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#68

Nonpoint Source News-Notes

The Condition of the Water-Related Environment
The Control of Nonpoint Sources of Water Pollution
The Ecological Management & Restoration of Watersheds

Commentary

EPA Leading Effort to Safeguard Nation's Waters

In response to the events of September 11, 2001, the U.S. Environmental Protection Agency (EPA) significantly increased its efforts in defending the nation's water infrastructure against terrorist attack. As EPA's Assistant Administrator for Water G. Tracy Mehan III says, "Doing our part to increase the security of water and wastewater systems is one of EPA's top priorities this year." A major step in that effort was the establishment of the Water Protection Task Force in October 2001. Housed in the Office of Water, the all-EPA Task Force includes experts in a variety of subjects, including drinking water and wastewater treatment, security, training and outreach, and funding. The goal of the Water Protection Task Force is to help make drinking water and wastewater utilities as safe as possible, as quickly as possible. Working with the states, tribes, utilities, and other appropriate partners, EPA strives to provide utilities with the best information and tools available to reduce their vulnerability to terrorist attacks. As might be imagined, this effort is being pursued on an accelerated schedule.

The Universe of Drinking Water and Waste Water Systems

The Water Protection Task Force works with a very large and diverse population of water and wastewater utilities. Of the approximately 168,000 public water systems in the United States, 54,000 are community water systems that supply water to 264 million people. Approximately 80 percent of the population in the United States is served by only 7 percent of the systems—large utilities that serve more than 10,000 people each. The great majority of systems, conversely, are small and serve relatively small populations. On the wastewater side, 20 percent of the approximately 16,000 publicly owned wastewater treatment works serve the major metropolitan areas and consequently a large portion of the population.

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All issues of News-Notes are accessible on EPA's website: www.epa.gov/OWOW/info/NewsNotes/index.html

The Mission of EPA's Water Protection Task Force

The Water Protection Task Force works with the states, tribes, utilities, and other appropriate partners, focusing on six major areas:

- ***Developing tools***– vulnerability assessment methodologies and emergency operations guidelines.
- ***Offering training***– for drinking water and wastewater utility managers and operators.
- ***Providing technical and financial assistance***– to support enhanced security at utilities.
- ***Supporting information sharing***– to provide secure communications on threats and incidents among utilities, law enforcement, and other relevant parties.
- ***Undertaking research***– to improve the information and technologies needed to enhance security for water and wastewater utilities.
- ***Networking***– with a wide variety of organizations with related interests and responsibilities.

Using an information system developed in partnership with the Association of Metropolitan Water Agencies (AMWA) and several other water organizations, the Task Force sends notices to utilities. AMWA also uses this system to send out special alerts from the FBI. Early notices have outlined:

- Recommended security measures, including working closely with local law enforcement;
- Resources available;
- Training offered; and
- Advice on monitoring and treatment.

To date, the Task Force has reached hundreds of people—those who run the daily operations at drinking water facilities across the country—through training programs with the American Water Works Association (AWWA) and the AWWA Research Foundation. These programs provide information on general security practices as well as methods to assess vulnerabilities for drinking water systems.

"We've been working with Sandia National Laboratory for some time to develop a set of tools that will help large drinking water utilities assess their vulnerability," said Bob Bostock, Assistant to the Administrator for Homeland Security, adding "so, fortunately, they were able to put this effort on a fast track to completion." Sandia will provide training to selected firms in the performance of vulnerability assessment methodology — known as Risk Assessment Methodology for Water Utilities (RAM-WSM). These firms will then be asked to train others who can also assist utilities with their security planning.

The Agency received a $53 million supplemental appropriation from Congress to improve the safety and security of the nation's water supply through grants to publicly owned, large drinking water systems. Collectively, these large systems provide drinking water to nearly half of those Americans served by public water systems. The grants may be used to support vulnerability assessments, remediation planning, or emergency plan development. EPA expects to award these grants early this summer.

