OUR LAND, OUR WATER

CASE STUDIES IN LOCAL SUCCESSES

conserving natural resources for our future

A National Association of Conservation Districts Special Report

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Special Thanks

America's conservation districts and their partners were primary sources of information for this report. We thank them for their time, talent and energy in helping to provide information.

Non-Discrimination

All activities pursuant to this agreement shall be in compliance with the requirements of Executive Order 11246; Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. 200(d) et seq.); Title V, Section 504 of the Rehabilitation Act of 1973 (87 Stat. 394; 29 U.S.C. 794), as amended by the Americans With Disabilities Act; the Age Discrimination Act of 1975 (89 Stat. 728; 42 U.S.C. 6101 et seq.); and with all other federal laws and regulations prohibiting discrimination on grounds of race, color, sexual orientation, national origin, disability, religion, age or sex.

25 case studies, hundreds of partners

WELCOME to this report focusing on 25 inspiring case studies of conservation-minded citizens addressing resource concerns on a watershed or community scale. The report is national in scope but it focuses on local strategies to address local and regional conservation challenges.

The recognized need for watershed-scale conservation approaches is hardly new, but the reality of accomplishing the task remains elusive. That is why these case studies are refreshing: The people here are achieving success. Conservation districts and a remarkable array of partners come together to assess and plan coordinated responses to concerns across many miles and jurisdictions. Yes, they have more work to do, but that is the nature of our job. It is ongoing.

The challenges of conservation at this scale are many. There are multiple stakeholders and jurisdictions. America's land and water have and continue to serve a multitude of functions in the private sector, and these systems have frequently been altered greatly over time. The job of protecting them today is often necessarily pragmatic: dealing with what we have been handed in the best ways we are able. Public watersheds and lands are also vexed by many challenges – forest and range management, fire, noxious weeds and others. The places where public and private lands meet offer their own sets of challenges, including coordinating conservation across jurisdictions at the landscape scale. Frequently, land use changes such as sprawl and loss of open space have added new elements to the mix.

Virtually every case study here highlights a growing understanding that a watershed is comprised of many stakeholder communities. Especially where many groups rely on a watershed or landscape for different needs, the task of reaching consensus on actions can be difficult. Here we are happy to show it can be done.

Time and again, the voices here report that when stakeholders become partners, they realize a simple fact: "This is our watershed. We are all part of the problem and the solution."

We present this report both as a specific reference for local, state and federal partners and policy-makers and as a tool for grass-roots, locally led efforts to replicate and build on what our peers are doing across America. The message here is that federal programs and state leadership that provide support for and encourage watershed assessments and planning are working. But everything clicks when local partners are at the heart of identifying and solving local and regional conservation issues and developing plans to address them.

An important message for local partners is that program resources can be stretched a long way when partnerships are broad. Traditional public resources are mingled with those from a growing list of private groups and entities, including market-based conservation approaches.

We learn in this report that the tools available in today's conservation world make all of our jobs a lot easier. GIS and GPS technologies have given us layers of local, state and national information we could not have imagined available just a few years ago. This information often serves as a starting point for plan development by providing baseline data. Real-time soil monitoring, NRCS on-line digital state soil surveys and other technologies help guide the development of watershed-scale plans. These, in turn, support watershed planning tools made available by several sources.

Just as it is possible to make wise decisions about watershed sustainability through the use of these tools, it is also more possible at the watershed scale to monitor and assess the impacts of coordinated activities. Virtually every effort described in this report includes monitoring and assessment for accountability.

Conservation districts and other local partners have long worked for the wise use, conservation and protection of our land and water. Frequently this has been at the county level. The watershed- and community-scale approach has helped local conservation leaders to see bigger possibilities. Watersheds don't know jurisdictional boundaries, so working across watersheds and landscapes requires multi-jurisdictional and multi-faceted partnering.

Case studies here touch on rural, urban, near-wilderness and various mixed land uses that impact watersheds and landscapes. They focus on projects at differing stages of development. Each case study varies by its own local circumstances, but common threads run through many. Understanding that everyone is part of the solution is one such thread. The power of partnership and cooperation is another. A list of the many partners who support these projects fills the last page of this report.

Contacts and sources of more information are listed with each case study. This report is necessarily limited to 25 case studies. There are many more stories to tell out there, and we hope this report opens the door to ongoing community-wide attention on "our land, our water."

Krysta Harden
NACD Chief Executive Officer
September, 2008

Building a better watershed assessment tool

Statewide watershed assessments that incorporate local conservation priorities are valuable tools for identifying local conservation needs, opening doors to funding opportunities and developing new partnerships.

ALABAMA'S recently completed statewide watershed assessment incorporated input from every county in the state, thanks in no small part to the work of soil and water conservation districts. What emerged is a much clearer understanding of water quality concerns, changing land use patterns, wildlife concentrations and a whole lot more.

The state's 67 SWCDs – one for each county – collected data, garnered public input and set local priorities, says J.O. Norris, water quality coordinator with the Alabama State Soil and Water Conservation Committee. District costs were covered as part of a grant from the Alabama Department of Environmental Management that funded the statewide effort to update and vastly expand an assessment last completed in 1999. "Almost everything was done at the local level," says Norris.

"Local districts held public meetings in every county. They ran advertisements in newspapers to publicize the meetings. Some had up to 100 people at their meetings, including state senators and representatives."

The local meetings were held so that participants could review data and identify and prioritize local conservation needs. Each district was asked to develop watershed plans based on priorities identified at the public meetings.

"Local districts held public meetings in every county. They ran advertisements in newspapers to publicize the meetings. Some had up to 100 people at their meetings, including state senators and representatives."

J.O. Norris
water quality coordinator
Alabama State Soil and Water Conservation Committee

The state assessment information will be shared widely on an innovative web-based database that provides an array of information on activities that impact land and water resources in the state's watersheds.

It will also serve as a tool for obtaining funding to address local priorities. "Everything now is geared toward watersheds. Funding from the national and state level is targeted that way," Norris says. "Local SWCDs set those priorities. There's never enough money to go around, but you can target the needs."

In several counties, animal waste is the top priority. Alabama is home to dozens of poultry operations. While high price of fertilizer has put poultry litter in demand, runoff remains an issue.

Erosion continues to be a concern in counties with high-intensity cropping, but the assessment showed that it may be abating because conservation tillage has supplanted conventional methods on many farms. Ten years ago, conventional tillage was practiced on the majority of state farms. The new assessment shows that the majority of farms have shifted to conservation tillage.

The assessment also turned up some surprises. "By far the biggest problem from erosion is going to be dirt roads,"

Alabama soil and water conservation districts held public meetings in every county to allow participants to review watershed data and prioritize local conservation needs. Each district was asked to develop watershed plans based on priorities identified at the public meetings.

Norris says. One county figured its problem with animal wastes was from livestock. Data collection showed that deer were the main cause of wastes in its waterways.

With growing interest in land management for hunting, the assessment also focused on wildlife populations, food sources and habitat. "You can look at the assessment, and it will say that in some counties, deer are overpopulated."

Land use trends can be tracked with the new tool, which can be easily updated. Some parts of the state have seen rapid growth since the last assessment was completed. "We have counties in Alabama that need this assessment done every three to five years with all the construction, building and land use changes that are occurring," he says. Other regions have seen little change and will likely continue that way. "It was forested 10 years ago and it will be 10 years from now."

"We have counties in Alabama that need this assessment done every three to five years with all the construction, building and land use changes that are occurring."

Soil types, forested resources, mining land, septic systems, cultural resources and other categories are available on spread sheets and maps. "Like I told somebody the other day, you can look at the inventory and get the total number of golf courses in Alabama," Norris says.

More information: Contact Norris at james.norris@swcc.alabama.gov. The web-based inventory was in final stages of completion at press time. It will be posted at www.swcc.state.al.us/

Homer SWCD educates about development's impact

The Homer Soil and Water Conservation District's suitability maps show where development is likely to affect conservation features of the land. The next step is to encourage low-impact development techniques to protect valuable natural functions and larger landscape systems.

PERCHED on the southwest edge of the Kenai Peninsula in Alaska, the city of Homer has seen rapid growth in recent years. Many people choose the area for natural attributes like viewscapes, wildlife and open spaces.

To help preserve those attributes, the Homer Soil and Water Conservation District has developed suitability maps that pinpoint lands likely to be developed and those with high conservation value. It will introduce low-impact development techniques and establish a developer's certification program to meet development needs and preserve natural attributes.

"This is really an attempt to look at larger systems rather than individual lots. It's incentive-based and meant to motivate landowners and developers to develop with a stewardship ethic," says District Manager Tara Schmidt. The project is funded by the U.S. Environmental Protection Agency Wetlands Protection Development Grant and a U.S. Fish and Wildlife Service Alaska Coastal Communities Grant.

A technical advisory committee for the project features broad representation, including excavators, contractors, real estate agents, surveyors, biologists, soil scientists and wetlands scientists. The city of Homer has cooperated in several ways, including providing technical assistance.

In phase one of the project, the district worked with DnA Design of Homer to develop Geographic Information System-based landscape systems maps for the city and an important watershed that serves as its source of drinking water.

> **"This is really an attempt to look at larger systems rather than individual lots. It's incentive-based and meant to motivate landowners and developers to develop with a stewardship ethic."**
>
> *Tara Schmidt*
> *Homer Soil and Water Conservation District Manager*

Suitability for developable lands is based on physical landscape features affecting cost of construction, such as drainage, topography, and soil types, along with amenities such as view, proximity to trails and parklands. Prime conservation lands focus on factors that include hydrologic functions, wildlife habitat corridors, trail connectivity and aesthetic qualities.

When the GIS maps are overlapped, areas where development is likely to meet prime conservation lands are highlighted. That serves as a tool for wise land use planning. The project was under way just as the city of Homer's comprehensive plan was up for review. The suitability maps served as the basis for a green infrastructure map that was adopted into the revised comprehensive plan as a guide for future decision-making.

Much of the new development in and around Homer has occurred on steep slopes. "We have topography that is a challenge," Schmidt says. "We're trying to understand how uplands are connected to wetlands across the whole system to guide development."

The suitability maps were introduced to the public at workshops in May 2008. Also introduced at the workshops was a Best Stewardship Practices Booklet highlighting various low-impact development (LIDs) techniques and their values. About

Suitability mapping by the Homer Soil and Water Conservation District identifies natural resources characteristics such as moose habitat.

80 people attended over three days. "It's important that people hear from the start that we're not trying to limit development. We're acknowledging these properties have high value and will be developed, but let's try to motivate landowners to develop with an understanding that they are part of larger systems," Schmidt says.

A curriculum for the developer's certification program is being finalized during phase two of the project. The program will help individuals learn to use GIS tools to integrate landscape systems into projects. Developers who complete one or more workshops would qualify for green certification for projects.

Both passive and active incentives have been identified to encourage landowners and developers to apply voluntary best management practices. Passive incentives include construction techniques that respect and take advantage of green infrastructure functions and larger landscape systems. Benefits may include reduced construction costs, increased real estate values, accelerated appreciation, and/or avoidance of certain regulatory requirements.

Active incentives provide economic or procedural "payments" to reimburse property owners for developing property in ways that protect green infrastructure functions and larger landscape systems. These could include expedited permitting, low-interest loans, tax benefits or cash payments. The district is investigating low-interest rate loans that would be available to qualifying development projects.

Low impact development (LID) techniques have also been identified with the focus on protecting valuable natural functions and larger landscape systems. LIDs are intended to reduce development costs and other costs that are ultimately borne by taxpayers when municipalities have to replace degraded natural functions with structural solutions, such as storm water drains and retaining walls.

In addition to instilling better understanding of landscape impacts in the Homer area, Schmidt says the project can serve as a model for other communities seeking to better understand green infrastructure functions and larger landscape systems as they guide development.

More information: Contact Tara Schmidt at tara@homerswcd.org. Information on the project is at www.suitabilitymap.org/.

Cooperating across state lines to protect Tahoe

Backyard conservation can have far-reaching effects, as homeowners in two states of the Lake Tahoe Basin learn from cooperating conservation districts.

COOPERATION across state lines between two conservation districts is helping residents in the Lake Tahoe basin protect one of America's best-known water bodies.

Lodged in the Sierra Nevada Mountains, Lake Tahoe was developed rapidly and not always wisely in the mid-20th century. With multiple jurisdictions in the basin, including two states, cooperation is the key to making conservation gains.

The Tahoe Resource Conservation District in California and the Nevada Tahoe Conservation District in Nevada have the daunting task of helping about 40,000 residential property owners in the basin comply with mandated best management practices (BMP). Their work is part of a broader strategy to reduce sediment and nutrient impacts on water quality in Lake Tahoe and improve overall forest resource management.

The districts make regular use of the national Backyard Conservation Program to provide private landowners conservation education, technical assistance, and whole-parcel conservation plans. The Natural Resources Conservation Service offers guidance on protocols for effectiveness studies the districts conduct on recommended practices.

While at least half of the residential properties in the basin are in need of attention, there has been progress. "We feel the program has made a lot of headway, and we've been able to help homeowners and assist with lake clarity," says Jason Brand, program manager in the Nevada-Tahoe District. But there's still plenty of work to be done. Some communities in the basin have aggressively worked toward compliance; others haven't moved as quickly. "There's a huge need for BMPs," says Brand.

His counterpart at the Tahoe Resource Conservation District says it's important that the two districts provide consistent information. "We try and be on the same page as to materials and messages we provide to homeowners," says Eben Swain, BMP coordinator. "If you get a site evaluation on the Nevada or California side, it should be the same."

> **"We feel the program has made a lot of headway, and we've been able to help homeowners and assist with lake clarity."**
>
> *Jason Brand, Program Manager, Nevada-Tahoe District*

"We cooperate extensively," says Brand. A memorandum of understanding paves the way for districts to work across state boundaries. They also share services on some projects. Invasive weeds are a concern in the region, and the Nevada-Tahoe District uses the services of the Tahoe RCD's invasive weeds coordinator. The districts also partner with NRCS, Cooperative Extension, the Tahoe Regional Planning Agency (TRPA), state agencies and local communities.

Swain's program has a staff of 10, plus two or three seasonal employees. Brand has a staff of five. Both districts provide free site visits to residential properties. Conservation plans for private parcels include recommendations for runoff management and storm-water treatment, slope stabilization, soil protection, noxious weed removal, revegetation with native and adapted plants, water and fertilizer management, pest management, wildlife habitat improvement, forest management and reduction of fire hazards. Swain's program this year offers trees, ground cover and other vegetation free to cooperating homeowners, using proceeds from a state grant. The work helps landowners comply with local ordinances and basin-wide water quality strategic plans, some of them mandated by the TRPA. The districts certify compliance for homeowners.

BMP work is complicated by wildfire risks in the heavily forested region. The Angora Fire last year destroyed more

An armored drip line installed around a home in the Lake Tahoe Basin captures rainfall and keeps it on site, reducing runoff from the residential property.

than 250 homes. The districts are working to make sure their conservation goals are consistent with defensible-space requirements for homes. This includes testing BMPs like mulch for fire-resistance.

Outreach activities drive both programs. The Tahoe RCD reaches out to close to 2,000 homeowners a year in a variety of ways, including workshops, conservation block parties, person-to-person contacts, phone calls, site visits and other contacts. In Nevada, the program is promoted through a community watershed planning process in individual communities. Workshops, demonstration sites, educational publications and on-site visits with homeowners are used.

The work is costly, and both districts rely on grants. A main source for both is funding from the Southern Nevada Public Land Management Act. NRCS administers the funds for district programs. Both districts also receive state funding for BMP work.

> **"We're set up to deal with local issues, and in this area, one of the main issues is BMPs."**
>
> *Eben Swain,*
> *BMP coordinator, California Tahoe District*

The work is clearly identified by both districts as a local and regional priority. "We're set up to deal with local issues, and in this area, one of the main issues is BMPs," says Swain.

With studies showing that urban upland areas in the basin are some of the biggest contributors to nutrient and sediment loading in Lake Tahoe, the districts are working on a local issue that makes a difference for a national treasure.

