems. This approach honors a past of hard work and community building by bringing that same civic engagement and hard work to the design and construction of treatment systems. The treatment systems clean polluted waters, reach people, restore nature and revitalize abandoned spaces. This innovative process has allowed AMD&ART to forge many unlikely allies and build useful partnerships for funding.

TITLE: **BIGALK CREEK WATER QUALITY PROJECT, HOWARD COUNTY, IOWA**

PRESENTED BY: Frank Moore, Howard Soil and Water Conservation District

ORGANIZATION: Iowa Department of Agriculture and Land Stewardship

Bigalk Creek has always been a ready source of fresh water for raising livestock, but now it is producing something even more, rainbow trout.

Iowa Department of Natural Resources (IDNR) fisheries biologists have documented that rainbow trout are naturally reproducing on the 1.2-mile stretch of creek, above its confluence with the Upper Iowa River in Howard County, Iowa. Bigalk Creek becomes only the third stream in Iowa where natural reproduction of rainbow trout has been documented. The state currently has 105 trout streams covering 307 miles.

Documentation of natural rainbow trout spawning comes after an extensive, four-year watershed improvement project at Bigalk Creek. The project included working with private landowners in the watershed to implement best management practices on their land to improve water quality.

The natural reproduction of rainbow trout on Bigalk Creek is an added bonus to a very successful water quality improvement project. The efforts at Bigalk Creek show that substantial improvements to water quality can be made on our coldwater streams by working with private landowners without acquiring public ownership of the land.

A survey of Bigalk Creek by IDNR fisheries biologists in 1999 counted 80 trout in the stream, a 600 percent increase from a 1992 sample when 12 fish along the same stretch were found. Biologists also noted that 20 percent of the rainbow trout caught could be classified as "naturalized," meaning the fish had been in the stream long enough to get their natural colors and are feeding on what would be a natural diet of insects and small fish. The presence of naturalized rainbow trout is an indicator that natural reproduction can occur. Included in the sampling were less than year old rainbow trout, documenting natural reproduction. Fisheries biologists note that the find is particularly significant because baby trout are extremely hard to catch during sampling efforts.

The Bigalk Creek Water Quality Protection Project was a joint effort by the IDNR, Iowa Department of Agriculture and Land Stewardship, U.S. Natural Resources and Conservation Service, U.S. Environmental Protection Agency (EPA), and the Howard County Soil and Water Conservation District.

The cooperation between private landowners and the various agencies was the key to success for the project, according to Frank Moore, coordinator of the Bigalk Creek project. The primary concern for Bigalk Creek at the beginning of the project was the extensive livestock grazing that took place along the stream. It was causing excessive erosion and water degradation from animal waste. Nearly 90 percent of the 1.2-mile target area along the stream was extensively grazed when the project began. Today, only a 1,700-foot section of the stream continues to have cattle grazing. The removal the cattle from the stream did not necessarily mean losing a primary source of water for producers. In the case of Manley and Linda Bigalk (who's family the creek is named after), a large pasture along the stream was fenced off and nose pumps were installed in 1992. The pumps, installed with EPA section 319 water quality grant money administered by the IDNR, allow cattle to draw water from Bigalk Creek without ever getting close to the stream bank.

The project was able to not only document the environmental benefits to using best management practices, but the economical rewards as well. From the beginning, it was felt to be essential that the economics of best management practices be provided. Farmers will not adopt these practices unless they can be shown that it is financially beneficial over the long term. The effort to help farmers keep better records paid particular dividends in 1998 when crop prices plummeted. Adequate records allowed these farmers to make management decisions to weather the financial crisis.

Erosion was reduced by 12,785 tons of soil in the Bigalk Creek watershed during the project. If current sediment control structures remain in place, it is estimated that erosion will be reduced by more than 5,000 tons a year in the future. Nutrient and pesticide usage by farmers was also reduced by the implementation of an Integrated Crop Management program (ICM). Farmers completed extensive soil testing, took legume and manure nitrogen credits, and hired crop consultants to scout fields for weed and insect problems. The goal was to apply fertilizer and pesticides only where and when it was needed and in the proper amount. This high level management allowed the producers to cut their costs while maintaining yields and profits.