EPA is also working with the states, tribes, and utility organizations to determine the best methods for meeting small and medium drinking water and wastewater system needs. EPA will use a significant portion of FY 2002 funds to provide training, development and distribution of tools, and technical assistance.

EPA also works closely with the Association of Metropolitan Sewerage Agencies (AMSA) and Water Environment Federation to develop and disseminate tools for wastewater system operators. AMSA has developed legal and security checklists for large wastewater utilities, and is currently developing a vulnerability assessment methodology tool.

Through fast-paced, action-oriented partnerships, the Task Force has set an ambitious path for protecting our nation's water infrastructure. But, as Assistant Administrator Mehan points out, "the federal government is only one soldier in the battle. Communities across the country need to take action to protect our water resources and the health of our citizens."

[For more information, visit the EPA Water Infrastructure Security web site at www.epa.gov/safewater/security.]

Notes on the National Scene

319 Success Stories Volume III Released

Section 319 Nonpoint Source Success Stories Volume III describes the successful implementation of the section 319 Clean Water Act Nonpoint Source Program. The report provides examples of solutions to a variety of water quality problems caused by nonpoint source pollution. The report features approximately two success stories from each state and also includes special sections on tribal successes, innovative ideas, and noteworthy education and funding projects.

The stories primarily demonstrate water quality improvements, a return to water quality standards, or other objective evidence of improvement in the water or in the habitat associated with the water. Many of the stories also document specific pollutant reductions or other measurable improvements attributed to the 319 project, such as increased shade for temperature-impaired waters and improved streamside habitat. The stories highlight the range of best management practices, training programs, and other activities implemented to achieve these successes, as well as the funding sources and other partners that contributed to the successful project. From FY 1990 through 2001, EPA awarded an aggregate of more than $1.3 billion to states and territories under section 319. Funds available for grants in FY 2001 alone have increased to more than $237 million, which is nearly double the FY 1998 appropriation.

The document is now available online at www.epa.gov/owow/nps/Section319III.

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Taking the TMDL Program to the Public

EPA recently made great strides toward improving its Total Maximum Daily Load (TMDL) program. The updated TMDL regulation, published on July 13, 2000, generated lawsuits and congressional opposition. The controversial regulation, which never went into effect, is now being reviewed and revised by EPA. During fall 2001, EPA conducted five public meetings to solicit stakeholder perspectives on key TMDL and related National Pollutant Discharge Elimination System (NPDES) issues. EPA will use the information received at these public listening sessions as it considers changes to the regulations governing the TMDL program and related areas of the NPDES program. EPA plans to propose modifications in mid-2002 and hopes to issue a new rule in spring 2003.

Each of the first four public meetings revolved around a specific theme chosen to help focus the discussion. "EPA selected the themes based on the key issues that they anticipated would be raised at the meetings," explained Anne Weinberg of EPA's Office of Water. "The themes allowed us to explore each key issue in depth." The meeting themes included: Implementation of Nonpoint Source TMDLs (Chicago, IL – October 22 and 23); Scope and Content of TMDLs (Sacramento, CA – November 1 and 2); EPA's Role in TMDLs, the Pace/Schedule for Development of TMDLs, and NPDES Permitting Pre- and Post-TMDL (Atlanta, GA – November 7 and 8); and Listing Impaired Waters (Oklahoma City, OK – November 15 and 16). At the fifth meeting, in early December in Washington, DC, EPA provided a summary of the input received at the first four public meetings and encouraged additional input from the participants.

The meetings generated good will, noted Weinberg. "We had a great turnout — between 120 and 300 people joined us at each location. Also, people liked the meeting format. We innovatively used small groups to focus on specific issues related to each meeting's theme. Each group generally consisted of no more than 10 people and an EPA facilitator." This format allowed EPA to record many detailed and comprehensive comments.