More information: Contact Jason Brand at jbrand@ntcd.org and Eben Swain at tahoercd@yahoo.com. More on the Tahoe RCD program is at www.tahoercd.org. More on the Nevada Tahoe CD program is at www.ntcd.org.

Innovation helps producers in water-challenged region

The Yuma Conservation District works with producers across the Republican River Basin to reduce water use, introduce farming alternatives and save rural communities.

MARK TWAIN said, "Whiskey's for drinking, water's for fighting."

In a 21st century twist, the Yuma Conservation District's Republican River Basin Pathways Project in eastern Colorado is working to give producers and rural communities a fighting chance.

Irrigated agriculture in the basin pulls water from the Ogallala Aquifer, an overtaxed but critically important water source that stretches across the Great Plains from Texas to South Dakota. Colorado producers do not now face water allocations, and by helping them reduce water demand and consider alternatives, the district is working to keep agriculture and the communities it supports sustainable.

Goals include growing traditional crops like corn and sugar beets using less water and encouraging producers to experiment with lower-water-use crops such as grass-fed beef, onions and peas, says Project Coordinator Brian Starkebaum. He is also a producer and conservation district board member in nearby Haxton County.

The Yuma District set out on a proactive course thanks to an Environmental Protection Agency 319 grant that focused on water quality. The grant showed that the majority of the 250 producers who participated were doing a good job keeping nitrates out of the aquifer. Still, local work groups consistently focused on water as a major local resource concern. Starkebaum credits the state Natural Resources Conservation Service for stressing the importance of local work groups and responding to their findings.

Mist irrigation systems help Republic River producers to limit water use while providing for crop needs. The Yuma Conservation District promotes best-management practices and other solutions to water quantity concerns in the region.

"Our local work groups identified water quality and quantity every year," he says. "We understand that in our region, this form of agriculture is so vital to our economy." Estimates show that agriculture and spin-off businesses pump $420 million annually into the county's economy. "If we lose this irrigation, that's all there is. Our towns die," he says.

The district and NRCS developed irrigation water management plans, and the district then applied for an NRCS Conservation Innovation Grant. It was awarded one of six such grants nationally in 2005. That helped the district face the county's water issues head-on. "My personal

> **"We understand that in our region, this form of agriculture is so vital to our economy."**
>
> *Brian Starkebaum*
> *Project Coordinator*
> *Yuma District*

belief is conservation districts are facilitators of information, and that's what we're doing," Starkebaum says.

Efforts to interest producers in alternative crops such as canola had some success, but with high prices for traditional crops, interest has backed off some. "So we refocused and decided to work with producers growing traditional crops but using less water. We tried to build awareness, and we're coming to find out it is very possible to reduce irrigation consumption and not lose return," Starkebaum says. He has the facts to prove it, too. A big part of his job is to gather data and success stories that will be shared on an innovative database in cooperation with the USDA's Agricultural Research Service in Fort Collins. One finding: Pilot farm producers have cut water use by half without any production losses.

The project also focuses on familiarizing producers with value-added vegetable crops and marketing opportunities such as the flourishing local foods movement.

Starkebaum put together a whole farm planning notebook based on a similar tool developed by NRCS in Minnesota. "A lot of the guys I'm working with already know this, but we did find that a lot of them didn't know about marketing opportunities, especially value-added," he says.

As the project matures, more options have opened up. A Laura Jane Musser Fund grant helped support efforts to build a team of local experts to determine interest in developing a local foods cooperative. The project is under way and includes public programs sharing information with producers.

Producers and researchers gather around a soil pit to gather information from a root-zone study conducted by an NRCS soil scientist in the Republican River Basin. The study helps producers see how crop roots are developing in the soil and to monitor results from nutrient and water planning.

A state of Colorado NRCS Conservation Innovation Grant facilitated the partnership with ARS for the online database. It will include a range of information on water use, crop economics, production, research and stories about producers who've made the transition to lower water demand. "ARS bought the concept immediately," he says. It may be adapted for use across the country.

"We're at the end of the line with what we can do with traditional practices. What we have to address now is management. That's where the big leaps are. Producers are definitely better managing the resources they have."

More information: Contact Brian Starkebaum at brian-starkebaum@yumaconservation.org. More on the Republican River project on the district's web site at www.yumaconservation.org.

Photo © The Nature Conservancy/Mark Godfrey

Real-time soil moisture monitoring on irrigation rigs relies on broadband telemetry and wireless Internet to link rigs in the field to computers in farm offices.

Groups combine conservation and rural development

The Flint River Soil and Water Conservation District, The Nature Conservancy, NRCS and other partners achieve important water conservation gains and boost rural communities with innovative technology.

IMAGINE a project that addresses a major conservation problem and fosters rural development. That's what supervisors in the Flint River Soil and Water Conservation District did, and the results are impressive.

In southwest Georgia, the Flint District is joined by the Natural Resources Conservation Service, The Nature Conservancy, the University of Georgia, the Georgia Agriculture Innovation Center and other partners in the project. Thanks to their work, farmers have important tools for efficient irrigation and water use, and rural residents will soon have access to wireless Internet service.

The Flint District and NRCS have applied innovative technology and ongoing education to help producers be good stewards of water resources for years. It's important work. The lower portion of the Flint River basin in southwest Georgia is one of the most agriculturally intensive areas in the southeast. Producers grow peanuts, cotton, corn and soybean. More than 5,000 center pivot irrigation systems water about 500,000 acres, straining already limited ground and surface water resources in the basin and challenging the region's ability to sustain crop yields without sacrificing biodiversity. Recent drought years have intensified concerns, and farmers are constantly juggling crop needs with water conservation efforts. The district and its partners have supported efforts that have conserved more than 10 billion gallons of water. That savings equates

to the annual water use of more than 250,000 people.

Real-time soil moisture monitoring has been introduced to meet irrigation needs and protect water resources. The district and its partners are now pioneering technology that uses broadband telemetry and wireless Internet to link irrigation rigs to computers in farm offices. With a core network in place, the partners are now taking steps to expand wireless Internet service to other rural areas in Baker, Calhoun, Early, Miller and Mitchell counties.

In 2004, the district and partners initiated a Variable Rate Irrigation (VRI) pilot project to deploy 22 VRI systems on farms. The systems map crop acres and define irrigation patterns by soil type, slope and hydrology. Non-crop areas are removed from irrigation, and other areas receive irrigation equal to their needs.

To more effectively manage VRI, the district in 2005 set up a 100-square-mile wireless broadband telemetry network in Calhoun County. The network provided wireless connectivity to 17 center pivot irrigation systems covering 2,467 crop acres. Participating farmers were provided with Internet access, allowing them to monitor center pivot activity via cameras mounted to each boom and schedule irrigation based on "near real time" soil moisture readings recorded by wireless sensors in their fields.

Internet connectivity is sometimes lacking in rural America, which can inhibit community and economic development. To expand coverage, the district and partners are assisting in the deployment of a five-county rural wireless broadband network. When completed, the network will serve area schools, hospitals, first responders, businesses and residences in addition to farm operations. Goals include advancing the development of education, health, safety and communication resources in the coverage area. The network will also provide opportunities to expand research and development of new agricultural technology.

Photo © The Nature Conservancy/Mark Godfrey

Georgia's agriculture and water resources exist side-by-side in the Flint River Basin.

The Nature Conservancy is involved because it is interested promoting sustainable farming practices and protecting the biodiversity of the ecologically rich lower Flint River basin, part of the Apalachicola-Chattahoochee-Flint River basin. This is the main source of drinking water for southwest Georgia and north Florida.

David Reckford, project director, is a Nature Conservancy employee with half of his salary paid by the district and his equipment and office space provided by NRCS. He credits district supervisors with providing the leadership to embrace the new techniques. "Oftentimes you may have a good concept in an educational institution, but you need to put it on a working farm. Almost every technology we have now was put on the farms of these district supervisors."

One of those supervisors is board Chair Marty McLendon, who farms 8,000 acres. "We wanted to show our willingness to partner with different agencies and research and development institutions on cutting-edge practices. It helps researchers and helps makes it economically feasible for others. We put the practices into the real world," McLendon says. He's sold on the value of partnerships to achieve conservation successes. "My only advice is there are extremely good farmers and extremely good partners, and if you truly want to do something and be involved, you can do that." As for partnering with TNC, he says: "Four years ago, I never would have thought we would be involved with an environmental organization, but it has worked beautifully. We agreed to go into relationship with open minds and see where we could work together and quit butting heads."

Innovation has been rewarded with funding, including a U.S. Department of Agriculture Conservation Innovation Grant for remote soil moisture monitoring equipment and an Environmental Protection Agency Strategic Agricultural Initiative grant to develop a conservation-based crop rotation practice. The five-county broadband expansion project was funded by a $2.7 million grant from the OneGeorgia Authority's BRIDGE (Broadband Rural Initiative to Develop Georgia's Economy) program and a $1 million match from the Flint River Soil and Water Conservation District. Each county is contributing $10,000, as well as time and resources to the project.

More information: Contact Marty McLendon, chairman of the Flint River Soil and Water Conservation District at mai@mclendonacres.com or David Reckford, director of the Flint River Basin Program at dreckford@tnc.org. Learn more about the South Georgia Regional Information Technology Authority at www.sgrita.org.

Community members and service men and women from the Pohakuloa Training Area gather for a photo after a volunteer stream cleanup day. The Mauna Kea Soil and Water Conservation Disrict makes regular use of volunteer assistance in its watershed protection efforts.

Special attention for Big Island watersheds

Watersheds on the Big Island of Hawaii cascade from mountaintop to coral beds in the Pacific Ocean. The health of these watersheds and associated landscapes affects the well-being of life all along the way. Repairing damaged watersheds and protecting healthy ones are goals of the Mauna Kea Soil and Water Conservation District (SWCD) and other districts on the island.

WATERSHEDS on Hawaii's Big Island present challenges that conservation districts elsewhere in America don't face. Water flows through multiple climatic zones and altered landscapes such as those heavily grazed and sometimes overrun by invasive plant species. The sediments they carry empty into the Pacific Ocean and across fragile coral reefs. These same watersheds are increasingly asked to meet the needs of growing human populations.

All of this heightens the importance of work by conservation-minded citizens on the Big Island. Conservation districts like the Mauna Kea SWCD are charged with helping to implement the state's polluted runoff control program. To accomplish that, the district works on both watershed protection and rehabilitation. The district encompasses 1,141 square miles on northern reaches of the island.

Two watersheds are receiving attention from the district, its partners and volunteers, says John Pipan, conservation specialist. The Waiulaula Watershed benefits from generally good water quality. Here, work is proactive. The Pelekane Watershed is another matter. It is

challenged by multiple resource issues, and restoring watershed health is the focus for Pelekane.

In both cases, volunteers and community partners have a big role in the efforts.

A first step for Waiulaula (pronounced WY ULA ULA) is a comprehensive monitoring program. Water sampling stations recently put in place capture data from the forested upper section, then below the town of Waimea and finally at the mouth of the watershed. Storms cause most of the flux in the watershed, so monitoring will capture where nutrients, sediment, chemicals and suspended solids enter. "If we can pick out areas with problems, we can be proactive to address them" with appropriate best-management practices, Pipan says.

Geographic Information Systems software will compare land cover and runoff sources from the three different land use areas. Data will be presented in a document that makes recommendations to the county in its zoning and community development decisions. It's important information in a watershed where population has grown dramatically and where communities like Waimea and its 7,000 residents rely on watershed reservoirs for drinking water.

A Waiulaula Watershed Advisory Group provides important community input, helps educate residents on water quality issues, identifies pollution and will help develop a watershed management plan. Monitoring by community members and students provides educational opportunities and community buy-in. The district has also involved volunteers in other efforts to address water quality. They have worked on inventories and invasive species eradication, often in difficult terrains dominated by rough lava flows. Students from the Cornell University Field Program in Earth Systems Science have been engaged for that work.

Community watershed clean-ups link people to their watersheds. In addition to community members, service men and women from the Department of Defense Pohakuloa Training Area donate their time, as do volunteers from Starbucks and Outdoors Circles comprised of community members interested in green space.

Waimea Middle School students learn about nonpoint pollution through the use of a watershed model provided as part of a watershed education program sponsored by the Mauna Kea Soil and Water Conservation District.

The district reaches out to elementary school students about the importance and fragile nature of watersheds. A portable watershed model is used to simulate what happens in nature.

Hawaii's landscapes are challenged by an array of introduced plant and animal visitors that have become persistent residents. Invasive plant species frequently supplant natives. Even when farming practices address concerns about grazing, feral goats and cattle roam many hillsides, stripping them bare.

These and other factors challenge watersheds like Pelekane. It lies in the rain shadow of Kohala Mountain, so it is dry much of the year. Parts of watershed are completely bare earth, so when rain does fall, Pelekane Bay in the ocean is recipient of sediment loads. It's now considered seriously impaired.

"We've evaluated strategies for mitigating sediment, and the bottom line is the watershed will have to be re-vegetated," Pipan says. "It's dry, so not much grows there, period. We have problems with feral goats, and some of the vegetation is grazed by cattle. We'll need a combination of native and introduced vegetation." They'll also need to trap and remove the goats.

Cleaning up Pelekane Bay will be more challenging. Ancient cultural attributes such as the Hill of the Whale stone worship site in the bay may preclude dredging. Other options include increasing the flushing capacity of harbor and constructing sediment basins.

Pelekane's problems are difficult, but they helped district officials and other partners to see the value of protecting watersheds like Waiulaula before they become impaired.

More information: Contact John Pipan at john.pipan@hi.nacdnet.net. Learn more about the watershed programs at www.maunakeaswcd.org.

Pervious pavement at the city of Elkhart Environmental Center increases on-site storm water infiltration. It is among many practices recommended by the Elkhart River Alliance.

Rural and urban folks join to fix their watershed

A small group of concerned citizens grew to a broad coalition of partners determined to improve the health of the Elkhart River watershed. The Elkhart County Soil and Water Conservation District has been at the forefront of the effort.

WHEN a neighborhood association raised concerns about sediment in a pond in northern Indiana, it ignited a discussion across a whole watershed.

Residents around Goshen Pond Dam learned that the sediment was a symptom of a much larger problem in the 447,000-acre Elkhart River Watershed. With the help of the Elkhart County Soil and Water Conservation District and the state Department of Environmental Management (DEM), the group set out to do something about the problem.

"The pond was a sediment trap and was full of purple loosestrife," says Nancy Brown, program manager at the conservation district. "They asked whether there was anything we could do. I felt the best way to get funding was to address how the sediment got there, and said we would do that and look at related issues."

The district contacted a watershed specialist with the Indiana DEM. "We met with the association and presented a plan for assistance for watershed planning," says Brown. "Their group said they were totally in agreement and formed a steering committee called Elkhart River Alliance."

"That original homeowners association took on this big project. I am amazed at the ability of a small neighborhood group to adopt a whole watershed. Even though

their original interest was their neighborhood, they saw a need to address watershed issues on a watershed basis," Brown says.

Soon the group formed a nonprofit corporation, the Elkhart River Restoration Association, and began to reach out to interested parties across the watershed. It found plenty, including local and state government, sportsmen's group, conservation districts, Extension, property owners, farmers, sportsmen, naturalists, youth organizations, service clubs, industries and churches.

The watershed stretches across four counties and is a half-and-half mixture of rural and rapidly growing urban areas. The district had good contacts in both sectors because of its program work in rural and urban conservation. "We can say we work with both of you. When fingers are pointed, quite honestly, we can say we hear the opposite side from the other group," Brown says.

Assisted by an Environmental Protection Agency 319 grant obtained through the DEM in 2006, the group embarked on a year of planning and two years of implementation. The work is daunting, because the watershed is in rough shape. Most sections of the river – in both rural and urban areas – are impaired waters. In addition to excessive sediment, it has problems with E. coli bacteria, nutrient loading, rapid land-use changes that degrade the watershed's hydrology, loss of wetlands and wildlife habitat, and land and water user conflicts.

"We're not protecting something pristine. We're trying to fix something that's broken," says Brown.

Perhaps the group's biggest accomplishment was to get diverse groups and individuals in the watershed to realize they all played a part in its problems, just as they would all have a role in nursing it back to health.