D. Innovative Approaches

Many also adapted no-till farming practices, which further reduced the amount of sediment reaching the stream.

TITLE: THE BITTERROOT WATERSHED PARTNERSHIP

PRESENTED BY: Roxa French

ORGANIZATION: Bitter Root Water Forum

The Bitterroot Fires of 2000 burned more than 350,000 acres. About 16 percent of the rural county and Bitterroot River watershed in southwestern Montana were burned. This recent fire event put the Bitterroot watershed on the radar screen of local organizations in a new way. The result is the Large Scale Watershed Restoration Project by the new Bitterroot Watershed Partnership.

The Bitterroot Watershed Partnership is a collaboration supporting restoration needs, monitoring and management challenges, community outreach and education opportunities, and positive community and economic development in the Bitterroot River watershed. The partnership's first step was to complete a 5-year business plan that was accepted by the U.S. Forest Service Large Scale Watershed Initiative as one of their 16 nationwide projects.

The partners envision a future where the Bitterroot watershed's health is secure. The proposal to achieve this builds upon the Bitterroot Watershed Partnership strengths and details initiatives to improve our capacity and the capacity of all watershed residents to answer existing and future threats. The partnership will focus all effort within the guidance of four mutual objectives:

- Objective One: Habitat Conservation and Restoration
- Objective Two: Monitoring and Decision Making
- Objective Three: Communication and Education
- Objective Four: Economic Development

The major challenge within the partnership echoes the social challenge within the community. The partnership agrees in wanting a clean, healthy watershed, but do not individually agree entirely upon the best path to achieve this objective. However, the members of the partnership have pledged to work together to find solutions, to work to accomplish programs incrementally and learn from the actions.

The current challenge facing the partnership is financial constraints. Some entities located within the watershed may wish to "buy" the product, but they may not be able to afford the costs. A prime example is the competition between the effect of rapid growth, that is "squeezing" riparian habitats and rural agricultural production, and the resultant increasing pressure on the valley's heavily used water resources.

The partnership's business plan includes an approach for developing a cost-effectiveness analysis as a way to gauge the potential costs and benefits associated with watershed restoration projects. It is the assumption that determining whether an action represents a worthwhile social gain depends on whether the net gain in benefits equals or exceeds the net costs.

The partnership has selected the American Dipper as its logo. The Bitterroot Watershed Partnership realized that, like the partnership, the dipper's vitality depends upon unpolluted water. The American Dipper "connects" all parts of the watershed and is a symbol of the connection the partnership shares with the watershed.

TITLE: **BRASSTOWN CREEK RESTORATION**

PRESENTED BY: Jason Wheatley, Soil Conservationist

ORGANIZATION: USDA/NRCS

Brasstown Creek flows 14 miles from Brasstown Bald, the highest point in Georgia, northward to join the Hiwassee River at Brasstown, North Carolina. By 1994, this creek, like others in the Hiwassee River watershed, had been declared impaired by both the Georgia Environmental Protection Division and the North Carolina Division of Water Quality. Local citizens, having seen their streams deteriorate, and soil and water conservation districts from two Georgia and two North Carolina counties formed the Hiwassee River Watershed Coalition.

In 1999, this Coalition received a \$2.1 million grant from the North Carolina Clean Water Management Trust Fund to restore the North Carolina portion of Brasstown Creek. But the Coalition had a problem, which was no technical expertise to do the job. They asked help from the National Resources Conservation Service (NRCS). The NRCS and the Hiwassee River Watershed Coalition agreed to equally fund a soil conservationist to direct the Brasstown Creek Restoration Project.

The \$2.1 million grant required the Coalition to restore 20,000 feet of streambank. Today, 16,000 feet of bank have been restored and 20 acres of riparian buffer planted. The project is ahead of schedule and under budget. Probably, 30,000 feet of repair will be done for the contracted price for 20,000 feet.