Taking the TMDL Program to the Public (continued)

When asked for feedback on TMDL listing issues, including the timing, scope, list credibility, data and information, and public review aspects, the participants

- generally supported the integration of section 305(b) with section 303(d) lists so that the lists can be viewed in context of all waters of the state (note: this process is already underway – see "EPA Issues New Integrated Water Quality Reporting Guidance" on page 5 for more information);
- believed that better/more monitoring data and improvements in water quality standards are needed as a base for listing decisions;
- noted that states' listing methodologies are important;
- suggested that longer listing cycles would allow for more focus on TMDL development; and
- asked for clearer delisting criteria.

When asked for feedback on nonpoint source TMDL implementation, including issues such as how to ensure TMDLs are implemented and whether the technical tools, authorities/programs, and funding sources are available to ensure implementation, the participants

- agreed that implementation of TMDLs is important; however, attendees were divided about whether to require implementation plans as part of TMDLs;
- believed that TMDL implementation should be locally driven; and
- identified the gaps limiting effective implementation as (1) financial resources; (2) coordination between EPA and other agencies; (3) public participation, outreach, and need for information and education at the local level; and (4) monitoring and data.

When asked for feedback on the scope and content of TMDLs, including issues such as how to encourage stakeholder involvement in the allocation process and whether TMDLs are appropriate for all impaired waters and pollutants, the participants

- provided mixed feedback on how specific TMDLs should be (e.g., gross allocations for point and nonpoint sources versus more specific allocations);
- believed that EPA should allow for different types of analyses for different types of TMDLs;
- expressed a need for equity between point sources and nonpoint sources in TMDLs;
- asked for EPA to allow flexibility in TMDLs as knowledge/local conditions change (adaptive management); and
- said that they need more state funding for TMDL development.

When asked for feedback on EPA's role in TMDL development, including issues such as how EPA can most effectively support and ensure state TMDL development and what EPA should do in response to states' action or inaction, the participants

- agreed that EPA has an important oversight role;
- believed that EPA should participate in interstate watershed TMDL development more actively than in watersheds that are wholly within a single state (to serve as a consistent information resource and mediator for the numerous parties involved in interstate water issues);
- said that 30 days is not long enough for EPA's review of lists and TMDLs;
- noted that reasonable assurance is a critical issue; and
- recommended that states implement a rotating basin cycle for permitting and other water quality management activities.

The public also offered feedback on other aspects of the TMDL program. They noted that:

- There is a need to account for existing federal, state, and local programs that serve the same functions.

Taking the TMDL Program to the Public (continued)

- EPA and states should encourage development of TMDLs by third parties.
- They generally support the watershed approach.
- EPA needs to provide more guidance on a variety of issues including TMDL development, NPDES/TMDL issues, and pollutant trading.
- TMDLs are necessary but should not drive out other important work.

To view more comprehensive summaries from the meetings or for more information about the TMDL program, visit EPA's TMDL web site at www.epa.gov/owow/tmdl.

[For more information, contact Anne Weinberg, U.S. EPA, Office of Water, Watershed Branch (4503T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1217; e-mail: weinberg.anne@epa.gov.]

EPA Issues New Integrated Water Quality Reporting Guidance

In November 2001 EPA issued the final 2002 *Integrated Water Quality Monitoring and Assessment Report Guidance* , which affects the way states, territories, and authorized tribes report their water quality information. The guidance recommends an "Integrated Report" that will satisfy Clean Water Act requirements for both section 305(b) water quality reports (summarizes the state's water quality data for monitored waterbody segments) and section 303(d) impaired waters (TMDL) lists (identifies the state's waterbody segments that do not meet water quality standards and explains why). The objectives of this guidance are to help states, territories, and authorized tribes strengthen monitoring programs, encourage timely monitoring to support decision making, monitor increased numbers of waters, and provide a full accounting of all waters and uses. It encourages a rotating basin approach, strengthens assessment methodologies, and will lead to improved public confidence in assessments and lists.

Integrated Reports will include the following information:

- Delineation of water quality assessment units (AUs) based on the National Hydrography Dataset.
- Status of and progress toward achieving comprehensive assessments of all waters.
- Water quality standard attainment status for every AU.
- Basis for the water quality standard attainment determinations for every AU.
- Additional monitoring that may be needed to determine water quality standard attainment status and, if necessary, to support development of TMDLs for each pollutant/AU combination.
- Schedules for additional monitoring planned for AUs.
- Pollutant/AU combinations still requiring TMDLs.
- TMDL development schedules reflecting the priority ranking of each pollutant/AU combination.