A Water Management Plan is now in place to do that. Ongoing funding is an issue, but if determination counts, the group is in good stead. "I've never worked with a group with such passion," says Brown.

Bioretention areas are among practices recommended by the Elkhart River Alliance in its efforts to restore health to the Elkhart River Watershed. The Elkhart County Soil and Water Conservation District is joined by other partners in the effort.

The management plan outlines a set of goals, each accompanied by objectives for implementation. The plan prioritizes objectives and action items and identifies responsible parties to implement actions. The plan has milestones and measurable goals for short- medium- and long-term.

Goals include:

- Sustaining the financial and institutional capacity of the group itself;
- Reducing soil erosion and sedimentation;
- Reducing E. coli levels;
- Reducing nutrient loading;
- Increasing preservation, restoration and appreciation of open space and maintaining land-use balance; and
- Developing an outreach and education program to keep a broadened group of stakeholders involved and informed.

Work is already under-way. Cost-share programs support agricultural and urban best management practices. They are funded by state and federal program dollars.

Two demonstration sites are being developed – one urban and one agricultural. The urban site is the city of Elkhart's Environmental Center, where conservation district staff has installed a rain garden, pervious pavement and a bio-retention area in a parking lot. The agricultural demonstration site focuses on exclusion fencing and alternative watering for livestock. Both sites will be showcases for educational programming. "I like to tell the staff we're doing the same things at both sites. The practices are just a little different," says Brown.

The district is also training a cadre of volunteers for water monitoring in each of the Elkhart's 37 sub-watersheds. "We're a district, and this is what districts do – educate."

More information: Contact Brown at nancy.brown@in.nacdnet.net. Details on the ERA and the implementation plan are at www.elkhartriveralliance.org.

A big watershed benefits from local frugality

The Franklin County Conservation District and its partners stretch limited funds a long way to address rural water quality issues across 13 counties.

THE Marais des Cygnes River (MdC) Watershed covers 13 rural counties in eastern Kansas before crossing into Missouri. Addressing rural water quality issues over an area that size requires cooperation, creativity and old-fashioned rural frugality.

The Franklin County Conservation District and its partners have applied those measures and good communication to help agricultural producers address nonpoint pollution concerns and upgrade their farm systems.

Kansas uses the Watershed Restoration and Protection Strategy, or WRAPS, process to meet federal and state water standards. WRAPS involves local citizens in identifying water quality and water quantity issues within their watershed. With guidance and technical assistance, citizens then develop and implement a plan.

The MdC WRAPS was sponsored by the Lake Region Resource Conservation and Development Council in partnership with the Kansas Department of Health and Environment (KDHE). Five public meetings were held around the basin, where citizens identified concerns, goals and actions. The RC&D, local conservation districts, Kansas State Extension and the Kansas Water Office reviewed public comments and fashioned a final report, completed in 2003.

A main focus was reducing nonpoint pollution across the basin by educating and working with producers. Three federal reservoirs in the watershed are recipients of sediment and pollutants from nonpoint sources. The reservoirs and the Marais des Cygnes River are all public drinking water sources.

Old implement tires become innovative and inexpensive alternative watering systems for producers in the Marais des Cygnes River Watershed in Kansas. The Franklin County Conservation District and partners are addressing rural water issues across the multi-county watershed.

The plan gave conservation partners the specificity they needed to seek funding to address concerns. The RC&D, conservation district and Cooperative Extension took lead roles.

The RC&D received an Environmental Protection Agency grant through KDHE for a riparian forestry initiative. It used grant funds to hire a forester who works on tree planting, timber stand improvement and other measures to protect and enhance riparian forests. Federal Environmental Quality Incentives Program (EQIP) funds are available for cost sharing on timber stand improvement.

The Franklin District and Kansas State Extension sought and received a $200,000

EPA 319 grant through the state for a livestock project in 2006. The Franklin district administers the program, which is overseen by a board comprised of representatives from 13 conservation districts, Extension and producers in the basin. All the partners are involved in education and outreach to promote the program.

About 50 percent of the basin is grassland where beef cattle are raised. "That's a lot of area and a lot of producers. We felt that big gains could be made working with producers," says Franklin District Manager Keri Harris.

Projects include livestock stream crossings, renovations to confined and unconfined feeding sites and construction of alternate water supplies, several of which feature solar pumping systems. Sediment basins, grass buffers and riparian fencing are also among practices eligible for cost-sharing.

"One thing we are proud of is that 95 percent of the money is going to producers," Harris says. The Franklin District board helped to stretch grant dollars by agreeing to cover Harris' work on the grant as part of her regular salary. "My board saw the benefit of me being involved," she says.

To further limit costs, the board does much of its project oversight work electronically. Signup sheets are distributed and reviewed over the Internet. "We've been able to get a lot of work done with little expense to the grant," she says.

Dollars are stretched as much as possible to offer a 50- to 60 percent cost share. Some state funds funneled to conservation districts and some EQIP funds are available, too.

One small project with a big impact is providing water supply tanks. More than 35 have been completed. "You put a fence around a pond and only allow cattle in to flash graze. Then you run a supply line through the pond dam in a freeze-proof concrete supply tank." Bacteria tests show "amazing improvements," she says. Streams that flow from the ponds are cleaner, and that has an impact across the watershed.

Solar pumping systems move water to alternative watering systems in the Marais des Cygnes River Watershed in Kansas. The Franklin County Conservation District and partners are working to help producers install watering systems and protect fragile streams.

The project received an additional $53,000 in EPA 319 funding this year. It was less than expected, but with the majority of funds going directly to producers, "everyone is positive we can get a lot done," she says. EQIP and the Kansas Alliance for Wetlands and Streams also help the partners and producers with streambank stabilization and riparian vegetation projects.

Kansas State University and KDHE are conducting scientific monitoring of water quality improvements, but one of the best gauges of success for the livestock project is how well it has spread by word of mouth among producers.

More information: Contact Keri Harris at district@fccdks.org. More information on the WRAPS process is at http://fccdks.org/wraps.htm.

Green River CREP adjusts, advances, protects

The Green River CREP forges a celebrated public-private partnership to protect precious resources, control soil erosion and preserve working lands.

THE success of Kentucky's Green River Conservation Reserve Enhancement Program hasn't escaped national attention. The public-private partnership effort received the "USDA Two Chiefs Award," as announced by Forest Service Chief Abigail Kimbell and Natural Resources Conservation Service Chief Arlen Lancaster in November 2007. The chiefs saluted a strong partnership that links public and private entities in efforts to protect a distinctive and biologically diverse watershed.

Back home in Kentucky, it was no surprise that in 2002, farmer and conservationist John Colliver and his brother were among the first state landowners to enroll land on their fourth-generation Barren County farm in CREP. Colliver is chair of the Jefferson County Soil and Water Conservation District and a member of the state board. His father was on the board of the Barren County Soil and Water Conservation District for 48 years.

About 100 acres of the 340-acre Colliver farm are CREP lands, planted to native grasses.

"We had a field day out there, and U.S. Senator Mitch McConnell and (then) Secretary of Agriculture Ann Veneman came. I gave a talk and told them we were doing it for three reasons. One, at that time, we looked at the economics of it, and it was fair. Two, both of us have our hearts in conservation. We want to keep the soil in good condition, and hearing about efforts to protect the Green River, we wanted to help. Three, we felt confident in the conservation partnership. There's a lot of trust involved when you take land out of production. You hope the money is there to pay the bills."

The partnership Colliver referred to is strong and innovative. Steve Coleman, director of the Kentucky Soil and Water Conservation Commission, notes that conservation districts provide technical support and marketing in 14 counties in the watershed, located in south central Kentucky. The five-year-old CREP relies heavily on locally-led conservation at the county level, Coleman says. Conservation district local work groups have been important in reaching out to landowners. Forums were held to determine interest before the proposal was submitted for consideration. With the CREP in place, county-level meetings were organized to promote it.

The CREP is the single largest conservation program in Kentucky's history. It has solidified and strengthened a partnership between the NRCS and the Farm Service Agency, which administers the federal portion of the program, says Coleman. Also involved are state agencies of Forestry, Conservation, Fish and Wildlife Resources and Water.

The Nature Conservancy (TNC) is a major private partner, providing $5 million to boost enrollments in permanent easements. Its involvement in the project marked a new direction for TNC, which is putting more focus on strategies to aid farm owners.

The CREP targets 100,000 acres of environmentally sensitive land. Landowners who enroll receive direct payments, cost-sharing and other incentives. "We're now at 75 percent of the goal," says Coleman. One feature of CREPs is that they can be modified after adoption to better focus on local conservation concerns.

"There's a lot of trust involved when you take land out of production. You hope the money is there to pay the bills."

John Colliver
Farmer and Conservationist

The Green River and Mammoth Cave are the focus of a multi-county Conservation Reserve Enhancement Program effort in Kentucky. It focuses on helping agricultural producers achieve conservation improvements on their own properties as they protect the highly valued watershed.

"We expanded our CREP and modified some practices in 2007. About that time, FSA was updating rental rates. That was the perfect storm," Coleman says. Enrollments jumped after the CREP was expanded from eight to 14 counties and modified to include karst topography and sinkholes identified by Western Kentucky University as having a significant impact on water quality and rare mussel species.

The CREP's conservation goals include water quality, erosion control, farmland preservation, endangered species protection and wildlife habitat improvements. Western Kentucky University spearheads monitoring and assessment. Coleman notes that the CREP is distinctive because it is proactive. "We have a world treasure in Mammoth Cave, and we're protecting the resource beforehand, not cleaning up pollution."

> **"We have a world treasure in Mammoth Cave, and we're protecting the resource beforehand, not cleaning up pollution."**
>
> *Steve Coleman,*
> *Director of the Kentucky Soil and Water Conservation Commission*

The Green River is one of the most diverse ecosystems in North America and is the most biologically abundant branch of the Ohio River System. The river flows unhindered for more than 100 miles until it reaches Mammoth Cave National Park, the world's largest and most diverse cave system.

But back on the Colliver farm, the program has served its purpose, too. "For the first time ever, I've seen wild turkeys come out of the land there. We have many different types of birds," Colliver says. With his own children expressing an interest in the farm, he has also managed to preserve the land.

More information: Contact Coleman at steve.coleman@ky.gov. Visit www.conservation.ky/progams/crep for more information on the Green River CREP.

From septics to Ag BMPs in Louisiana

The Coulee Baton Stream microwatershed is the center of an effort by a conservation district, RC&D and other partners to address both agricultural and residential water quality.

An effort to address water quality in the Coulee Baton Stream microwatershed is long on solutions and short on finger pointing.

As a result, agricultural producers and residential homeowners can both take voluntary steps toward improvements. The Vermilion Soil and Water Conservation District and Acadiana Resource Conservation and Development Council are among several partners in the efforts.

The Coulee Baton was chosen because of its diverse topography, drainage and land use. Focusing on all the stakeholders in the area was a deliberate strategy. "We want to stay away from finger pointing," says Ernest Girouard, chair of the Vermilion District Board. "The goal is to identify the problems and have everyone do their share to improve water quality. We figured it had to be a team approach to promote ownership. If everyone accepts ownership and everyone does their part, you can make a difference." Field trips and public meetings are used to reach out to farmers, landowners and homeowners with educational information.

In addition to local stakeholders, state environmental and agriculture agencies and university researchers are also involved. "That's a result of our conservation district's work in the past," Girouard says.

The program is supported by Environmental Protection Agency 319 Grants administered by the state Department of Environmental Quality. One phase of the effort that has drawn attention provides cost sharing of up to 60 percent to residential homeowners who want to upgrade their septic systems.

The work is definitely needed. A preliminary survey found that 55 of 110 homes discharge directly into a public ditch with no secondary treatment of sewage. The project will allow all 110 homeowners in the 6,200-acre watershed the opportunity to participate with a maximum cost-share of $4,000 per system for repair or replacement of their systems. At least three options are provided, all of them leading to better treatment of wastes. A separate 319 Grant covers monitoring of the impacts of septic system improvements over five years.

Many of the homeowners lack the resources to pay for improvements themselves, Girouard says. Some will struggle to come up with their part of the cost-share, and the district continues to search for other funding to help them.

Outreach to homeowners has been extensive. Six meetings have been held to educate them about options. "We're trying to show them that part of being a good land steward is to make sure your sewer system is up to snuff," Girouard says.

Three demonstration sites were chosen to display options available to

"The goal is to identify the problems and have everyone do their share to improve water quality. We figured it had to be a team approach to promote ownership. If everyone accepts ownership and everyone does their part, you can make a difference."

Ernest Girouard
Chair of the Vermilion District Board

Efforts to address water quality in the Coulee Baton Stream microwatershed include a program to replace residential septic systems. Public meetings sponsored by the Vermilion Soil and Water Conservation District and Acadiana Resource Conservation and Development Council educate residents about their options for cost-sharing projects.

homeowners. They include a spray irrigation system, a rock field with water plants and the more conventional systems that rely on absorption into the soil.

Another area of work in the Coulee Baton focuses on encouraging agricultural producers and other landowners to apply best management practices, including improved watering systems for cattle and cross-fencing to protect waterways. The partners are also working with rice producers on BMPs to reduce sediment and stream loading when irrigation water is released. Federal Environmental Quality Incentives Program funds provide cost-sharing for that work.

Farmers in the area are also encouraged to participate in the state's Master Farmer Program, an intensive educational program that leads to development of an NRCS resource management system plan and state certification. The voluntary program is an effort to achieve conservation gains without regulation. Girouard serves as area agent for the Master Farmer Program. He notes that the southwest region where he works has the most participants. Maybe that's because he farmed himself for 35 years after earning a PH.D. at Louisiana State University.

"We're trying to show them that part of being a good land steward is to make sure your sewer system is up to snuff."

More information: Contact Ernest Girouard at egirouard@agcenter.lsu.edu.

Some of the best whitewater rafting in the northeast is available on the Kennebec River in Maine. Recreational users are among a wide array of stakeholders involved in the Kennebec River Initiative, coordinated by the Kennebec County Soil and Water Conservation District.

Hundreds work to polish a gem called Kennebec

The Kennebec County Soil and Water Conservation District spearheads a multi-county effort to secure the future of the Kennebec River, one of the state's most important resources. Multiple goals focus on enhancing the river's assets, including scenic, ecological, fisheries, wildlife, recreation, cultural and economic, and the potential for revitalization efforts in river communities.

WHEN Maine U.S. Sen. Edmund Muskie authored the 1972 Clean Water Act, he may have had the Kennebec River in mind. The historic Kennebec was a mess. As with many American rivers, it had long served as a dump for municipalities and industries. Decades of log drives had harmed its physical attributes. What emerged after the clean-up was a diamond in the rough.

Groups worked to take advantage of the renewed resource, but a coordinated effort didn't emerge until the Kennebec River Initiative was created. The Kennebec Valley Council of Governments looked to the Kennebec County Soil and Water Conservation District to serve as lead agency for development of an action plan for the river. The effort was boosted by grants from the Maine Outdoor Heritage Fund, the Land and Water Conservation Fund of the National Park Service, the state of Maine, the Sportsman's Alliance of Maine and the Council of Governments.

Hundreds of citizens and dozens of groups guided the resulting effort to enhance, protect and utilize the river's many assets. The Kennebec District worked with this broad group to develop a plan that paints a hopeful picture for the river. A Kennebec River Council with broad representation is being formed. The council will implement strategies outlined in the action plan. "The whole reason for the KRI was, 'Now that the river's clean what are we going to do with it? ' " says Josh Platt, project director on the Kennebec District staff.

He credits the guiding vision of longtime river activist Bill Townsend, a Skowhegan attorney who wrote a detailed appraisal of the river in 1971 and focused on the key questions: "How do we sustain this river, maintain its character and assure its use by the people of Maine?"

The district first coordinated efforts to map the river and its diverse resources, using its own Geographic Information Systems expertise and extensive input from citizens at mapping sessions. Mapping focused on the river's northern, central and tidal reaches, which are distinct and diverse as the river cuts its way from south central Maine to the Atlantic Ocean. The river includes everything from high-quality whitewater rafting to rich salmon fisheries and important tidal resources. Its shores are home to wilderness areas, historic forts, community waterfronts, agricultural and industrial users.