Jason Wheatley, the director of the Brasstown Creek project that is jointly funded by the NRCS and the Hiwassee River Watershed Coalition, will explain the day-to-day management of this experiment in a government agency/citizen group partnership.

TITLE: **COLLABORATIVE APPROACH FOR MANAGING A WESTERN
WATERSHED**

PRESENTED BY: Jim Blankenship

ORGANIZATION: North Fork River Improvement Association

D. Innovative Approaches

The North Fork River Improvement Association (NFRIA) was established in 1996 as a volunteer coalition, aimed at restoring the ecological health of North Fork of the Gunnison River for the benefit of the entire community. The group empowers a broad-based coalition of riverfront landowners, farmers, ranchers, environmentalists, in-stream gravel mining companies, sportsmen, boaters, irrigation companies, and concerned members of the community. This “solution-focused” organization is a unique collaboration of diverse community interests and government agencies, brought together to develop resolutions to the common problems associated with the valley’s most valuable resource, the river. It is designed as an alternative to traditional “top-down” government regulatory approaches.

Past studies showed that degraded fish and wildlife habitat along the North Fork of the Gunnison River were primarily caused by excessive streambank erosion due to channelization. The channelization of this river began approximately 100 years ago as a means to protect agricultural land from spring flooding and to expand crop production in the floodplain. This was a well intended but misguided practice. It cut the river off from its floodplain, increased stress and erosion on the riverbanks, decreased wetland and riparian areas, devastated the fish habitat, damaged important irrigation facilities, and subsequently reduced water quality by increasing sediment yield to the stream. This is a widespread problem through an approximate 12-mile reach of river from east of Paonia to west of Hotchkiss.

The organization was originally formed by a group of riverfront landowners aimed at researching alternative methods to reducing extreme bank erosion along the North Fork of the Gunnison River. As other water users and river interests joined the group, it quickly transformed into an innovative local watershed group, focused on restoring the ecological health of the floodplain while working to develop consensus among all interests. The mission of this association is to *meet current and future demands for traditional uses of the river while improving stream stability, riparian habitat, and ecosystem function along the North Fork of the Gunnison River.*

This all-volunteer group, which has one part-time staff person, is working to:

- Educate the community on the value and responsible use of the river’s natural resources
- Engage local farmers and ranchers in riparian restoration and agricultural conservation
- Improve water conservation through innovative and sustainable irrigation practices
- Encourage the community to develop collaborative solutions to complex resource problems
- Restore proper riverine function to damaged sections of the river
- Improve and monitor water quality
- Enhance fish and wildlife habitat
- Disseminate information to the community, government agencies, and watershed groups.

This organization is excited to face the local challenges as an informed grassroots community collaboration. The North Fork River Improvement Association looks forward to working closely with local individuals, government agencies, and other watershed organizations to ask better questions, find substantive answers, and ultimately promote positive action.

TITLE: **COMMUNITYVIZ™: USING TECHNOLOGY TO ENHANCE WATERSHED DECISION MAKING**

PRESENTED BY: Dace Carver, Partnership Relations

ORGANIZATION: The Orton Family Foundation

The presentation will demonstrate the three modules in CommunityViz™, Scenario Constructor Town Builder 3D, and Policy Simulator. Attendees will see a live fly-through of Lyons, Colorado, so they can visualize the character of the community (Lyons is located in the foothills between Boulder and Rocky Mountain National Park. It features steep hogbacks

surrounding the St. Vrain River). Development impact analyses will follow with evaluation of development suitability and composite summaries using standard ArcView (vector) themes as

base data. The development suitability weighs resources and hazard overlays to evaluate potential impacts. The composite summary will add together nonpoint source sediment generators (e.g. streets, overlot grading and agriculture) to estimate sediment loads. The software offers an open tool for modeling spatial information. Users (the audience) can offer their input on the assumptions within the model, reflecting their perceptions and preferences. Results of the analyses will then be viewed in three dimensions.