With the exception of the monitoring schedules and the delineation of assessment units, all of the data and information needed to support the Integrated Report was requested in guidance for earlier 305(b) reports and 303(d) lists. The data and information will simply be conveyed in a different manner in the 2002 Integrated Report.

To allow states, territories, and authorized tribes time to incorporate some or all of the recommendations suggested in its new guidance, EPA issued a rule on October 18, 2001 that delays the submission date of 2002 303(d) lists by 6 months to October 1, 2002. For a copy of the 2002 *Integrated Water Quality Monitoring and Assessment Report Guidance*, visit www.epa.gov/owow/tmdl/policy.html.

New Reporting Requirements for Section 319 Grants

On September 27, 2001, EPA announced the final changes to reporting requirements for nonpoint source grants under section 319 of the Clean Water Act. Effective in fiscal year 2002, the new data to be reported reflects a year and a half of deliberations by the Results Work Group, one of the seven State/EPA Nonpoint Source Partnership groups formed by EPA and the Association of State and Interstate Water Pollution Control Administrators to improve the quality of nonpoint source programs nationally (see *News-Notes* #63 for more information on the work groups). EPA currently plans to upgrade its computer tracking system this summer to enable new data entry. The information will also be available to the public.

The most significant newly required reporting elements include:

- More precisely geolocating section 319 projects, enabling projects to be linked to information from section 303(d) and other programs, and allowing tracking of water quality improvements.
- Reporting, where applicable, load reductions for nutrients and sediment.
- Reporting, where applicable, acres of wetlands restored and created and feet of streambank protected and stabilized.
- Providing a cost breakdown by main source category after project closeout.
- Providing a full description of each project.

The announcement and more detailed changes are available online at www.epa.gov/owow/nps/Section319/grts.html. For more information, contact Romell Nandi, U.S. EPA, (4503T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1203; e-mail: nandi.romell@epa.gov.

Stakeholders Have Their Say

Want to know what others are doing to manage their watersheds? Be sure to read EPA's new document *Protecting and Restoring America's Watersheds: Status, Trends, and Initiatives in Watershed Management.* The document highlights successful projects, programs, and coordination efforts recently implemented across the country by diverse watershed stakeholders. It presents selected case studies and evaluates programs and partnerships representative of the ongoing national effort to encourage adoption of the watershed management approach. It also highlights the need for improvement in several watershed management program areas including development and maintenance of partnerships, evaluations of project success, efforts to monitor and perform assessments of watersheds, and coordination between government agencies.

One case study highlights a successful watershed management project in the Blackfoot River watershed in Montana, where stakeholders designed a comprehensive collection of watershed education and awareness programs. The Blackfoot Challenge, a grassroots organization, uses this information to sponsor teacher education programs that demonstrate how teachers can blend watershed resource education activities into their existing curricula. The organization also hosts workshops on weed management and alternative ranch income (e.g., ecotourism and guest ranching) for private landowners in the watershed. Wildlife management experts hold meetings about threatened and endangered species in the watershed such as grizzly bears, wolves, bull trout, and west slope cutthroat trout. These education programs have helped change land-use habits in the watershed and improve watershed health.

The report also highlights a section 319 funded grassland enhancement project in New Mexico where a partnership is working to preserve native species threatened by habitat modification. Valle Grande Grass Bank provides the opportunity to rehabilitate intensely used rangelands in northern New Mexico. Managed by The Conservation Fund, a nonprofit organization, in partnership with ranchers, environmentalists, and Forest Service personnel, the Grass Bank provides alternative grazing lands so that ranchers can rest and restore their home pastures. Ranchers deliver their cows to the Grass Bank and plant their overused lands with desired vegetation. Ranchers usually participate in the Grass Bank for several growing seasons to allow the new vegetation to become established and resilient.