Twenty towns, 11 land trust groups, five local trails groups, nine businesses and several state agencies participated in mapping. The resulting 15 maps detail areas of the river that need a closer look at access, offer opportunities for economic development or better marketing, provide high-value habitat and may need protection or restoration work.

A series of forums followed. More than 300 citizens participated. Their input led to a plan that focuses on river access improvement; trail enhancement and development; corridor protection and enhancement, including fisheries; community-based water development; agricultural land preservation; and marketing and tourism. The action plan is a menu of possible projects and a compilation of ideas and proposals for future action.

"The plan talks about not only the natural resources piece, but also the people piece," Platt says. "It asks how we can revitalize downtowns and promote wise development. We look at the natural resources the river offers as a way to improve wise use."

"The plan talks about not only the natural resources piece, but also the people piece. It asks how we can revitalize downtowns and promote wise development. We look at the natural resources the river offers as a way to improve wise use."

Josh Platt

Project Director, Kennebec District staff

A cleaned-up Kennebec River is already home to community river festivals, concerts, trails and other assets. The action plan seeks to enhance and add to those activities and find ways to link them regionally while protecting the base resource.

How did a conservation district get involved? "The district was hired because districts tend to get things done," says Platt. "Districts in Maine and across the country have a history of developing a goal, planning, getting partners together and then getting something done on the ground." While the district had the project lead, it worked with four other conservation districts on plan development. Such cooperation will be needed in the future.

Platt is now working with various groups to write grants, further develop mapping and take other steps toward meeting the plan's goals. The Kennebec River is in good hands.

More information: Contact Platt at josh@kcswcd.org, and visit the district web site at www.kcswcd.org.

An array of stakeholders participated in planning efforts for the Kennebec River Initiative.

Farm Bill program boosts watershed collaboration

Watershed work under an innovative agreement takes advantage of a little-known Farm Bill program and leads partners down new roads that extend beyond the limits of a single project.

RESTORATION work on two watersheds in southwest Michigan piloted use of a little-known Farm Bill program and led to ongoing cooperation among a broad group of partners. Gregg Strand and Kristine Boley-Morse, project coordinators for the Calhoun Conservation District, say there are lessons aplenty from work on the Rice Creek and Battle Creek River watersheds.

The watersheds comprise more than 225,000 contiguous acres in southwest Michigan. They are tributaries of the Kalamazoo River, where an approved Total Maximum Daily Load (TMDL) for phosphorus is currently being implemented. The waters ultimately drain to Lake Michigan. With support from the Michigan Department of Environmental Quality, the two watersheds were selected to take part in a pilot U.S. Department of Agriculture partnership initiative making them a priority area for Farm Bill funding in Michigan.

The rivers are impacted by phosphorus and sediment runoff from agricultural lands, excessive levels of PCBs in fish, stream bank erosion and storm water loads from contaminated, impermeable surfaces. Agriculture is the dominant land use, but the watersheds are typical of how formerly rural areas have become home to a variety of land uses and stakeholders, including urban sprawl resulting from proximity to two major interstate highways. Riparian wildlife habitat, public water supplies, public/county drainage, tourism and recreation all depend on improved water quality.

Comprehensive watershed management plans were completed with support from Environmental Protection Agency Section 319 funding. Farmers, landowners, agency staff, town officials and concerned citizens took part in planning. Both plans included an inventory of best management practices, cost estimates, implementation time frames and lead partners.

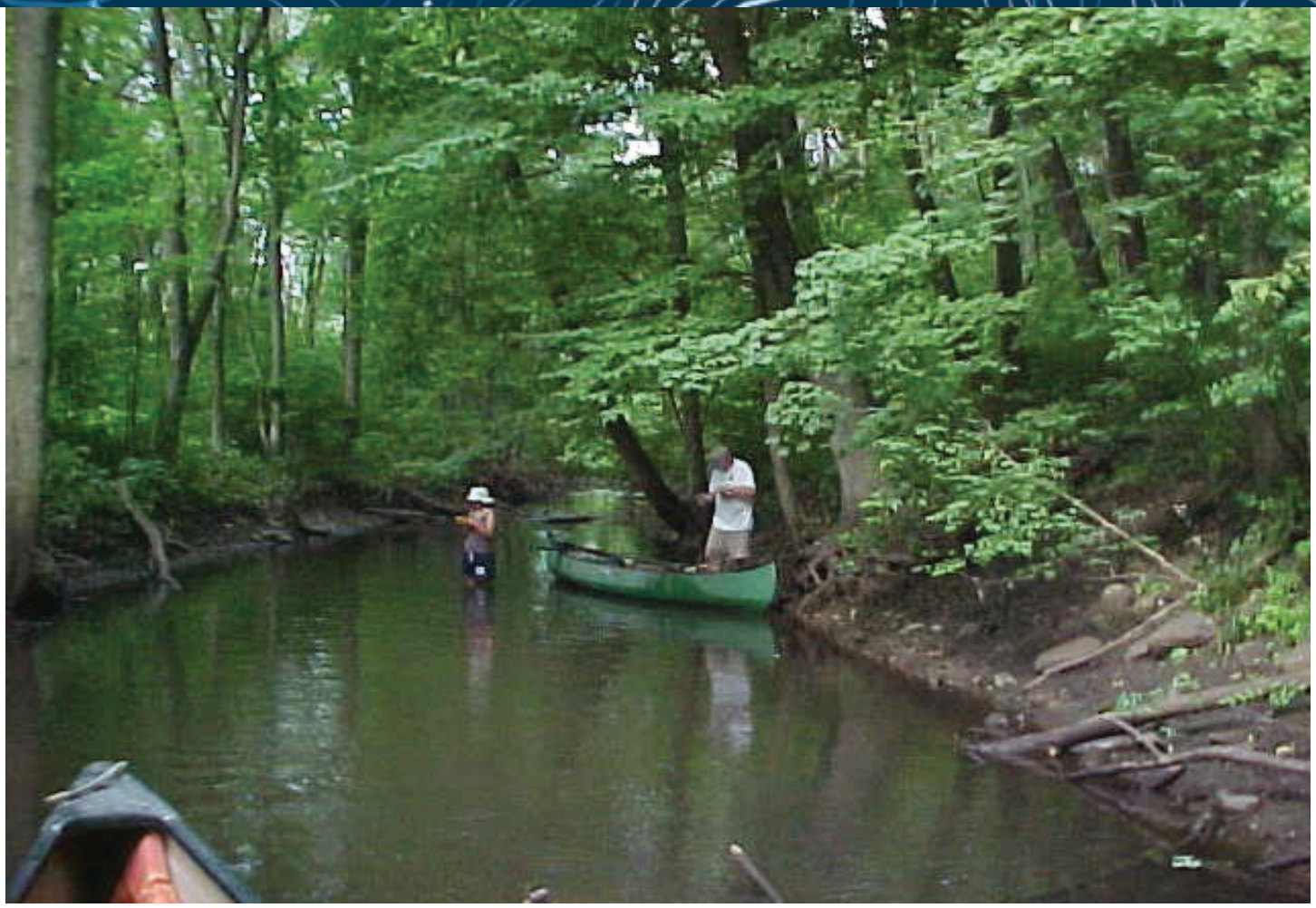
In February 2004, more than 20 agencies and organizations in both watersheds joined the partnership. They include USDA's Natural Resources Conservation Service and Farm Service Agency; U.S. Fish and Wildlife Service, Michigan Department of Natural Resources, Michigan Department of Environmental Quality, Michigan Department of Agriculture, several conservation districts, county drainage commissioners, county health departments, The Nature Conservancy, Ducks Unlimited, Trout Unlimited, Pheasants Forever and the Southwest Michigan Land Conservancy.

Impetus was a section of the 2002 Farm Bill called "Partnerships and Cooperation." It authorized USDA to enter into stewardship agreements for special projects, encouraging producers to install and maintain practices that affect multiple resource concerns in watersheds. The partnership allowed USDA greater flexibility to adjust application of eligibility criteria, approved practices and other elements of USDA programs. It also allowed the state to target Farm Bill funds to high-priority watersheds.

The Battle Creek River and Rice Creek partnership is an example of how multiple funding sources and programs can be used to address shared concerns. While Section 319 funding supported the development of the watershed plans, Farm Bill funding was targeted to address agricultural-related water quality concerns. "In this way, funding from the various programs can be leveraged so that it does not duplicate, but rather complements, other programs," says Strand.

NRCS Assistant State Conservationist Alan Herceg credits local involvement for development of the agreement. About half of the watersheds lie in Calhoun County, and the Calhoun County Conservation District administered funding for watershed planning. The Calhoun County Conservation District, "really built all the additional partners at the local level," Herceg says.

Forming those partnerships early in the process was important, says Strand. "Developing a formal partnership on the front end of these 319 projects is critical to successfully implementing manage-



Watershed restoration in Michigan addresses the concerns of many stakeholder groups, including recreation and tourism interests.

ment practices in the plan, and it also leads to sustainability when you have all agencies and organizations working together in an area. It gets bigger than the project really fast, and the partners tend to stick around after projects are completed," Strand says.

Broad partnerships also boost the whole watershed, he says. "It's pretty easy for projects to get too focused and work only on certain types of practices. But that leaves the other 99 percent of watershed alone." With more partners, projects have the opportunity to focus on a more inclusive list of resources and land use issues – rural, urban, in-stream, upland. That's the key to watershed work," he says.

The impact of the broad partnership is reflected by the list of completed projects. They include buffers, filter strips, grazing plans, wetland restoration, planting of trees and native grasses, stream bank stabilization, three major river restoration projects associated with removal of aged dams, urban river clean-ups and soil tests, low-impact development practices, rain gardens, acquisition of conservation easements, prescribed burns, fish habitat improvements and outreach and education provided to thousands of residents in the watersheds. The Calhoun District alone completed more than 35 projects in one year of the agreement.

Conservation districts working on watershed projects are able to diversify their range of duties, the project coordinators say. "We're growing and getting better about how we can give our citizens opportunities to do some really good things," Boley-Morse says. Strand adds: "Districts in the past were seen as the ones who do tree sales, or were one in the same with USDA. Working on watershed projects means we have our fingers in so many different resource areas. Districts have evolved because of these projects and become more diverse."

The partnership is also credited with helping lead to development of a Michigan Stream Team comprised of the agencies that deal with water resource issues in the state. The group meets regularly to coordinate strategies, avoid duplication and improve communication.

More information: Contact Gregg Strand at gregg.strand@macd.org. Contact Kristine Boley-Morse at Kristine.boley-morse@macd.org. More on the watershed work is at www.calhouncd.org.

Protecting a watershed and a Great Lake

The Nemadji River watershed offers multiple challenges to partners in a two-state region. At stake is prime aquatic habitat in the watershed and water quality and shipping in Lake Superior. The Carlton Soil and Water Conservation District is a major partner in the effort.

THE Nemadji River tumbles down slopes that cut through rugged forest country in northeast Minnesota and northwest Wisconsin on its way to Lake Superior's south bay.

Along the way, the Nemadji and its tributaries drain about 433 square miles, or 277,400 acres of land in the two states. The streams are flood-prone, and when they flash, the water cuts into clay banks. The streams carry a lot of red clay and silt, much of it deposited thousands of years ago by glaciers. That sediment affects the water quality of the streams, which are home to prime trout habitat, and ends up in south bay, where dredging is required to clear the harbor for Great Lakes ships.

These concerns have long drawn attention, with studies going back decades, says Brad Matlack, Carlton Soil and Water Conservation District manager. The district has taken a lead role in watershed restoration efforts, working with local stakeholders, representatives of the two states and federal agencies.

Sometimes moving forward requires stepping back, and one major project at the district has been to reassemble information from the 1970s-era Red Clay Project. That was a joint effort sponsored by the Environmental Protection Agency and the Soil Conservation Service, forerunner to today's Natural Resources Conservation Service. The project encompassed parts of Superior's south shore in Wisconsin and a couple of targeted watersheds in Minnesota.

Riparian forest buffers planted in the Nemadji River Watershed are among practices aimed at improving water quality.

One outcome was the construction of 18 erosion-control and sediment trapping dams that have outlived their life expectancy and are in various states of disrepair. Now the district and its partners are determining what to do with the aging structures.

NRCS led a watershed study that generated a report in the late 1990s. The Nemadji River Report sought to quantify erosion and sedimentation from tributaries and served as the impetus for organized efforts throughout the watershed.

Thus was born the Nemadji River Basin Project. EPA 319 grants and funding from the Minnesota Pollution Control Agency Clean Water Partnership Grant Program spurred activity among a growing list of

partners that includes forest-products companies, Trout Unlimited and Lake Superior Steelheads, so named for the trout that travel between the streams and the big lake. "We're collectively trying to implement goals and recommendations in the NRCS report," says Matlack. "We installed practices like reforestation, riparian buffers and fish passages through road culverts."

The project includes extensive public education and outreach through newsletters, meetings and other activities. About 1,200 landowners in the region kept informed about activities. "All the partners play a role, some more significant than others," says Matlack. The Army Corps of Engineers is heavily engaged, he notes, because its tab for harbor dredging runs about $200,000 a year.

The district serves as lead agency, provides technical assistance and administers grants. Recently, the Carlton SWCD Board of Supervisors approved a contract with Minnesota Pollution Control to conduct phase 1 of a total maximum daily load TMDL study on the Nemadji and a tributary, Deer Creek, both listed as impaired waterways. As part of the public stakeholders component of the TMDL process, the district hosted a meeting of representatives this year from a dozen agencies involved in the two-state effort. Many of the groups have been involved in committees working on solutions since the NRCS report was released. The TMDL work will allocate sediment loads to various sources. Matlack notes that the partners will only be able to do so much. "There is a significant amount of sedimentation that is natural." This results from steep clay deposits left by the glaciers that are transported both by surface and ground waters.

But with some of the best trout habitat in all of the Lake Superior region and an important Great Lakes shipping hub at stake, the partnership can't turn its head the other way. "We know that by affecting the hydrology of these watersheds, we can have an impact on flood flows going down through these streams. Riparian buffers, upland open land cover and reforestation with conifers that reduce snow melt can make a difference," Matlack says.

Monitoring on Deer Creek, a stream in the Nemadji River Watershed, helps the Carlton Soil and Water Conservation District determine the source of sediment that degrades water quality and moves to Lake Superior.

The TMDL process will focus local attention on the streams. "We know some of the waters are impaired, but some stretches are not. We're trying to quantify them and get the impaired tributaries back to better condition," he says.

More information: Contact Brad Matlack at bradmatlack@carltonswcd.org. More information on the Nemadji River Basin Project is at www.carltonswcd.org/nrbp.htm.

Doing means learning in Mississippi

Using a basin management approach, Mississippi spreads its water resource activities across the state.

LAKE Washington's turn has come up again in Mississippi. The lake and its 27,170-acre watershed in Mississippi's delta were recognized several years ago by the National Awards Council for Environmental Sustainability after substantial water quality gains were accomplished during a demonstration project there in the early 1990s.

That project saved an average of 711 tons of soil per acre on 6,505 acres where best management practices (BMPs) were installed. It also resulted in marked improvement in water quality in the popular lake.

Now, state and local conservation officials are installing more and bigger best management practices, such as slotted board risers and grade stabilization structures to further reduce sedimentation. In addition to landowners in the watershed, Washington County is participating in the $680,000 project, including doing some in-kind work. Some of the larger structures are being installed on county roads to halt the movement of sediment to the lake. Despite earlier successes, the lake is still subject to excess phosphorous loading.

"It looks pretty promising," says longtime Washington County Soil and Water Conservation District board member John Oglesby of the new work. "If it does as much good as the work did last time, it'll be something."

The Lake Washington project has become a showcase for the Mississippi Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA), says Mark Gilbert, environmental administrator for the Mississippi Soil and Water Conservation Commission.

Sedimentation is the major water quality concern in Mississippi, where the state's Department of Environmental Quality has its hands full addressing impaired waterways. The Mississippi Conservation Commission and the state's local conservation districts play big roles in helping to accomplish improvements.

DEQ uses a basin management approach to focus funding on one of its 10 basins each year. "The approach is to go through one basin per year and see what priorities are in the basin and then to direct funding there," says Gilbert. Usually the focus goes to watersheds where total maximum daily loads (TMDLs) have been established, primarily because of sedimentation.