CommunityViz™ is developed by the Orton Family Foundation. It is a suite of software tools designed to assist with spatial decision-making and analysis of land-use scenarios. This suite of integrated ArcView GIS extensions helps users view, project, analyze, and understand potential changes to their environment by offering three-dimensional exploration and alternative scenario building and analysis. CommunityViz™ is a tool that significantly increases the ability of citizens and their government to define and shape their desired future

Scenario Constructor is a powerful tool for performing impact analysis. It allows users to create dynamic models based on their own assumptions and parameters. Scenario Constructor introduces the concept of the Scenario view, which is expanding the power of ArcView by providing a customizable framework.

TownBuilder 3D provides an interactive, real-time, three-dimensional environment. The user can create and manipulate a virtual representation of his or her town and visually explore different land-use/management alternatives. Source data is made up of ArcView themes or layers. Townbuilder 3D contains a model library, which is delivered containing a generic set of building models and features. It also supports directional fly-through of the three-dimensional scene enabling the user to visualize alternative designs.

TITLE: INNOVATIVE APPROACHES TOWARDS ACHIEVING WATER QUALITY GOALS AND COST-SAVINGS DURING TMDL DEVELOPMENT

PRESENTED BY: Avinash Patwardhan, Ph.D., P.H.

ORGANIZATION: CH2M Hill

Section 303(d) of the Clean Water Act (CWA) requires that states identify and submit to the U. S. Environmental Protection Agency (EPA) a list of waters that do not meet water quality standards. All water bodies impaired by pollutants appearing on the 303(d) list are required to have Total Maximum Daily Loads (TMDLs) established. A TMDL is a quantitative process of assessing water quality problems, pollutant sources, and pollutant reductions needed to restore and protect a river, a stream or lake. A TMDL is also the amount of a pollutant a water body can absorb, and still meet water quality standards for designated uses such as drinking water, aquatic life and recreation. A stream segment may have more than one TMDL developed if it has multiple pollutants.

The goal of the TMDL program is to restore and protect appropriate and attainable beneficial water body uses and with the added goal on the part of affected point and nonpoint sources, the restoration and protection efforts be implemented in the most cost-effective ways practicable. Unfortunately, the pace of the TMDL program, as currently driven by court actions in most states, precludes development of TMDLs and implementation plans based on sound science with minimal uncertainty. Furthermore, of the nation's over 21,000 water body segments listed for not meeting water quality standards, a significant share can either be shown to qualify for de-listing or could meet their water quality goals more effectively and at lower cost by preventing or refining TMDLs. Thus, TMDL alternatives are worth pursuing.

This presentation describes TMDL procedures/alternatives and associated tools for watershed management, especially for achieving compliance with the CWA. Stakeholders can identify which alternatives may apply to their own situation and choose a path forward toward a cost-saving solution. There are a number of technical and regulatory actions or opportunities available to point and nonpoint sources that are or maybe affected by TMDLs. These tools include, but are not limited to, data analysis, modeling, site-specific criteria, use attainability analyses, watershed implementation plans, trading, and mitigation banking. Use of these tools may in fact allow the TMDL to be implemented in a manner that is cost effective and will help attain additional watershed restoration benefits. These tools are described in the context of a broader Watershed Stewardship Action Strategy (WSAS), where they can be presented as TMDL alternatives and an implementation plan can be tailored to the stakeholders' specifications.

The applicability of the tools and the potential magnitude of the cost-savings from implementing a TMDL alternative depend upon where the state government agency is in the TMDL development process:

1. Water body not listed,
2. Water body listed and TMDL forecasted,
3. TMDL developed,
4. TMDL enforced, and,
5. TMDL in continuing implementation.

The benefits of early action in terms of cost-savings cannot be over emphasized, but no matter when TMDL alternatives are introduced into the process, stakeholders can reap the benefits from the use of these tools and the watershed management process. Implementation of these tools is illustrated in the context of case studies involving trading, watershed management and mitigation banking.