The report categorizes case studies, program descriptions, and feedback from multiple stakeholders based on the watershed framework, including the watershed approach, local citizen leadership and active support, and state and federal support and coordination.

[To view the report online, visit www.epa.gov/owow/protecting. To order hard copies, contact the EPA National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242-0419; Phone: (800) 490-9198; fax: (513) 489-8695; e-mail: ncepimal@one.net.]

Attention on Deck: Control NPS from Marinas and Recreational Boating

EPA recently released the final version of the *National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating*. Available online at www.epa.gov/owow/nps/mmsp/index.html, the document provides technical assistance to state program managers and others, such as marina managers, on the best practical means of reducing nonpoint source pollution of surface waters from marinas and recreational boating. The guidance provides background information on the nature and causes of pollution from marinas and recreational boating as well as technical information about how to reduce that pollution.

Choppy Water Ahead: Pollution Problems

The pollutants that might be generated at a marina and by recreational boats include nutrients and pathogens (from pet waste, overboard sewage discharge, and leaky marina septic systems), sediments (from parking lot runoff and shoreline erosion), waste from fish cleaning (flesh, blood, and bones), petroleum hydrocarbons (from fuel and oil drippings and spills, and from solvents), toxic metals (from antifoulants and hull and boat maintenance debris), and liquid and solid wastes (from engine and hull maintenance and general marina activities). Marina construction and reconstruction, in-water modifications at marinas, and propeller wash and boat wakes can also destroy aquatic habitats and disturb plants and animals. Water quality in a marina often reflects not only nonpoint source pollutants generated at the marina but also a cumulative load of pollutants from several watershed sources. When marinas are poorly planned or managed, they may pose a threat to adjacent lakes and oceans, which are the end point of watershed runoff.

Navigating the Waters: Promoting Pollution Prevention

In the new guidance, EPA identifies 15 management measures that can help reduce or prevent nonpoint source pollution from marinas and recreational boating. Management measures include marina flushing, water quality assessment, habitat assessment, shoreline and streambank stabilization, storm water runoff control, and more.

The document describes each management measure and the best management practices (BMPs) that can be used to achieve success. Each management measure discussion concludes with a table restating the management measure and summarizing environmental concerns that the management measure addresses, BMPs applicable to the management measure, and information pertinent to implementation of each BMP. Each table provides detailed BMP information, including:

- Suggested location for the BMP in a marina and the purpose for its use;
- Expected benefits for marina owners and operators and boat owners;
- Expected environmental benefits;
- Cost estimate for initial installation of the BMP (e.g., a structural BMP) or establishment of the practice (e.g., a recycling program);
- Cost estimate for ongoing use or maintenance of the BMPs.

Ahoy: What's In It for Marinas?

Marinas, though not usually a major contributor of pollution to our nation's rivers, lakes, and estuaries, can have a large local impact because they are recreational centers. Implementation of management measures can help protect local water quality and public health in swimming and recreational areas around the marina. Implementation also makes sense economically: customers are happier if the marina is well-managed and the water and associated land are clean.

The current guidance modifies and expands upon the chapter "National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating" in EPA's *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*. The 1993

Attention on Deck: Control NPS from Marinas and Recreational Boating (continued)

guidance, published under section 6217 of CZARA, applied only to coastal marine waters. The revised guidance reflects circumstances relevant to differing inland freshwater conditions and provides the most up-to-date technical information available. It does not set new or additional standards for state nonpoint source management programs under section 319 of the Clean Water Act or section 6217 of CZARA. This new guidance is one of a set of management measure documents based on the original chapters in the 1993 guidance. Single hard copies are available through the NSCEP by calling (513) 891-6561; ask for publication EPA 841-B-01-005.

[For more information contact Ed Drabkowski, U.S. EPA, (4503T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1198; e-mail: drabkowski.ed@epa.gov.]