Basin teams identify projects of interest to soil and water conservation districts, helping the commission to select projects based on local needs. The commission then contracts with DEQ for work funded by Environmental Protection Agency 319 grants. The three-year grants fund an array of projects, most of them providing cost-sharing of 60 percent for best-management practices.

The traditional conservation partnership provides local support. SWCDs prioritize and approve landowner applications. Natural Resources Conservation Service (NRCS) personnel assist with project design, and conservation districts provide lists of private contractors who do the work.

To monitor results, NRCS collects data on soil loss before and after installation.

The focus is on achieving water quality through installation of BMPs, but most of the projects also serve to educate land-

> **"We are still subject to those natural resource concerns. We have flat ground and hilly ground, so we have flooding, and that brings other problems."**
>
> *Don Underwood*
> *Executive Director Mississippi Conservation Commission*

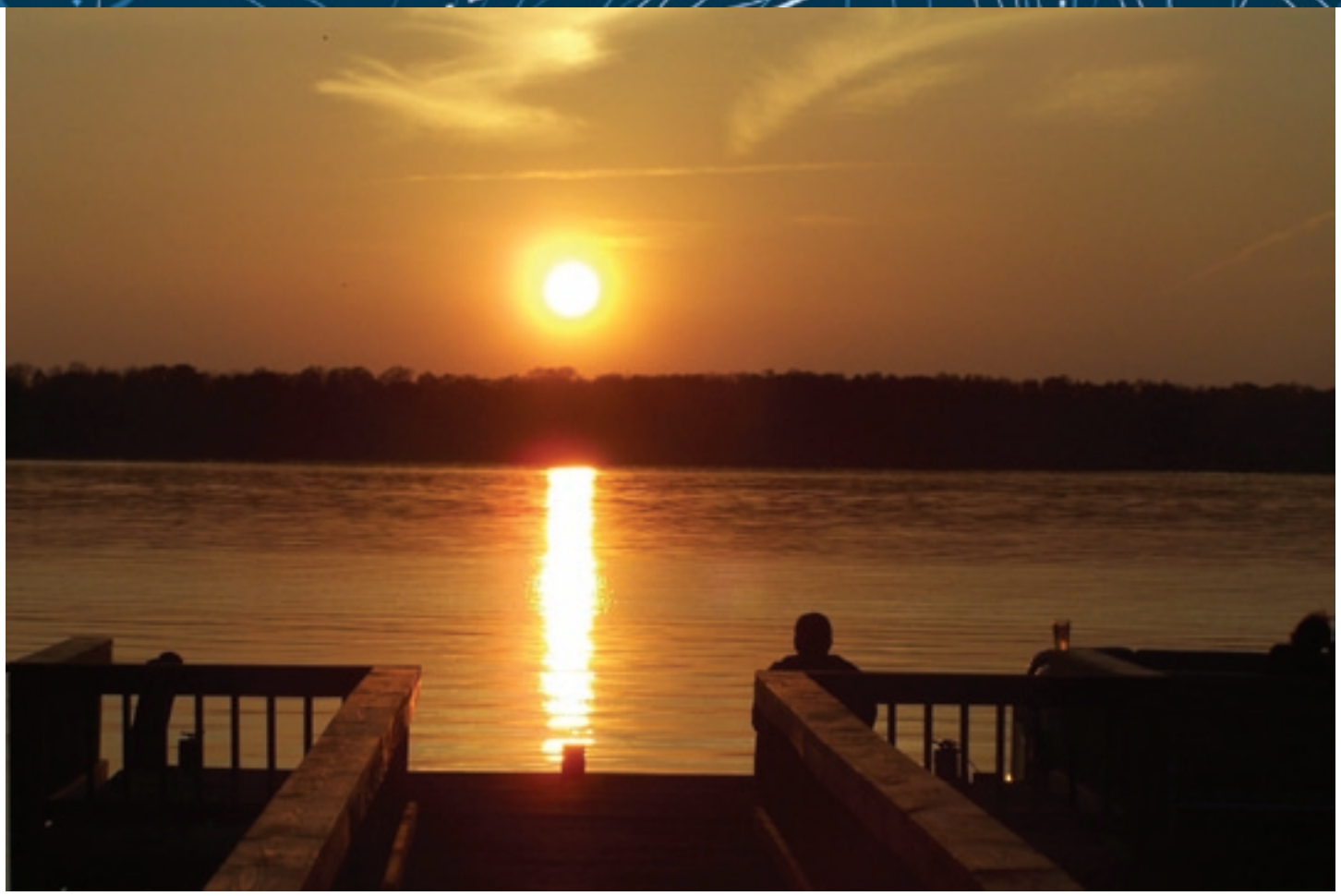


Photo courtesy Blake New, NRCS

Sunset on Lake Washington in the Mississippi delta, where conservation efforts to reduce sedimentation are under way.

owners about the economic and environmental value of BMPs. Individual projects range from $200,000 to $700,000, says Don Underwood, executive director of the commission. "It's an evolving process. Some things it feels like we've been doing forever, and some are fairly new. Some of it takes a long time to change people's behavior and attitudes." Some projects over the years have funded BMP manuals and other educational tools meant to reach producers and other audiences.

Even with BMPs on many locations, nature plays a big hand in Mississippi. Flooding is an ongoing issue. "We are still subject to those natural resource concerns," Underwood says. "We have flat ground and hilly ground, so we have flooding, and that brings other problems." Stream bank erosion is one concern.

> **"You do one thing, and you don't realize how it's going to affect something else. We're learning the synergy of all the natural resources."**

Like Lake Washington, the Twenty Mile and Donivan Creek watersheds are funded in the current cycle after benefiting from a demonstration project earlier. About $280,000 is targeted to the current project. The two watercourses are tributaries of the Tombigbee River, the major source of drinking water for the city of Tupelo. A recent study identified the watersheds as being impacted by a number of agricultural pollutants. Both are listed as impaired. Several state and federal agencies are implementing the project. BMPs include grade stabilization, stream bank stabilization, stream fencing and off-stream watering. About 40 landowners have signed up to participate.

"It's all interconnected," says Underwood of the conservation work. "You do one thing, and you don't realize how it's going to affect something else. We're learning the synergy of all the natural resources."

More information: Contact Don Underwood at dunderwood@mswcc.state.ms.us.

Missouri River Council voice of private lands conservation

Fifteen conservation districts cooperate to represent private conservation perspectives in complex management challenges along the Missouri River corridor.

THE historic Missouri River zigzags from west to east as it bisects the state of Montana. Roughly half of the corridor is in private ownership spread over 14 counties, and the other half is managed by three separate public agencies.

The Missouri River Conservation Districts Council has emerged over the past decade as an important local voice in decisions that affect the river and its many uses. Fifteen districts participate, and the council serves as a collective voice for districts and private landowners in dialogues with federal agencies, putting voluntary conservation on the ground and educating a growing and changing population along the river.

An early success was the council's advocacy of a 2002 Conservation Reserve Enhancement Program (CREP) along the river. The federal-state program enhances water quality and fish and wildlife habitat on agricultural lands along the Missouri and Madison rivers. The council was also instrumental in later revisions to the CREP that boosted enrollments.

Communicating with federal land management agencies was a big reason the council was formed. "Council members are great about keeping things local and where they make sense. They're out there on the land and have concerns, and they are really good about conveying them to federal agencies," says Vicki Marquis, coordinator for the council.

The 370,000-acre Upper Missouri River Breaks National Monument in central Montana is managed by the Bureau of Land Management. Charles M. Russell National Wildlife Refuge in north-central Montana extends along 125 miles of the river and is managed by the U.S. Fish and Wildlife Service. The refuge extends up river from Fort Peck Dam, which is managed by the Army Corps of Engineers. Each has a different set of challenges.

The Missouri River Breaks was controversial when established by presidential decree in 2001. The council heard concerns from private landowners and served as their voice. About 80,000 of its acres are privately owned. Grazing disputes, trespassing, easements and campsite development are among the issues. Public lands decisions have an impact on private lands, Marquis says. But the dialogue has improved. BLM has provided signage that designates private lands, sponsored a video featuring private landowners and contracted with a National Riparian Services Team to assess cultural and natural impacts on the river.

"So much of it is relationship building," Marquis says. The council invited BLM officials to tour private lands and explore local issues, and that led to better understanding. After four tries, Marquis was seated on the BLM's Resource Advisory Council for central Montana, an important 15-member citizens advisory council. "There's a lesson for others: Don't give up," says Marquis.

The council also has a seat on the planning team working to develop a management plan for the CMR Wildlife Area. "One of our conservation districts asked to be a cooperating agency and was

"Council members are great about keeping things local and where they make sense. They're out there on the land and have concerns, and they are really good about conveying them to federal agencies."

Vicki Marquis
Missouri River Conservation Districts Council Coordinator

The Missouri River, pictured here at the Upper Missouri River Breaks National Monument, is impacted by multiple land users and land owners. The Montana Missouri River Conservation Districts Council offers the voice of private landowner/conservationists to discussions about the watershed.

denied. The council took up the cause and did get a seat," Marquis says.

Much of the success working with agencies comes from interaction with the Army Corps of Engineers. Dam management affects irrigators like council members Buzz Mattelin of Roosevelt County and Ron Garwood of Valley County. They had success with the Corps on water releases and other concerns. "They've as irrigators been very involved and proactive. Their encouragement and success have kept us going in our work with other agencies," she says.

In upper reaches of the river, issues differ. Several counties are seeing an influx of people who want to live on the stream bank and remove vegetation for a view of the water. There are now concerns about storm water runoff, wells that draw down ground and surface water and septic systems that pollute. The council focuses its action on education. "We have a couple of projects to get people to look at the importance of the river and riverbanks." One provides historic photos of the river in flood stage. "Our goal was to give people a deeper respect for the river. A river can move and rise. It's better to develop back a ways," Marquis says. "The best way to do the right thing for the resource is to get people to want to do things right. It's more sustainable. That's why we've taken the educational approach to the resources."

Speaking of sustainability, the council worked for and received guaranteed funding for its coordinator position from the state Legislature. It was funded through the state Department of Natural Resources and Conservation, which Marquis credits for strong support and cooperation in council activities.

From sitting on the planning team for the Missouri River Recovery Implementation Committee to working with fly fishers who want to clean up landings, the council takes on jobs big and small.

More information: Contact Vicki Marquis at mrcdc@missouririver-council.info. Visit the council's web site at www.missouririvercouncil.info/.

Walnut Creek flood control reservoir is an example of the multiple-use reservoirs favored by the Papillion Creek Watershed Partnership. The reservoir offers fishing, camping and other recreational activities, and its water quality is protected by a subwatershed plan.

Natural resources district steers watershed partnership

Eleven local units of government including the Papio-Missouri Natural Resources District are working collectively to address water quality and quantity issues in the Omaha metropolitan area.

THE Papio-Missouri Natural Resources District (NRD) follows watershed, rather than jurisdictional boundaries. That has empowered the NRD to address watershed-scale conservation issues and work as a regional resource for local governments in the metropolitan Omaha area.

Eight cities, two counties and the NRD formed the Papillion Creek Watershed Partnership to address water quality and quantity, flooding and storm water control. The NRD was the logical entity to coordinate and administer the group's activities. "Water knows no boundaries," says Marlin Petermann, assistant general manager of the district. "Forming this partnership would not have been possible

without one entity with jurisdiction over the watershed," he says.

Petermann joined the NRD in 1974, when it was dealing with water quality and quantity issues in a rural setting. Urban growth has added new challenges. One-quarter of the state's population lives in the Omaha urban area. The growth has led to changes in hydrology and the ability of the landscape to assimilate storm water, and has broadened district's focus.

"We continue with our roots of soil and water conservation," Petermann says. "As the Omaha metro area has grown, we have seen our efforts shift to being involved not only with rural needs, but also a great deal of urban conservation needs."

The Papillion Creek Watershed Partnership is a prime example. Its mission is to establish regionally common goals and objectives that address water quality and water quantity issues in the 402-square-mile watershed by the year 2040. The partnership is nearing completion of a management plan for the watershed, a process that has taken three years. It is focusing on a variety of strategies, including low-impact development techniques that hold water where it falls, enhanced stream corridors, setbacks and regional water detention strategies such as flood control structures.

The footprint of rural activities remains in the form of Army Corps of Engineers flood control structures and Natural Resources Conservation Service erosion control structures. Several were completed before the Corps ran out of funding and the landscape changed from rural to urban. The existing structures have value, and the district has added others, primarily for flood protection. The new structures are multiple-use. They control floods but also serve as community amenities – lakes with walking trails, water access and other benefits.

One successful strategy has been to employ public-private partnerships in the construction of flood-control dams. "The latest structure we built in 2006 cost about $8 million, and a developer contributed more than $1.5 million," Petermann says. The resulting housing development benefits from being near water. The manmade lake is ringed with a buffer for water quality, offers public access and is part of a park. "We got a needed flood-control structure, and they got to build houses around water. It's a win-win situation if we work together," Petermann says. "With our limited funding, we need to be creative."

A drainage and flood control channel in the community of Papillion is lined with trails that people use for walking, biking and other activities.

Urban water quality efforts are driven by storm water permitting required by federal law and administered by the Nebraska Department of Environmental Quality. Communities will be re-permitted in 2009, and the partnership is developing a new regional storm water plan. "By addressing water quality issues from a watershed basis rather than individually as communities, it can not only be more efficient and effective, but also less costly, because many of the activities can be combined," Petermann says.

Communities have already seen the advantages of working together. The partnership has developed a single set of rules for controlling erosion on development sites. The city of Omaha serves as inspector for all the communities. Developers know that rules are consistent from community to community, and having one inspector is more uniform and efficient.

Developing a comprehensive plan that addresses multiple issues is a tall order, especially because the group relies on consensus rather than majority votes to reach agreement. But progress has been steady. Extensive public input will be incorporated into a final plan, and regular reviews and adjustments to reflect progress and changing conditions will be needed. Most of the funding for implementation will come from local sources. "We're looking at the best ways to maximize local resources to meet flood control and water quality needs," Petermann says.

More information: Contact Marlin Petermann at mpetermann@papionrd.org. Learn more about the Papillion Creek Watershed Partnership at www.papiopartnership.org/.

The Mason and Smith Valley conservation districts in Nevada participated with partners in a Streambank Soil Bioengineering Technical Training Workshop. The site was experiencing drastic bank erosion. Partners in the workshop included the Nevada Division of Environmental Protection, Western Nevada Resource Conservation and Development, the Natural Resources Conservation Service and Nevada Division of Water Resources. Workshop participants reshaped the stream bank, installed rock refusal trenches, rock and vegetated barbs, willow bundles, juniper revetments, live stakes and erosion control blankets.

Tackling noxious weeds a watershed at a time

Controlling noxious weeds requires watershed approaches and strong partnerships. Two conservation districts have joined forces with local, state and federal partners to get the work done.

GAINING a foothold in efforts to eradicate noxious weeds is like herding cats. They're not always where you want them to be.

That's one of the lessons learned by partners in noxious weed control on the Walker River basin in western Nevada. But the weeds may be corralled by a project that focuses on pinpointing where they are and then eradicating them a watershed at a time. The first step is developing a comprehensive map.

"We've known for some time that a comprehensive map is not available," says Michelle Langsdorf, district manager of the Mason Valley and Smith Valley conservation districts. The districts chair the Walker River Basin Cooperative Weed Management Area (CWMA), comprised of landowners and local, state and federal agencies. "All the stake-

holders in the basin got together to find those gray areas where noxious weeds aren't targeted or funding is not available. Those are the areas where weeds thrive most," she says.

The partners decided to coordinate efforts to have a greater impact. The conservation districts have a central role. The partners decided to address weeds on a watershed basin. The Walker River has east and west branches that join into a main stem. Each of the stems has a reservoir that serves agricultural producers who grow alfalfa, garlic and onion and graze cattle and sheep.