TITLE: INNOVATIVE STATE PROGRAMS: MASSACHUSETTS & OREGON APPROACHES

PRESENTED BY: Karl Hokonen, Watershed Manager, Massachusetts Executive Office of Environmental Affairs and Melissa Leoni, Willamette Regional Program Representative, Oregon Watershed Enhancement Board

OREGON APPROACH

Watershed councils are voluntary, non-regulatory, locally organized groups established to improve the condition of watersheds in their local area. The 1995 Oregon Legislature unanimously passed House Bill 3441 providing guidance in establishing watershed councils, but made it clear that formation of a council is a local government decision, with no state approval required. Watershed councils are required to represent the interests in the basin and be balanced in their makeup. Watershed councils offer local residents the opportunity to

independently evaluate watershed conditions and identify opportunities to restore or enhance the conditions. Through the councils, partnerships between residents, local, state and federal agency staff, and other groups can be developed.

Across the state, local watershed councils are systematically assessing watershed conditions to determine problems and restoration opportunities using the Oregon Watershed Assessment Manual. The information gained from assessments provides a necessary starting place for planning ways to restore watershed function. As watershed councils complete assessments, they collaborate with landowners, soil and water conservation districts, businesses, government, and others on restoration projects designed to resolve problems and improve watershed health. When aggregated, watershed assessments will play a critical role in developing a statewide strategy that points toward key restoration opportunities in each region of the state.

The Oregon Watershed Enhancement Board (OWEB) is charged with promoting and funding voluntary actions aimed at enhancing Oregon's watersheds. OWEB's vision is to help create and maintain healthy watersheds and natural habitats that support thriving communities and strong economies. The Board is structured to foster collaboration among citizens, agencies, and local interests to accomplish this charge. Such collaboration supports Oregon's statewide efforts to restore critical salmon runs, improve water quality across the landscape, and enhance the biodiversity of ecosystems that are critical to achieving healthy watersheds. OWEB administers a grant program that awards more than \$20 million annually to support voluntary efforts by Oregonians consistent with this charge.

D. Innovative Approaches

MASSACHUSETTS APPROACH

The Massachusetts Watershed Initiative (MWI) is not simply a new name. Nor is it solely a State program. It is a broad partnership of state and federal agencies, conservation organizations, businesses, municipal officials and individuals. The MWI is an innovative, results-oriented program that protects and restores natural resources and ecosystems on a watershed basis by:

- 💧 Finding the sources of pollution and taking cooperative action to clean them up;
- 💧 Teaching and helping groups and communities to protect and restore their local waters;
- 💧 Expanding communication among local, private and public partners so everyone works together to solve water resource problems;
- 💧 Improving coordination among government agencies, and,
- 💧 Directing resources to critical needs so our limited dollars go further to resolving the most important problems.

Watershed Teams, made up of representatives of governmental agencies and community partners (non-profit organizations, municipal boards, and businesses), coordinate the watershed protection efforts in each of the 27 major watersheds of Massachusetts.

The primary goals of the MWI are to:

- 💧 Improve water quality;
- 💧 Restore natural flows to rivers;
- 💧 Protect and restore habitats;
- 💧 Improve public access and balanced resource use;
- 💧 Improve local capacity to protect water resources; and,
- 💧 Promote shared responsibility for watershed protection and management.

This session will highlight the lessons learned from the MWI from the perspective of Karl Honkonen, Watershed Manager.

TITLE: **LARGE-SCALE WATERSHED RESTORATION PROJECT**

PRESENTED BY: Jim Sedell

ORGANIZATION: USDA Forest Service

In mid-1999, the forest Service turned back to its roots, and, at the same time, it dramatically broke new ground. Over a century ago, public concern about adequate supplies of clean water led to the establishment of federally protected forest reserves. These reserves have been managed for multiple objectives over the years – loosing site of the original charter. Now

helping to refocus the agency on its original purpose, the establishment of the Large-Scale Watershed Restoration Project provides a compelling first act. Around the country, 15 large watersheds – providing water for millions of people and habitat for numerous sensitive and threatened species – have been selected to become national prototypes for more visionary management of ailing watersheds and ecosystems. To spur a better future, the agency increased its investment in these watersheds to over \$24 million, trusting that what is learned from this experiment could be shared and used in other settings. Partners matched this funding by providing an additional \$22 million.