State/EPA Nonpoint Source Partnership Forum

The State/EPA Nonpoint Source Partnership Forum, November 27-29, 2001, in New Orleans, Louisiana, hosted more than 100 state and EPA NPS professionals as well as state coastal nonpoint source program staff who also met that week. The meeting served as a forum for strengthening the state/federal NPS partnership, sharing innovative approaches, and developing a strategic plan to enhance program integration when resolving NPS issues in impaired waters.

In the Beginning

The State/EPA NPS Management Partnership, formed in April 2000, originated from a previous national nonpoint source meeting sponsored jointly by the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) and EPA (see *News-Notes* #63, December 2000). Over the past two years, the seven Partnership workgroups have refined and implemented specific action items to address priority NPS problems. The workgroups covered watershed planning and implementation, rural nonpoint sources, urban nonpoint sources, nonpoint source grants management, nonpoint source capacity building and funding, information and outreach, and nonpoint source results. The priority issues of each workgroup led to the development of the agenda for the Partnership Forum meeting.

During the Meeting

The opening session featured Kerry St. Pe, Executive Director of the Barataria Terrebone Estuary Program, who reminded the group that approximately two-thirds of the United States drains into this Louisiana estuary (which includes the mouth of the Mississippi River) and stressed the necessity for interstate cooperation for addressing nonpoint source issues across the country. Chuck Sutfin, EPA Assessment and Watershed Protection Division Director and the Partnership co-chair, led a discussion on strategic directions of the nonpoint source program, emphasizing the increase in resources devoted to developing and implementing watershed plans addressing nonpoint sources, particularly priority waterbodies and on-the-ground implementation. Jeff Loser, National Leader for Clean Water Programs at USDA's Natural Resources Conservation Service, highlighted the role of the Farm Bill in providing assistance to implement Total Maximum Daily Loads (TMDLs) and addressing animal feeding operation problems.

Other sessions addressed various nonpoint source issues, including:

- Examining the relationship of TMDLs to watershed planning and Clean Water Act section 319;
- Learning from the nonpoint management successes experienced by the coastal nonpoint program such as continuation of strong stakeholder partnerships, use of available funding, and use of outreach and education programs; and
- Introducing social marketing as a powerful tool for behavior change and analyzing how other high profile public education campaigns succeeded in making a difference through marketing (e.g., anti-smoking, seat belt promotion).

Throughout the Forum session participants presented a number of state and local case studies that highlighted successful approaches to NPS management. The audience learned about making the

State/EPA Nonpoint Source Partnership Forum (continued)

best use of state revolving funds for nonpoint sources, documenting water quality improvements in watershed implementation projects, finding better ways to monitor and measure environmental results, addressing urban runoff, and implementing successful restoration projects.

In addition to attending general sessions, individual workgroups met separately to assess accomplishments, confirm existing action items, and develop new agenda items. The workgroups' plans for the upcoming year are ambitious but attainable. The Outreach Workgroup plans to continue exploring approaches for a national media campaign and will work on strengthening its partnerships in the upcoming year. The Rural Workgroup plans to continue developing NPS related tools for managing Animal Feeding Operations and promoting innovative BMPs for rural areas (including better targeting of practices in critical areas), and the Urban Workgroup is planning an urban runoff training program. The Results Workgroup will strive to provide direction to states on useful monitoring techniques for better targeting, tracking, and reporting results to the public.

The Capacity Building and Funding Workgroup announced the completion of the Capacity Building web site (www.epa.gov/owow/nps/capacity/index.htm) and will soon plan for a national conference showcasing successful efforts at building local capacity. They also discussed social issues, prevention of water quality problems, and adding flexibility to 319 grant guidance as new items to be considered for action by one or more of the workgroups. The Watershed Planning and Implementation Workgroup will continue exploring program integration issues and the relationship between TMDLs and watershed planning, and the Grants Management Workgroup plans to continue work on a 319 Grants Manual and facilitation of discussion on the 319 guidance. All workgroup plans are currently being updated and will be publicly available on the Internet at www.epa.gov/owow/nps/partnership.html and www.asiwpca.org/programs/nps.htm.