"We've targeted the east stem first. It's about 75 miles long and has private landowners and federal land managers along the way," she says. "Some of the areas are pretty remote, and because people aren't back there, we don't really know what's in there." Gaining access for mapping and subsequent eradication efforts isn't always easy, but the conservation districts' local identity helps. "We have access to 99 percent of the east fork, and the portions we haven't gotten access to, the landowners haven't said no," she says.

The districts are developing a comprehensive map of the basin, and that will be followed by eradication efforts spearheaded by the CWMA and the districts. The partners will move on to the west branch next year and then the main stem.

Funding includes the federal Desert Terminal Lakes Program, in this case administered by the U.S. Fish and Wildlife Service. The program's goal is to assure water supplies to at-risk desert terminal lakes. Lyon County provides base funding, and the Nevada Department of Agriculture helps fund CWMA. The Walker River Irrigation District provides equipment. The state Department of Wildlife will provide work crews for eradication efforts, especially on difficult terrain. State departments of Water Resources and Environmental Resources are engaged, as are Cooperative Extension and dozens of local landowners. In addition to the Fish and Wildlife Service, the federal Environmental Protection Agency and Forest Service are involved. The Natural Resources Conservation Service provides technical assistance.

"The districts would not be doing good work if not for our partners," Langsdorf says.

Langsdorf has the services of a district technician, and she also contracts with the Americorps Program for a two-person seasonal field staff. She also trains volunteers who replant native species.

Targeted weeds include tamarask (salt cedar), perennial pepper weed, Canada thistle, puncture vine, hoary cress, spotted and Russian knapweed. What makes them noxious weeds? "The simplest way I explain is all noxious weeds are invasive, but not all invasive weeds are noxious," she says. Nevada identifies noxious weeds for several reasons, including displacement of native vegetation; reduced value of an area for wildlife, agriculture, recreation and other uses; reduced biodiversity; altered nutrient and water cycling; and increased stream sedimentation.

The weeds' impact on marketing agricultural commodities can be significant. It's illegal to transport noxious weeds in Nevada. The vast majority of crops are sold to California, which has even more stringent noxious weed laws.

Langsdorf likes the partners' chances. "We feel there's a possibility to eradicate rather than manage some of these populations."

The traditional role conservation districts serve in education is important, Langsdorf says. "If people don't understand why something is a bad plant and care about why, we're not going to get anywhere," she says.

The districts hold workshops for local residents on weed identification and management, and on safe use of herbicides. In the schools, the districts and the Western Nevada Resource Conservation and Development Council combine to sponsor Walker River Basin Work Days, which reaches out to elementary and secondary students with education in the schools and in the field.

More information: Contact Langsdorf at michelle.langsdorf@nv.nacdnet.net.

Education is crucial to understanding watershed issues. Here, students participate in a Walker River Basin Workday held in Smith, Nevada.

Degraded stream beds resulting from flashing storm water are among the focuses of efforts by the Camden Soil and Water Conservation District to improve watershed function in a primarily urban setting.

Seeking balance in an altered urban watershed

Watershed work is challenging in any environment, but highly developed urban areas present multiple layers of issues and many stakeholders. The Camden Soil Conservation District and others in The Garden State are leaders in storm water management efforts.

CONSERVATIONIST Aldo Leopold taught that the first rule of intelligent tinkering is to save all the parts.

In the case of heavily developed states like New Jersey, some of the parts were discarded, and new, different parts were added. Managing storm water and improving watershed function in this setting is a challenge, but local conservationists working in the Camden Soil Conservation District and other districts have rolled up their sleeves to get the work done.

In New Jersey, legal authorizations to discharge storm water are issued by local soil conservation districts in cooperation with the State Soil Conservation Committee and the New Jersey Department of Agriculture. That has led to a broader role for districts in watershed-based planning and regulatory activity.

"When you have this much activity going on for so long, you have to work

to get it cleaned up," says Craig McGee, Camden District project manager for regional storm water management.

Using a grant from the New Jersey Department of Environmental Protection (DEP), Camden has worked with the Burlington, Gloucester and Cape-Atlantic districts to develop regional storm water management plans. "We've been the lead agency, but when we work in their districts, they help out and coordinate activities. The ability of districts to work together is important. Watersheds don't stop at boundaries," McGee says.

The DEP grant targeted development of regional storm water management plans in five watersheds. They range in size from 200 acres to 80 square miles, and represent varied conditions on the coastal plain. The district partnered with municipalities, DEP, the Natural Resources Conservation Service, Rutgers and Rowan universities and the New Jersey Department of Agriculture on various aspects of the work.

"We prepared characterization and assessment reports and, ultimately, management strategies," McGee says. A broad group of local stakeholders was involved. "The technical work is easy. The stakeholder part is the hard work," says McGee. "There's an education process. Why care about a river? It requires a lot of people to come to the table, to participate and find out what they are interested in, or at least what they will support. I must say, it hasn't been easy. When in the room, people are supportive of what we're talking about. But are they going to follow up with their municipalities?"

The five watershed reports came out over about a year and a half, in 2004-05, followed by a final report. One lesson learned was that the state has work to do before it can truly enact regional storm water management. New Jersey municipalities are accustomed to home rule. "It's hard for a regional agency or even worse no regional agency to say 'You have to adopt those requirements,' " says McGee. Still, the watershed work has value as municipalities seek to comply with phase two of the Change Clean Water Act to National Pollutant Discharge Elimination System and develop storm water management plans. Implementing local plans will benefit from the regional planning process and from municipal cooperation on that work. "Whether you're urban or rural, storm water issues cannot be addressed by one municipality. It has to be holistic, a watershed-wide approach," says McGee.

Now the district is focused on implementing recommendations in the watershed plans. With plans in place, targeted funding such as Environmental Protection Agency 319 grants administered by the state can be applied to address priorities.

One model project is in the Cooper River Watershed, where flooding typical of altered urban systems often occurs. Early development pretty much ignored storm water management, except to "get it off of the road and down to the creek," says McGee. Over the years, storm water basins were added. One recommendation was to retrofit some of the basins to handle the more frequent storm water surges in the urban setting and improve water quality in the system.

The district received grant funds to retrofit five basins in the town of Cherry Hill. Work was completed in spring 2008 and included reintroducing or enhancing wetlands, replacing mowed grass with riparian buffer vegetation and modifying outlet structures in basins to lengthen water flow patterns and improve infiltration. Monitoring for water quality, inflow and outflow will gauge success.

The district has also received funding for stream restoration work at the headwaters of the river, where erosion has pushed sediment downstream.

There's plenty of work ahead in this and other watersheds, but the process has already led to some intelligent tinkering.

More information: Contact McGee at craig.mcgee@camdenscd.org. More information on the district's work is at www.camdenscd.org/watershe.htm.

Volunteers are busy planting nearly 800 herbaceous and woody plants in a basin in Cherry Hill Township, New Jersey. The planting was part of a project led by the Camden Soil and Water Conservation District to retrofit an existing flood control basin into a bio-infiltration basin with extended storm water detention. Woody plants were selected to enhance wildlife habitat, while the herbaceous plants are helping to filter pollutants from storm water runoff.

District role crucial to coastal invasive plants effort

A conservation district serves as the local link in an ambitious partnership to control invasive plant species along a coastal watershed.

WHEN 11 partners gathered in May 2008 to sign an agreement forming the Coastal Watershed Invasive Plant Partnership (CWIPP), one local group was represented. Standing with representatives of state and federal agencies was Cynthia Smith, chair of the Rockingham County Conservation District in New Hampshire.

"I am signing this on behalf of the landowners of Rockingham County," said Smith, a dairy farmer and member of the conservation district board since 1989.

Smith's brief comments had real meaning. "When they decided to formalize the weed management area with this agreement, they knew the district was going to play an integral role, because we are the only entity that works with the landowners," says Mary Currier, district executive director. "They really needed and wanted us at the table. The district is the one entity that can represent all of the landowners."

It's believed that CWIPP is the first formal agreement of its kind in New England.

Other signatories include five state agencies, the Natural Resources Conservation Service, U.S. Forest Service, The Nature Conservancy, the Great Bay National Estuarine Research Reserve and University of New Hampshire Extension.

CWIPP's goal is to stop the spread of invasive plant species in New Hampshire's coastal watershed, an area covering 42 towns in Rockingham and Strafford counties. The coastal watershed is habitat for more than 130 native plant species, but they have been put at risk by the advance of non-native species. The newcomers include pepperweed, phragmites, oriental bittersweet, burning bush and purple loosestrife.

Based on an organizational model popular in the western United States, the new partnership aims to reduce the threat of invasive plants through prevention, various control methods (from mechanical to biological), monitoring and outreach.

The Rockingham District was a known commodity for many of the partners. The district's work on coastal restoration stretches back to 1992, when it partnered with the U.S. Fish and Wildlife Service and other agencies on a cooperative agreement to restore a tidal marsh. The district coordinated that project. In 2005, the district joined with F&WS and other agencies to coordinate habitat restoration on private lands degraded by human activity. Work included invasive species control.

District involvement on these projects began with the leadership of its board. "Our board of supervisors made a long-term commitment that we would be a party to this process. Since that time, we have stepped up and taken a major active role in some of the funding and oversight of projects. We handled money, contracted for services and have gotten some of the invasives control work done," says Currier. "The heritage of this district is to move forward and get the work done. We don't have time to mess around."

Currier and Conservation Specialist Tracey Degnan handle staff duties on the projects. The district's roles in CWIPP will be varied. It will work with NRCS on management plans for some sites, handle requests for proposals for work

> **"When they decided to formalize the weed management area with this agreement, they knew the district was going to play an integral role, because we are the only entity that works with the landowners."**
>
> *Mary Currier*
> *Executive Director, Rockingham County Conservation District*

Representatives of 11 partnering agencies gathered in May 2008 to sign an agreement to form the New Hampshire Coastal Watershed Invasive Plant Partnership. Representing the Rockingham County Conservation District was Board Chair Cynthia Smith (third from left). The Rockingham District plays a major role in the partnership.

on project sites and coordinate its activities with other agencies.

Controlling invasive species is no simple task. "There are different treatments depending on the species," Currier says. In many cases, the plants have altered natural systems. "Some of them have created such pools of water that mosquitoes are terrible. We need to have flow coming and going in these coastal areas so that the other critters can do their jobs," Currier says.

There are concerns that global climate change will cause more disruption. "Pepperweed is moving north because of warming. What we want to do is stop it from moving farther north," Currier says.

The district was part of the CWIPP planning process from the start. The partnership formalizes and streamlines efforts to control invasive species and achieve salt marsh restoration. Project monitoring will be supported by an extensive database created by The Nature Conservancy (TNC). Using Geographic Information System technology, TNC documented plant distribution on sites across the project area. Project work will be tracked on that database, providing a living record for future work.

> **"Think big. Under our state law, at least, there isn't much conservation districts can't do. So we do it."**

Currier's advice for other local conservation entities: "Think big. Under our state law, at least, there isn't much conservation districts can't do. So we do it."

More information: Contact Currier at rccdmac@comcast.net. Visit the www.rockinghamccd.org for more information on CWIPP and other district activities.

Members of an advisory committee view a drainage system as part of field tours to inform the development of the Ohio drainage report.

New alliances forged to address aging drainage systems

Education and solid information replace discord in discussions about fixing the state's aging rural drainage infrastructure.

A REPORT on Ohio's aging and neglected rural drainage systems doesn't mince words:

"What if someone told you that infrastructure critical for daily life and commerce over two-thirds of Ohio, or 17 million acres, was at risk? Would you be concerned? The ODNR Division of Soil and Water Conservation and the Ohio Federation of Soil and Water Conservation Districts and their partners are, and hope you are, too."

The report, issued in early 2008, is titled "Rural Drainage Systems: Agencies and Organizations Reach Consensus on Ways Forward." It outlines problems such as funding shortages, project backlogs, resistance from some stakeholders and a general lack of information about the importance of the infrastructure. It also steers a course for future action, addresses environmental concerns and sets the stage for water quality trading as a part of future projects. Partners in the broad-based initiative included groups representing rural and agricultural interests, state and local agencies, and environmental and nature organizations.

Producer Kenneth Riedlinger, a Wyandot County Soil and Water Conservation District board supervisor, is credited with raising awareness about the issue. Riedlinger, also a member of the National Association of Conservation Districts board of directors, was co-leader of the initiative. He, in turn, credits co-leader David Hanselmann, chief of the Ohio Department of Natural Resources (ODNR) Division of Soil and Water Conservation, for foresight and leadership.

The importance of the issue back home in Wyandot County is what got Riedlinger and other board supervisors interested. Ohio requires formal petitions for group drainage problems, those that affect multiple landowners. The process was clogged by backlogs and

challenges from environmental groups and some landowners who stood to be assessed for projects. "We brought these groups to the table to discuss how we could continue addressing rural drainage problems. Sometimes maybe you bring in your partners that are somewhat in opposition to what you're doing, and you give them an education," says Riedlinger. "Education of other people was probably one of the biggest things that made this successful."

"Our co-leaders saw the need to address this huge problem on two levels, environmental and agricultural," says Kirk Hines, ODNR engineering administrator. "We made it very much like a watershed, where you pull all the stakeholders in."

The process was an eye-opener on several fronts. It included a survey of 88 SWCDs and a like number of county engineers responsible for drainage projects. In addition to conflicts with environmental organizations that saw drainage as a negative impact, the survey produced other issues not previously identified, including staff and funding shortages, lack of public education and outreach and the need to address environmental concerns.

The report calls on conservation districts and county engineers to heighten public awareness. Also recommended are funding increases, a streamlined review process and an appeals process for landowners/petitioners. It also calls for a more consistent and uniform cost vs. benefit analysis that considers environmental, social, economic and other factors.

Next steps include incorporating some of the recommendations into state statutes and development of a drainage manual that includes a drainage needs assessment tool. The manual will serve as a reference guide for SWCDs, county commissioners and engineers, contractors, stream/wetland mitigation entities, private landowners and residents involved with projects.

A naturalized stream channel design for an Ohio drainage ditch incorporates "benches" and vegetative filters. Sponsors of the model project included Mr. and Mrs. Joe St. John, Hillsdale Soil and Water Conservation District, Hillsdale County, the Hillsdale County Drainage Commission, NRCS and Ohio State University. Funders were The Nature Conservancy and the Great Lakes Commission.

The report offers tables that seek to strike a fair balance for project consideration, depending on environmental values assigned to specific projects. One of the tables outlines a framework to develop incentives and an "economic trading market-driven" approach to ditch design in upland and transition landscapes of agricultural watersheds. Ohio is in the process of drafting new rules on water quality and stream use, and portions of the tables will be incorporated into those rules.

Ohio already has water quality trading, says Hines. Installing drainage BMPs could open the door for public funding from entities like wastewater treatment plants that would invest in reducing nutrients before they arrive at the plant, rather than treating them.

One reason the group reached consensus was the demonstration of need for drainage, especially in western Ohio, where glaciated soils drain poorly. "We've had enough sound information that we can show poor drainage can affect productivity by 30 percent in our glaciated areas in state," says Riedlinger.

The group also came to better understand how changing rural land uses compound the difficulties getting group improvement projects approved. "We used to have five landowners in a group project, and now there are maybe 20 that we have to get approval from to move forward," Hines says. Field trips helped educate group members about the impact of changing land use.

As Riedlinger says, the value of education gained through the process can't be underestimated. "We have aging drainage infrastructure that's affecting everybody. It needs to be fixed. Hopefully the increased public knowledge will lead to funding and support."

More information: Contact Riedlinger at kenmary@udata.com. Contact Hines at kirk.hines@dnr.state.oh.us. Read the drainage report at www.dnr.state.oh.us/tabid/20157/default.aspx.

Monitoring for Oklahoma watershed projects includes collecting data on benthic macro-invertebrate communities in streams.

Monitoring leads to more opportunities

Heightened monitoring on two watershed projects shows that best-management practices work and opens doors to more cost-sharing opportunities.

As watershed-scale conservation work advances across America, monitoring becomes more important to validate spending public resources on voluntary measures aimed at improving water quality.