Specific requirements are attached to the funding. Business plans are essential. Building new partnerships and strengthening old ones is essential. Projects on the ground, designed to move towards stated objectives, are essential. Accountability is essential. A plan for self-sufficiency within 5 years is required. Short-term success is already apparent. From each watershed, the scenes of restoration are encouraging: cleaner drinking water; increased fish populations; healthy wetlands; decreased risks from wildfire, insect, and disease infestation; improved recreation experiences and productive forests; unpolluted water due to road closings and better management practices; streambanks protected by trees and other vegetation; abundant wildlife habitat; and fewer invasive non-native plants. Long-term gains stand to be even more impressive as the cumulative effects of restoration are realized.

This presentation focuses on the establishment, conduct, and accomplishments of this national Large-Scale Watershed Restoration Project.

TITLE: **NEW COMMUNITY DESIGN TO THE RESCUE: FULFILLING ANOTHER AMERICAN DREAM**

PRESENTED BY: Joel S. Hirschhorn

ORGANIZATION: National Governors Association

New Community Design (NCD) offers a distinct alternative to the developmental “sprawl” that has dominated real estate growth over the last 50 years. NCD principles can be used to create vibrant neighborhoods of housing, parks, and schools within walking distance of shops, civic services, jobs, and transit, in short, a modern version of the traditional American town of times past.

Key features of NCD include:

- Extensive mixed land use,
- Reduced land consumption,
- Community centers,
- Ample greenspace,
- Transportation options, and
- Building designs that reflect the local culture and harmonize with the natural environment.

NCD projects also can help improve public health, preserve open space, and enhance environmental quality.

D. Innovative Approaches

NCD does not appeal to everyone, though about a third of home seekers would prefer to live in NCD communities if they were available (according to national surveys). However, few people have this choice. The level of NCD construction in recent years is but a fraction, less than one percent, of total housing construction. The problem is not insufficient consumer demand, but rather extremely little supply.

Unfortunately, the current real estate development market has been biased toward sprawl:

- Zoning laws encourage sprawl and other single land use development.
- Though new sprawl development require costly public infrastructure (roads, sewers, water connections, etc), most of these costs are passed through the broader tax base of the locality, providing little incentive to build in older areas with existing infrastructure.
- Building codes favor new construction over rehabilitation and reuse of older buildings.

Governors can help the public understand the full range of NCD benefits, including more housing choices for people. Specific actions can include:

- Reaching more citizens for input to discussions on growth and its impacts on quality of life through publishing survey forms in newspapers and on Internet sites,
- Creating design centers where citizens can see alternative community designs and interact with new digital visualization technology tools to express their preferences, and
- Using visual preference surveys at public meetings for community based planning and design.

Most local governments are now using zoning codes that support housing subdivisions and other single use development rather than NCD. States can help local governments adopt codes which support NCD development, and level the regulatory playing field. Several states, including Maryland, Minnesota, and Utah, have developed model codes for local governments to consider using or adapting.

States can also level the playing field by reducing spending that now supports land-intensive, greenfield development and its high infrastructure costs. States can target spending in designated growth areas. In addition, states and communities can make greater use of impact fees for recovering the true costs of providing infrastructure and public services to developments. Reducing subsidies for sprawl development is necessary to level the playing field where NCD can compete because it offers lower infrastructure costs on a per capita or per dwelling basis.

Governors and their appropriate cabinet members could work with leaders of state financial institutions, developers and builders, business associations, community organizations, and non-profits with considerable experience in community development to develop more effective public-private partnerships that promote and finance NCD projects. By recognizing the difficulty in financing NCDs, governors could recommend that state pension funds consider financing such projects.