- *Watershed Planning and Implementation Workgroup:*
Fred Suffian, EPA Region 3, (215) 814-5753; or
Jill Reinhart, Indiana DEM, (317) 233-8803.

- *Rural Nonpoint Sources Workgroup:*
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Brian Lovett, Wyoming DEQ, (307) 777-5622.

- *Urban Nonpoint Sources Workgroup:*
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- *Nonpoint Source Capacity Building and Funding Workgroup:*
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- *Information Transfer and Outreach Workgroup:*
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- *Nonpoint Source Results Workgroup:*
Romell Nandi, EPA HQ, (202) 566-1203.

- *Monitoring Workgroup:*
Tom Davenport, EPA Region 5, (312) 886-0209.

Down the Road

The final plenary session recapped the workgroups' future agenda items and identified potential key priorities for the upcoming year. Participants identified the need to focus more on integrating various federal and state programs to support watershed protection efforts, social issues, and demographics and statistical analysis. Finally, they identified a need to establish a Monitoring Workgroup to focus on enhancing states' NPS monitoring efforts. Though there are varying levels of NPS monitoring (statewide, watershed, and practice effectiveness), the Workgroup's first priority will be watershed level monitoring to improve the section 319 reporting process. The Partnership hopes to continue strengthening the success of the NPS program.

Many of the Forum presentations can also be found through ASIWPCA's web site. Those presentations related to NPS and TMDLs can also be found at www.tmdls.net, under Tips and Tools (proceedings). For further information about specific workgroup activities, or to join a workgroup as a state program representative, contact the individual workgroup co-chair shown in the box to the left.

America Celebrates Wetlands Month

The nation celebrated American Wetlands Month throughout May. This year's campaign focused on protecting some of the nation's more unique wetlands. EPA, the Izaak Walton League, other federal and local agencies, and nonprofit groups scheduled activities around the country. See www.iwla.org/sos/awm/events for the calendar of nationwide events.

Activities kicked off with an EPA and U.S. Fish and Wildlife Service 5K Run and 2K Walk on May 4 in Arlington, Virginia, to help fund the restoration of a local wetland. Additional activities planned on the Mall in Washington, DC included a National Park Service fair on May 3 and 4 and a family fair on May 18 at the U.S. Botanic Gardens. On May 16, the Environmental Law Institute, EPA, and other federal agencies honored the winners of the annual National Wetland Awards. The awards honor individuals who have made an innovative effort for wetland conservation, research, or educational projects at the local, regional, or state level. Winning photos from EPA's first Wetlands Photo Contest was also on display.

Over half of the nation's original wetlands have been lost or converted to other uses, with the rate of loss declining dramatically over the last 30 years. EPA strives to achieve no net loss of wetlands and to move toward an annual net gain through restoration. Visit www.epa.gov/owow/wetlands for additional information on wetlands.

News from States, Tribes, and Localities

Uncovering a Pollution Problem in Urban Alaska

Winter is finally coming to a close in Anchorage, Alaska, and the smell of springtime is in the air. Ah.....sniff.....wait a minute....that smells like ....dog poop. Yes, Anchorage residents face that unfortunate event every April. If people don't pick up after their dogs, an entire winter's worth of accumulated poop can appear once the snow melts. The poop is not only aesthetically unpleasing, but it also poses a risk to human health on land and in local waterways. Fortunately, a local environmental organization has stepped forward to help educate the public about the problem and to encourage people to pick up after their pets.

The Scoop on the Poop Problem

Large amounts of dog poop disappear into the winter snow unnoticed — until spring. According to a local nonprofit environmental organization, the Anchorage Waterways Council (Council), about 50,000 dogs call Anchorage home. A typical dog deposits three quarters of a pound of waste per day, which translates into about 37,500 pounds, or 19 tons of dog waste each day. An average of 70 inches of snow fall on Anchorage, beginning in early October and continuing through March or early April. Very little of the snow melts once it falls. If dog poop is not picked up, the deep snow contains many layers of poop by April. When snow melts over a period of about two weeks, the accumulated dog poop is exposed and can be washed into nearby waterways. In fact, the Alaska Department of Environmental Conservation classified eight creeks and four lakes in Anchorage as impaired, probably caused in large part by dog feces.