"Water quality monitoring is essential. You have to collect oodles of data, because what you are doing with water quality monitoring is just taking snapshots at any one time," says Shanon Phillips, assistant director of the Oklahoma Conservation Commission Water Quality Division. Extensive monitoring was part of projects on two impaired waterways, Beaty Creek in eastern Oklahoma and western Arkansas, and Peacheater Creek in eastern Oklahoma. It showed that best-management practices work and opened the door to new funding opportunities for work on other watersheds.

The streams are both part of larger watersheds and are lodged in one of the nation's top poultry-raising regions. Land-spread poultry litter fertilizes grasslands, enhancing their value for livestock grazing. It's a good formula for paired operations, but streams in the watersheds became impaired from overloading of phosphorous and other byproducts of animal agriculture.

The Conservation Commission established locally led watershed advisory groups comprised of stakeholders in the watersheds. The groups identified best-management practices (BMPs) for streams and upland areas. State appropriations were combined with Environmental Protection Agency (EPA) 319 grant funds to provide cost-sharing for producers, and conservation districts played a major role in implementing the projects at the local level.

That's a familiar approach for watershed projects, but the Beaty and Peacheater projects had another important component. EPA provided additional funding for monitoring using a statistical model developed at North Carolina State University. Control watersheds were paired with

project watersheds to gauge the effect of BMPs.

"This paired or nested monitoring allows you separate out impacts of climate over time to focus on changes due to implementation," Phillips says. "You choose watersheds close to one another that have the same weather conditions. Before you move to implementation, you do monitoring in the watersheds and prove that they respond similarly to natural conditions. You can then use the pre-implementation relationship to compare to post-implementation."

Conventional modeling may require 10 to 20 years to show impacts. The paired-watershed approach produces valid data within three years and can detect significant changes within five to 10 years, Phillips says.

Monitoring for phosphorous produced five years of weekly loading estimates. The results for Beaty showed BMPs reduced phosphorous loading by 31 percent. Peacheater had a 71 percent decline. Substantial declines in nitrogen were also recorded, and fish populations increased significantly.

Phillips credits the monitoring results for increased state funding for work in other watersheds and for directing state-federal Conservation Reserve Enhancement Program cost-sharing to some projects to achieve long-term riparian improvements.

But monitoring is only of value if enough BMPs are established to make a difference. Conservation districts and other partners made that happen. In the Beaty watershed, the Delaware County Conservation District in Oklahoma and Benton County Conservation District in neighboring Arkansas played major roles, cooperating with numerous other partners ranging from federal and state agencies to Cooperative Extension and the city of Tulsa. The Peacheater project included the Adair and Cherokee districts working with several other partners.

"These programs that seek to affect agricultural impacts cannot happen without local conservation districts," Phillips says. "Those are the people local producers go to for results." Partners rely on that credibility when new programs are introduced, she says. "It takes time to convince people when you come in with new programs that there aren't going to be negative impacts down the road."

Measuring for stream bank erosion on an Oklahoma stream.

She also credits districts for convincing the state Legislature to increase funding for the state's match to federal grants.

The commission uses some of its project funds to place additional staff in districts to help implement watershed programs. Districts are engaged with outreach, sign-ups, approval of plans and certifying cost-share payments. District board members serve on watershed advisory groups along with other stakeholders. In the case of Peacheater and Beaty, stakeholder members also included agricultural producers, homeowners, minority membership and representatives from the Oklahoma Trust for Public Land.

The Beaty project also featured cooperation and use of EPA funds across state lines. In that project, 63 percent of landowners in Oklahoma and 28 percent in Arkansas installed BMPs that included riparian management, buffers, stream bank stabilization, composters/animal waste storage facilities, pasture management, proper waste utilization and septic systems.

Lessons learned from Oklahoma's projects include the need to focus work on areas that produce the most benefit. "It's important to target implementation toward your most significant sources that affect water quality. In smaller watersheds, it's pretty easy to do that, but in a larger watershed, you can't be everywhere at the same time," Phillips says. The state uses the Source Water Assessment Program favored by EPA to assist in watershed assessment.

The commission has done projects in eight of the state's top 10 priority watersheds. "With the success we've had getting landowners energized and documenting achievements, we're finding new sources of money to support these efforts," she says.

More information: Contact Shanon Phillips at shanon.phillips@conservation.ok.gov. More information on the watershed work is at www.ok.gov/okcc.

Tough problem forged an important tool

NRCS Rapid Watershed Assessments use existing information to provide a big-picture look at watersheds and costs associated with protecting them. The assessments allow conservation districts and partners to identify and apply funding sources to accomplish local conservation goals.

If necessity is the mother of invention, Rapid Watershed Assessments (RWAs) are good examples of what results.

Originally applied to the 2001 water crisis in the Klamath Basin of Oregon and California, Natural Resources Conservation Service (NRCS) RWAs have become valuable planning tools across the country. More than 20 states have used RWAs, and many of those states have done so in multiple watersheds.

RWAs collect existing information to provide initial estimates of where conservation investments will best address the concerns of landowners, conservation districts and other organizations and stakeholders within a watershed. RWAs help conservation districts develop local work plans linked to available program funds and other resources.

Drought and impacts of the Endangered Species Act had more than 1,300 farms and ranches on the ropes with the threat of irrigation water shutoffs in the Klamath Basin in 2001. Tom Makowski, NRCS leader for the water resources planning team in Oregon, says input from the Klamath Soil and Water Conservation District in Oregon and eventually five other districts established four local conservation objectives: irrigated water conservation, fish and wildlife habitat improvement, forest land health and grazing land health. "What they wanted was information to make decisions," Makowski says. Districts wanted a big-picture idea of programs and resources that would be available to sustain producers and address conservation concerns.

"We worked with California and Oregon planning teams. It sounds obvious in hindsight, but we said, 'Let's take the information that's available,' " Makowski says. "The problem was, it was a huge area of public and private land, five million acres out there. We were used to a maximum of 550,000. It was half public and half private land. That's where the idea of watershed boundaries came in. How else could we break this up to do some work on it? We had to prioritize areas. Certain areas had more grazing, other watersheds more irrigated acres. We pulled information together on land use, land cover, precipitation, climate, stream flow data and other areas. We added census and social data on farms and farmers and their history and the history of conservation there. That was the first descriptive piece, a watershed profile."

To this information, the teams added a matrix that included an assessment of current conditions and a table of future conditions that identified appropriate suites of conservation practices available to deal with the local resource concerns for various land uses. Numerous local meetings followed to make sure information corresponded with what conservation districts knew and how they addressed local resource concerns in their business plans.

The tool helped NRCS at the national level to clearly identify needs for policymakers. That led to $50 million being designated for the Klamath Basin in the 2002 Farm Bill.

Their effectiveness highlighted, RWAs were seen as processes that could be replicated in watersheds across the country. Thus, in 2006, was born a new watershed planning tool. RWA teams were assem-

"When you can get people talking to other people in the watershed and they all have a personal interest in what's going on in that watershed, it helps them to see they have the same mission."

Jan Marie Surface
NRCS national watershed planner

NRCS rapid watershed assessments pinpoint resources and land uses within a watershed, from mountains and forests to grazing and other agricultural practices. (NRCS photo)

bled within states and regions. Funding has come from baseline conservation technical assistance appropriations. Initially, the agency sought both external and internal requests for proposals (RFPs) to conduct assessments. But outside organizations didn't have access to enough information to complete assessments, so RFPs are now conducted by agency teams. In addition to national funding, states can choose to use some of their base funding to complete RWAs. "We've had more requests for funding than we have funding available to complete them," says Jan Marie Surface, NRCS national watershed planner.

Makowski is quick to note that because RWAs provide a big picture of watersheds, they aren't specific enough to serve as watershed action plans. "RWAs help get discussion started by providing useful information to people," he says. "RWA really does facilitate the locally led, community-based approach."

RWAs are also reality checks. "What they invariably show is that the price to fix resource concerns is way too expensive for NRCS. What it says is that no one agency is going to be able to solve the problem," Makowski says. Local conservation districts sometimes realize they can do the job cheaper. RWAs also serve to point the way to other agencies that address land uses NRCS doesn't, such as upland forests. Information compiled in RWAs can also be the basis for grant proposals and efforts to corner resources needed to achieve watershed goals.

The assessments serve these and other functions, Surface says. "It could be a good tool to determine where staffing needs might be in the future." Talking to state contacts, she's learned that RWAs connect stakeholders. "When you can get people talking to other people in the watershed and they all have a personal interest in what's going on in that watershed, it helps them to see they have the same mission. This often brings people face to face for the first time, and I think that's invaluable." For the past couple of years, she has encouraged RWA work across state lines.

Previously, RWAs focused on soil, water, air, plants, animals and human impacts. Under the new Farm Bill, energy was added.

Surface sees RWAs as one tool among many to make watershed planning possible. "Although I'm the NRCS national watershed planner, it doesn't have to be our process. Other tools can work, as long as we're getting partners together," she says.

For more on RWAs, visit www.nrcs.usda.gov/programs/rwa/index.html.

Local leadership, innovation run deep in South Dakota

A small group of local landowners and organizations partnered to improve water quality in the Belle Fourche River Watershed. The results are impressive.

ABOUT 10 years ago, a small but determined group of landowners and conservation district representatives decided the time was right to take matters into their own hands. Rather than waiting for outside groups to determine the fate of the huge Belle Fourche River Watershed in western South Dakota and eastern Wyoming and Montana, they decided to get to work themselves.

Thus was born the Belle Fourche River Watershed Partnership, a model that has been showcased for visiting audiences from across the nation. "It was local leadership at its finest and an early innovation in the watershed concept," says project consultant Jared Oswald. "It's the epitome of locally led, and it's successful because they are innovators."

The Butte, Lawrence and Elk Creek conservation districts and the Belle Fourche Irrigation District are voting members of the partnership. It works with dozens of other local, state and national partners to address sedimentation and suspended solids in the South Dakota portion of the watershed, a landscape dominated by rangeland, irrigated cropping and, increasingly, residential development. The group has made steady progress on several impaired segments of the watershed over the past decade.

Tim Reich, president of the group, recalls that the idea was born over a cup of coffee with a friend who worked with the Natural Resources Conservation Service (NRCS). "We were looking at our watershed, and we said we needed to figure out where to prioritize efforts rather than picking up a little piece here and there for the next 50 years," says Reich. He is no stranger to locally led conservation. He's a longtime conservation district leader in South Dakota and a former national officer with the National Association of Conservation Districts.

State and federal officials discouraged them, saying it was too big a task for the small group. But the idea took hold. "We listened to their arguments, developed our counters and finally developed a proposal to do a macro study of the watershed," Reich says. The three-year study was conducted in cooperation with the South Dakota School of Mines and Technology. The study produced solid data that helped the fledgling partnership begin to address watershed issues. An NRCS watershed analysis was conducted in conjunction with the study, further solidifying the group's data.

"We wanted to establish that with the farming, ranching, mining and some urban development in the watershed, we were doing some things responsibly," Reich says. We established a base that said we can do things better in some areas, but also that said we're doing some things right."

If success is measured in dollars, the partnership has had its share. Total investment in the watershed work has exceeded $9 million. That includes $2.5 million in Environmental Protection Agency 319 funds, $3.7 million from local and state sources and $2.5 million in federal funds from sources such as the Environmental Quality Incentives Program (EQIP). A 2007 NRCS Conservation Innovation Grant of $500,000 is funding development of a Web-based interactive irrigation scheduling calculator customized for producers.

The focus of the partnership's efforts has been improving irrigation and rangeland practices, based on a 10-year Strategic Implementation Plan. It includes applying best management practices (BMPs) such as replacing open canals and laterals with pipelines, addressing unused water storage ponds, improving grazing management through the use of rota-

> **"It was local leadership at its finest and an early innovation in the watershed concept. It's the epitome of locally led, and it's successful because they are innovators."**
>
> *Jared Oswald*
> *Project Consultant, Belle Fourche River Watershed Partnership*

Success accomplished by the Belle Fourche River Watershed Partnership has drawn tour groups from across the U.S.

tional grazing and providing off-stream water supplies for livestock. Producers in the irrigation district have relied on flood irrigation in the past. Several have converted to center-pivot systems, which increases efficiency dramatically and eliminates the flow of sediment-laden water into the river.

Cost-sharing on BMPs has come from 319 grants, state support and Farm Bill program funds. "The partnership has piggy-backed with EQIP to help producers," Oswald says. "The partnership works well with NRCS. The NRCS staff has good relations with the community. Maybe a producer doesn't qualify for EQIP, but the staff may be able to connect him to the partnership and its programs," says Oswald.

> **"We can get a lot done if we really, truly don't care who gets the credit."**
>
> *Tim Reich*
> *President, Belle Fourche River Watershed Partnership*

Oswald credits targeted implementation of practices for water quality gains. "We're using modeling to determine where to put practices. It provides the biggest bang for the buck," he says. The long-term goal is to have the Belle Fourche River meet all of the water quality standards for the river's uses, including providing water to residents, livestock and agriculture.

Reich is concerned about the need to address the whole watershed and also about the rapid increase in residential development. But he's convinced that the decision to put local talent to the task of protecting the watershed was right. Not that he's looking for attention. "We can get a lot done if we really, truly don't care who gets the credit," he says, adding: "Resource work is never done."

Contact Tim Reich at 605-892-4366. More on the partnership is at www.bellefourchewatershed.org.

Stream bank restoration was an early accomplishment of Catawba Landcare.

Landcare success starts with landowners

Landcare helps shape conservation from the ground up in two regions of the state. The results are citizen-led sustainable land use efforts that support local economies and the environment.

THE Landcare movement made its way from Australia to America several years ago. In Virginia, it is described as a cooperative, sustainable approach to land management that produces economic, social, and environmental benefits desired by landowners and their partners.

With support from the Virginia Tech Landcare Center and other partners, two Landcare organizations have emerged. Catawba Landcare and Grayson Landcare share a common trait: Their actions are driven by local citizens who identify issues and actions. Conservation districts will recognize this approach for its similarities to their locally led process.

Catawba Landcare in southwest Virginia was formed by a group of landowners in the Catawba Valley. It works to encourage a healthy and sustainable environment in the Catawba Creek and North Fork watersheds and promotes open space across Roanoke and Montgomery counties. Landowners make up the core group, but a variety of other partners participate in meetings.

Grayson Landcare near the North Carolina border is comprised of farmers, landowners and other residents concerned about economic and environmental problems and retaining the rural character of the Appalachian landscape of southwest Virginia.

The groups focus on what they want the land to look like in the future and what steps can be taken to get there. They deal with similar issues, including rapid increases in land values, development and encroachment on rural lands.

The Catawba group gathers to socialize and explore issues and opportunities, says Coordinator Christy Gabbard. "People are at the same level, talking about things that matter at the community level. Landowners say it's a different way of learning, and it's non-threatening.

Caring for the land is the crux of their interest, but coming out of it is the idea of building community networks."

The group has worked some with the New River and Blue Ridge conservation districts, and Gabbard sees opportunities for more engagement in Landcare, especially to facilitate and coordinate for new groups.

In its brief existence, Catawba Landcare's work includes community-driven stream restoration efforts on a tributary of the Roanoke River. It focused on restoring trout habitat and improving water quality. Funds from the Virginia Department of Game and Inland Waters provide cost sharing of 90 percent. One landowner restored 2,500 steam feet. More than 8,000 stream feet will be restored this year. Other benefits include protecting reservoirs that provide community drinking water.

Sustainable working lands projects are explored at a 400-acre farm owned by Virginia Tech, where the Landcare group has focused on developing innovative initiatives and the markets needed to support them. Among several projects, the group is experimenting with growing warm season grasses for forage and bioenergy. Talks are under way with Catawba Hospital, located across the road, which is interested in using the grass as a fuel source for its boiler. "The hospital is very interested, but we will not be able to supply enough, so we'll have to connect with landowners to grow feedstock as well," she says.

The farm is also being used to provide community trails, showcase low-impact development and agroforestry, and develop protocols and guidelines for stream bank mitigation credits. Landowners are experimenting with community-supported agriculture, raising pollinator bees and developing a local foods distribution center.

Grayson Landcare Coordinator Jerry Moles' work for New River Land Trust led him to Landcare. Conservation easements can help preserve rural character, but developing sustainable working lands activities is also important. "If you're going to work with the land, you have to work with the people on it," he says.