Governors could also direct state agencies to support NCD projects, especially urban and suburban infill projects. This can be done by expediting permitting, giving state financial assistance for NCD projects from existing brownfields and main street programs, and targeting state capital spending on projects that enhance NCD projects or locations for them.

TITLE: PARTNERSHIPS FOR RESTORATION IN THE BUTTE CREEK WATERSHED, CALIFORNIA

PRESENTED BY: Dan Keppen, P.E.

ORGANIZATION: U.S. Bureau of Reclamation

The Sacramento Valley's initiative and efforts to help protect salmon and other aquatic species are unprecedented and are now recognized as one of the most exciting and progressive voluntary salmon restoration efforts in the United States. On Butte Creek, an important tributary to the Sacramento River, over a dozen agencies and stakeholder groups have addressed or will address nearly every fishery impediment identified by regulatory agencies. More importantly, record numbers of spring-run Chinook salmon have returned to their native spawning grounds.

The Butte Creek watershed is located on the east side of the Sacramento Valley, California, traverses through the Butte Sink, Butte Slough, and Sutter Bypass to the confluence with Sacramento River. It is one of the few havens for the federally threatened spring-run Chinook salmon. Butte Creek, as it is, is an extremely complex mix of diversion structures, operational schedules, and stakeholder/user groups. This complexity and interdependence of the various user groups require a very high level of local stakeholder/user group input.

Since 1994, Butte Creek interests have initiated far-reaching efforts to screen diversions, refurbish fish ladders, construct siphons, remove dams and implement other habitat improvement projects to enhance the environment. On the main migration corridor for Butte Creek spring-run salmon, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, California Department of Fish and Game, California Department of Water Resources, California Waterfowl Association, Ducks Unlimited, and Northern California Water Association are working with local water users and fishery agencies to determine the feasibility of reducing or eliminating fish passage and entrainment problems. Other key partners include the Butte Sink Water Users Association, Reclamation District 1004, RD 70, Butte Slough Irrigation Company, RD 1500, Butte Sink Waterfowl Association, Western Canal Water District, and RD 1660. The objective of this program is to facilitate stakeholder coordination to ensure that restoration actions meet the needs of all of the disparate users and by virtue of stakeholder buy-in, enhance the long-term effectiveness of restoration actions.

The Central Valley Project Improvement Act (CVPIA) identified several projects within the Butte Creek watershed that would improve fishery resource conditions, specifically spring-run Chinook salmon and steelhead trout. A number of these projects at Durham-Mutual, Rancho Esquon (Adams Diversion Dam), and Gorrill Land Company (Gorrill Diversion Dam) were constructed in 1998 and 1999, respectively. Western Canal Water District's \$11 million siphon project features construction of a siphon under Butte Creek to transport irrigation water across the creek without impacting migrating salmon, including the spring-run Chinook salmon. As a direct result of this work, several miles of new spring-run habitat have been opened up to migrating fish.

D. Innovative Approaches

Another key project relating to Butte Creek restoration efforts is the M & T Chico Ranch relocation and screening of its pumping station from the mouth of Big Chico Creek to the Sacramento River. It was recently completed for a total cost of \$5 million. This project will ensure a guaranteed water supply to over 8,000 acres of permanent wetlands and over 1,500 acres of seasonal wetlands. Additionally, it also protects habitat for migrating spring-run Chinook salmon. One other important benefit of this project is M & T Ranch's agreement to provide fish flows in the amount of 40 cubic feet per second to Butte Creek.

Cooperation between all of the projects as they proceed is of utmost importance in ensuring that the system will work as a whole. Facilitation of the distinct and disparate groups is needed to ensure that as issues arise, an understanding is reached and recorded which meets the project goals of enhancing fish passage while maintaining the viability of associated agricultural and managed wetlands operations. Ongoing implementation of the CALFED Bay-Delta Program, CVPIA, and a local county watershed management proposal will help to meet these challenges.