Frequent meetings of landowners and other stakeholders are key organizing activities for Landcare organizations such as Catawba and Grayson in Virginia. Landowners set the agenda, and attendees say the meetings are informational and non-threatening.

That approach led to the formation of Grayson Landcare and some of its projects. Several landowners agreed to work together to use rotational grazing to raise value-added "natural" beef. They focus on serving local markets to sustain sales and control costs.

Landowners also set up the Blue Ridge Forestry Cooperative. With 2,500 acres in the co-op, the group obtained grant funds to develop markets. Sustainable forestry is a goal. "We focus on each tree as part of a portfolio. If you don't touch a wild cherry tree, it will gain 17 percent value a year. This is how you do timber stand improvements," he says.

Grayson Landcare also holds an essay competition for high school kids focusing on how they can sustain themselves, the local environment and their cultural heritage. It hosted the first national Landcare workshop in October 2007. As a byproduct of that meeting, the group is now exploring a Fuels for Schools program. It is also extending into six neighboring counties, three in North Carolina and three in Virginia, to explore community development under a USDA Rural Development Business Opportunities Grant.

Partners include the New River Highland Resource Conservation and Development, and the New River and Skyline soil and water conservation districts, along with Natural Resources Conservation Service. But the decision-making rests with landowners. David Robertson heads the Landcare Center at Virginia Tech. "We try to not get ahead of landowners and local community. We want them to be responsible, rather than use a top-down approach," he says.

More information: Contact Christy Gabbard at cgunnels@earthlink.net. Jerry Moles can be reached at jmoles@igc.org. Contact David Robertson at davidrobertson@vt.edu. Catawba Landcare's web site is www.catawbalandcare.org. Grayson Landcare's web site is www.graysonlandcare.org.

Streambank restoration work on the Tongue River is part of an effort to improve watershed health in Sheridan County, Wyoming.

Local folks boost Wyoming watershed work

"Local" is the key word as the Sheridan County Conservation District, NRCS and stakeholders guide watershed assessment, planning and improvement projects on three watersheds.

RESIDENTS of Sheridan County, Wyoming, consider water resources issues among their major conservation concerns. Folks in this rugged and beautiful country also like to find local solutions to local problems.

Knowing those facts has helped the Sheridan County Conservation District to take a leading role as it works in three watersheds. "We are the local folks here," says District Manager Carrie Rogaczewski. "That's what we have as our mission and defining principles."

A district survey in 2001 showed that 60 percent of respondents identified water resources among their top concerns. By that time, work was well under way on the Upper Tongue River Watershed. Water sampling in 1996 by the district and the Natural Resources Conservation Service showed that coliform bacteria levels were high. "Actually, that watershed had not been found by the state to be impaired.

It's something we found as part of our process," she says.

That process includes watershed assessment, plan development and implementation, all guided by local input. District materials note: "Watershed planning is a locally led, voluntary, and dynamic process driven by the expectations of the stakeholders and developed through active, public participation."

A steering committee was formed as part of the assessment process for the Upper Tongue. It included representatives from towns, ranchers with large stakes and landowners of smaller parcels. "We met with them periodically throughout the assessment, and they identified coliform bacteria as the biggest issue in the county," she says. Broader public involvement was then incorporated as the steering committee wrote a plan of action.

A series of public meetings helped to shape the action plan. As part of plan development, landowners also identified other issues and concerns important to the watershed, such as sprawl and aesthetics. "The exciting thing happening is groups that typically don't talk to each other are at the table," Rogaczewski says.

Mailings and other outreach efforts keep those who don't attend meetings engaged and informed.

The Upper Tongue plan was updated in 2007, and it has provided a variety of cost-share options. Ranchers can receive help for relocating corrals, installing stream bank buffers, permanent cattle crossings and fish-friendly structures for irrigation diversions. Failing septic systems known to have a possible impact on water quality are eligible for 50-percent cost sharing for replacement.

Work on another watershed, Goose Creek, started in 2001, in response to the stream being listed as impaired by the state because of bacteria. The process was similar, although the steering committee was comprised of representatives of the district and the city and county of Sheridan. Public input was incorporated in plan development. "Each watershed is a little different. They are different people. You get to know them and how they like to function. Goose Creek is more formal," she says.

A restored site along the Tongue River sports a healthy stream bank and protective vegetation.

A third watershed, Prairie Dog Creek, is in the second year of assessment after the state identified it as impaired. "We're not trying to counter that, but an assessment gives us information we don't have. We're also engaging landowners to get access and permission, getting them interested in the watershed early on. It's the foundation of it all," Rogaczewski says.

In all cases, the watershed plan includes a progress register to track long-term changes. With limited resources, the district samples for water quality every three years. Over time, the impact of improvement measures logged on the register will become more apparent.

EPA 319 grants administered by the state have supported planning and assessment, and municipalities have provided matching dollars. Projects are funded by 319 and state Department of Agriculture grants. NRCS Environmental Quality Incentives Program cost-sharing supports improvements on working lands. Wyoming Game and Fish has provided funding for fish passages.

Sheridan is a small district with limited resources. Its partnership with NRCS staff is invaluable, Rogaczewski says. "We call ourselves 'the partnership.' We share personnel, vehicles and resources." The state Department of Environmental Quality has an office in Sheridan, and cooperation there is excellent, she adds.

There will be challenges in the future – Goose Creek is scheduled to be the first watershed in the state to be assigned total maximum daily loads for pollutants. But thanks to the heavy local involvement that serves as the bedrock of the watershed process, local folks better understand their watershed and its needs.

More information: Contact Rogaczewski at carrie.rogaczewski@wy.nacdnet.net. More information on the partners' watershed work is at www.sccdofwyo.org.

Partners in Watershed and Landscape Work

Central to the work America's conservation districts are doing on watersheds and landscapes are robust partnerships. Conservationists across America who helped us prepare this report provided ample evidence of the value and importance of these relationships. Here we provide a list of some of the partners who played important roles in the case studies we feature. It is not meant to be all-inclusive list of partners for every project, but it does illustrate the wide range of partners willing to participate in the important work of watershed and landscape protection.

Alabama
Alabama Soil & Water Conservation Committee
Alabama city and county engineers
Alabama Cooperative Extension
Alabama county governments
Alabama Department of Environmental Management
Alabama soil and water conservation districts
Alabama State Forestry
US Environmental Protection Agency
US Fish and Wildlife Service
USDA Natural Resources Conservation Service

Alaska
Homer Soil and Water Conservation District
Biologists
City of Homer
Contractors
Excavators
Real estate agents
Soil scientists
Wetland scientists
Surveyors

California
Cooperative Extension
Tahoe Regional Planning Agency
Tahoe Resource Conservation District
USDA Natural Resources Conservation Service

Colorado
Agricultural producers
Cope, Yuma, Washington conservation districts
US Environmental Protection Agency
USDA Agricultural Research Service
USDA Natural Resources Conservation Service

Georgia
Baker, Calhoun, Early, Miller and Mitchell counties
Flint River Soil and Water Conservation District
The Nature Conservancy
Georgia Agricultural Innovation Center
University of Georgia Environmentally Sound Production Agriculture Laboratory
USDA Natural Resources Conservation Service

Hawaii
Big Island Resource RC&D Council
Community volunteers
Cornell University Field Program in Earth Systems Science
Hawaii Department of Health
Local K-12 schools
Outdoor Circles of community members
Starbucks Team volunteers
Service men and women from Department of Defense Pohakuloa Training Area
USDA Natural Resources Conservation Service

Indiana
Agricultural producers
Businesses (canoe rentals, banks, sports stores)
Churches
City and county plan commissions, park departments and surveyors
College professionals (Goshen and Merry Lea)
County commissioners (Elkhart, Kosciusko, LaGrange and Noble)
Elkhart River Restoration Association
Elkhart River Alliance
Elkhart, Noble, LaGrange and Kosciusko County Soil and Water Conservation Districts
High schools (all in watershed)
Indiana Department of Natural Resources
Industry (Construction, developers, utilities, recreational vehicle businesses)
Lawmakers (all in the project area)
Municipalities (all in watershed)
Purdue Cooperative Extension
Wawasee Area Conservancy Foundation
Pheasants Forever, Quail Unlimited and other sportsmen groups
Riverside property owners
Service organizations (Kiwanis, Rotary, Optimists, Lions)
USDA Natural Resources Conservation Service
Youth organizations (FFA, Boys and Girls Club, 4-H)

Kansas
Agricultural producers
Conservation districts from 13 counties
Kansas Department of Health and Environment
Kansas Rural Center
Kansas State Extension
Kansas Water Office
Lake Region RC&D Council
USDA Natural Resources Conservation Service
US Environmental Protection Agency

Kentucky
Kentucky conservation districts: 14 counties
Kentucky Department of Fish and Wildlife Resources
Kentucky Divisions of Conservation, Forestry and Water
The Nature Conservancy
USDA Farm Service Agency
USDA Natural Resources Conservation Service

Louisiana
Acadiana RC&D Council
Agricultural enterprises and businesses
Coulee Baton Gravity Drainage District
Gulf of Mexico Program
Homeowners
Landowners
Louisiana Cooperative Extension Service
Louisiana Departments of Agriculture, Environmental Quality, Forestry and Natural Resources
Louisiana State University AgCenter
Tarleton University (Texas Institute for Applied Environmental Research)
University of Louisiana at Lafayette
US Environmental Protection Agency
USDA Natural Resources Conservation Service
USDA Farm Service Agency
Vermilion Parish Police Jury
Vermilion Soil and Water Conservation District

Maine
Business interests
Citizens throughout the watershed
Kennebec Soil and Water Conservation District and four other SWCDs
Kennebec Valley Council of Governments
Land trusts (regional and municipal)
Maine Department of Conservation
Maine Rivers
Maine Department of Agriculture and other state agencies
Maine Farmland Trust
Municipal officials
Natural Resources Council of Maine
Sportsmen's Alliance of Maine
Trails groups
Trout Unlimited

Michigan
Calhoun, Thornapple-Grand and Jackson County Conservation Districts
Michigan Department of Agriculture, Environmental Stewardship Division (ESD)
Michigan Department of Natural Resources Wildlife Division, Fisheries Division and Habitat Management Unit
Michigan Department of Environmental Quality Nonpoint Source Program
Potawatomi RC&D Council
Calhoun, Eaton & Jackson County Drain Commissions
Calhoun County Community Development
Calhoun County Chapter of Wild Ones
Cities of Battle Creek, Marshall & Charlotte
Ducks Unlimited – Great Lakes/Atlantic Regional Office
The Southwest Michigan Land Conservancy
Kalamazoo Valley Chapter of Trout Unlimited
Pheasants Forever
The Wild Ones
US Fish and Wildlife Service
USDA Natural Resources Conservation Service
USDA Farm Service Agency

Minnesota
Army Corp of Engineers
Carlton County
Carlton County Soil and Water Conservation District (Minnesota)
Douglas County Land Conservation Department (Wisconsin)
Lake Superior Steelhead Association
Local citizens and landowners

Minnesota Pollution Control Agency
Minnesota DNR Fisheries and Forestry
Potlatch Corp./Sappi Fine Papers
St. Louis River Citizens Action Committee
Trout Unlimited
University of Minnesota Extension Service
USDA Forest Service
USDA Natural Resources Conservation Service

Montana
Agricultural producers
Conservation districts (15)
Landowners
Montana Department of Natural Resources
Sportsmen's groups
US DOI Bureau of Land Management
US Fish and Wildlife
USDA Forest Service
USDA Farm Service Agency
USDA Natural Resources Conservation Service

Nebraska
Communities and citizens of Bellevue, Girls and Boys Town, Gretna, La Vista, Omaha, Papillion, Ralston
Counties of Douglas and Sarpy
Papio-Missouri River Natural Resources District

Nevada
Americorps
Cooperative Extension
Mason Valley and Smith Valley Conservation Districts
Nevada Departments of Agriculture and Wildlife
Nevada schools
US Fish & Wildlife Service
US Forest Service
USDA Natural Resources Conservation Service
Weed control districts
Walker River Basin Cooperative Weed Management Area
Walker River Irrigation District
Western Nevada RC&D Council
Counties of Washoe and Douglas
Fire protection districts
Municipalities
National Fish and Wildlife Foundation
Nevada Divisions of Environmental Protection and State Lands
Nevada Tahoe Conservation District
USDA Natural Resources Conservation Service

New Hampshire
Great Bay National Estuarine Research Reserve
New Hampshire Department of Environmental Services Coastal Program
New Hampshire Fish and Game Department
New Hampshire Department of Transportation
New Hampshire Department of Agriculture, Markets & Food
New Hampshire Department of Resources and Economic Development
Rockingham County Conservation District
The Nature Conservancy
University of New Hampshire Cooperative Extension
US Forest Service
USDA Natural Resources Conservation Service

New Jersey
Camden, Burlington, Gloucester and Cape-Atlantic soil conservation districts
Municipalities
New Jersey Departments of Environmental Protection and Agriculture
New Jersey State Soil Conservation Committee
Rowan University
Rutgers University
USDA Natural Resources Conservation Service

South Dakota
Belle Fourche Irrigation District
Butte, Elk Creek and Lawrence County conservation districts
Lawrence County
South Dakota Conservation Commission
South Dakota Department of Agriculture
South Dakota Department of Environment and Natural Resources
South Dakota Game, Fish and Parks (SD GF&P)
South Dakota Grassland Coalition
South Dakota School of Mines and Technology
South Dakota State University
US Bureau of Reclamation
US Environmental Protection Agency
US Geological Survey
US Fish and Wildlife Service
USDA Natural Resource Conservation Service
Wyoming Department of Environmental Quality

Ohio
Allen, Defiance, Delaware, Fairfield, Seneca Soil and Water Conservation Districts
Auglaize, Madison, Ottawa, Wood County engineers
County Commissioners Association of Ohio
County Engineers Association of Ohio
Darby Watershed Project
Ohio Association of Soil and Water Conservation District Employees
Ohio Department of Agriculture
Ohio Division of Natural Areas and Preserves
Ohio Division of Soil and Water Conservation
Ohio Environmental Council
Ohio Environmental Protection Agency Division of Surface Water
Ohio Farm Bureau Federation
Ohio Federation of Soil & Water Conservation Districts
Ohio Land Improvement Contractors Association
Ohio Soil and Water Conservation Commission
Ohio State University Department of Agricultural, Environmental and Developmental Economics and Department of Food, Agricultural and Biological Engineering
The Nature Conservancy, Ohio Chapter
USDA Agricultural Research Service
USDA Natural Resources Conservation Service

Oklahoma
Adair, Cherokee and Delaware County Conservation Districts, Oklahoma
Agricultural producers
Animal waste marketers
Arkansas Soil and Water Conservation Commission
City of Tulsa
Benton County Conservation District, Arkansas
City of Tulsa
Homeowners
Minority representatives
Oklahoma Cooperative Extension
Oklahoma Conservation Commission
Oklahoma Department of Agriculture
Oklahoma Trust for Public Lands
US Environmental Protection Agency
US Geological Survey
USDA Farm Service Agency
USDA Natural Resources Conservation Service

Virginia
Agricultural producers, forest owners and landowners
Carroll, Catawba, Floyd, Grayson, Roanoke, Montgomery and Withe counties, Virginia
Allegheny, Nash and Watauga counties, North Carolina
Carroll Grayson Cattle Producers
National Fish and Wildlife Foundation
New River Highland RC&D Council
Blue Ridge, New River and Skyline Soil and Water Conservation Districts
New River Land Trust
USDA Forest Service
USDA Natural Resources Conservation Service
Virginia Farm Bureau Federation
Virginia Tech
Virginia Department of Game and Inland Fisheries, Department of Agriculture

Wyoming
Agricultural producers
City and County of Sheridan
Communities
Landowners and other interested citizens
Sheridan Conservation District
US Environmental Protection Agency
USDA Natural Resources Service
Wyoming Departments of Environmental Quality, Agriculture and Game and Fish

This report was prepared by communications specialist Bill Berry, Stevens Point, Wisconsin, with oversight provided by NACD project managers Rich Duesterhaus and Debra Bogar. Design by Huston Design, LLC, Madison, Wisconsin.

conserving natural resources

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