TITLE: **PROTECTING WATERSHEDS THROUGH CONSERVATION FINANCE**

PRESENTED BY: Matthew Zieper

ORGANIZATION: The Trust for Public Land

The Trust for Public Land's (TPL) Conservation Finance program work with state and local government officials and community leaders to protect land for a wide range of purposes, with a significant focus on watershed protection, across the country. Over the past five years, TPL's conservation finance program has helped raise more than \$25 billion at the state and local level for land conservation. Of the 145 measures that TPL has worked on during this period, 83 percent have been successful.

Drawing from this experience, the presentation will provide an overview of how TPL's conservation finance program works and outline how watershed stakeholders can approach conservation finance as a means to achieve their goals. The product of one element of this conservation finance work, public opinion research, will be showcased to illustrate the strong support for public financing of water-related conservation.

The talk will present examples that highlight best practices that state and local governments are using to protect watersheds such as:

- North Carolina's Clean Water Management Trust Fund
- New Jersey's Green Acres program and county responses
- Chesapeake Bay Commission (MD, PA, VA) efforts to protect 20% of the Chesapeake Bay Watershed from development by 2010
- Georgia Greenspace Program

The presentation will also include an overview of land conservation finance efforts that:

- Preserve critical natural resources at Ocean County, NJ,
- Promote flood control at Napa County, CA, and,
- Protect drinking water supplies at Mountain Island Lake, NC and San Antonio, TX

TITLE: **WORKING ON THE RIVER – THE 1,366 MILE JOURNEY OF THE AUDUBON ARK**

PRESENTED BY: Dan McGuiness, Campaign Director

ORGANIZATION: National Audubon Society

The best way to convince someone that the river is critical habitat and a beautiful place is simply to get them out there. The river, to some extent, can speak for itself it is given an audience.

That is why Audubon Ark was built. It is a boat that travels on the river each summer, providing opportunities for people to see the river firsthand. By bringing the Ark to communities, the crew gets a chance to visit with school children, adults, and community leaders to build lasting and long-term working relationships at the local level.

Over the last three years, the Ark has traveled 1366 miles of the Upper Mississippi River from the Headwaters at Lake Itasca, Minnesota downstream to Cairo, Illinois. It has visited with more than 25,000 people in 90 communities. Nearly 2500 people actually came on board the Ark to see it firsthand and learn about our work.

The Ark is also building a constituency for river protection by bringing exhibits, performing music, holding press conferences, working with school children and honoring community elders. The website, www.audubonark.org, will provide a sample of what has been done in October 2000 and May and June 2001. By using the Internet, the crew has provided periodic reports on the ecological health of the river, what has been learned and did in river communities, and what life on board the Ark is like.

It is needed to get more people, especially school children, out on the river. The dream for the future is to have a permanent Audubon Ark “floating environmental education center and research vessel” on the Upper Mississippi River by the summer of 2004. It will travel from Minneapolis, Minnesota to Cairo, Illinois throughout the navigation season, stopping in communities for not just a few hours or a day, but for several days at a time. On the river above Minneapolis, an additional a fleet of canoes will be traveling on 500 miles of river.

In each community, the Ark will find partner organizations such as museums, organizations, chambers of commerce, environmental education centers or agencies who will co-sponsor field trips for kids and adults out on the river to see it and experience it firsthand. The boat will be equipped with water sampling gear, basic testing equipment, a wet lab, spotting scopes and binoculars, exhibits and a river library. The crew will teach river navigation, river and watershed ecology and natural and cultural history.

D. Innovative Approaches

The Ark will provide, for many people, the first opportunity in their lives to actually be on the river and in its backwaters – to experience the legendary and world-renowned Mississippi River firsthand with a crew of naturalists and river experts to help interpret and guide the experience.

- Increased fish populations,
- Healthy wetlands,
- Decreased risks from wildfire, insect, and disease infestation,
- Improved recreation experiences and productive forests,
- Unpolluted water due to road closings and better management practices,
- Streambanks protected by trees and other vegetation,
- Abundant wildlife habitat, and
- Fewer invasive non-native plants.

Long-term gains stand to be even more impressive as the cumulative effects of restoration are realized.