The Poop Solution

Each April the Council organizes a week-long "Scoop the Poop" campaign. The campaign explains how poop can become a problem and encourages people to pick up after their pets year-round. The Council also asks teams of volunteers to choose a public site, such as a trail or park area, to clean sometime during the week of the campaign. To keep track of the areas that still need to be cleaned, the Council asks the teams to register prior to their clean-up day. People use their own paper or plastic bags for the clean-up and place them in or next to public trash cans. Typically, participants include teams from churches, civic groups, and dog-related clubs and professions. "We keep the event itself low-key. We've tried many different tactics over the years, including weighing

the collected poop and holding a "Scoop the Poop" festival, but it never seemed appropriate," explained Catherine Moncrieff, Outreach Director with the Council.

Getting the Word Out

Each spring the Council relies on radio PSAs, newspaper articles, and spots on television news programs to announce the campaign, educate people about the issues, and attract participation. "The media love the "Scoop the Poop" campaign because it can be made humorous — there are so many plays on words available," remarked Moncrieff. "We don't have problems getting media coverage." And every year we get more interest — last year 21 teams signed up. We believe that about 10 additional teams forgot to register," explained Moncrieff. "We know that what we actually pick up each year is a tiny fraction of what is out there, but we are building an ethic in the community — which is what is most important."

The campaign's public education campaign has also been working. "There is definitely less poop out there than there used to be," noted Moncrieff. "Thanks to all the attention our campaign has gotten, more people are aware of the problem. We find that people patrol each other — if someone notices that their neighbor has not picked up after their dog they will say something. Also, the streets and trails are cleaner to begin with — people feel guilty leaving pet waste in an otherwise clean area."

Where it All Began

The City of Anchorage originally developed the idea in the early 1990s. At that time, the poop problem "was simply gross," noted Moncrieff. "Poop would be scattered all over the public trails, keeping people away during the time of year when they really wanted to get outside." Anchorage has a law requiring people to pick up after their pets, but "it has been difficult to enforce," explained Moncrieff. Public concern and outrage about the poop-laden public areas led the city to begin organizing annual poop clean-up days in partnership with the Council and other groups. Each year the event gained momentum.

In the mid-1990s the Council began receiving Clean Water Act section 319 funds annually from the Alaska Department of Environmental Conservation to support its efforts to clean Anchorage's waterways. At that time, the city asked the Council to assume the lead role in the Scoop the Poop project. Since then the Council has worked closely with diverse groups to implement the campaign, including the City's Parks and Beautification department, water quality agencies such as the Alaska Department of Environmental Conservation, the City's Watershed Management Section, the Anchorage Soil and Water Conservation District and Alaska Cooperative Extension, and many dog groups, such as Friends of Pets, Anchorage Dog Owners Group, the Skijour Club, the Retriever Club of Alaska, and Anchorage Animal Control. The only cost associated with the campaign is the Council's staff time, which is funded in large part by section 319 funds.

"We are currently looking to increase the visibility of the public education campaign," said Moncrieff. The Council plans to work with business owners to encourage them to permanently adopt the area outside their places of business. They also hope to encourage dog food companies to include information about picking up pet waste on their dog food bags. Finally, they are trying to secure funding to develop a short video about the "Scoop the Poop" campaign that television stations can air year-round.

[For more information contact Catherine Moncrieff, Outreach Director, Anchorage Waterways Council, Anchorage Waterways Council, P.O. Box 241774, Anchorage, AK 99524-1774. Phone: (907) 277-9287; e-mail: cmoncrie@pobox.alaska.net; Internet: www.anchwaterwayscouncil.org.]

The Anchorage Waterways Council has incorporated the Scoop the Poop project into its Clean Waterways Campaign (CWC), a community-based effort to educate the public on ways they can reduce their impact on water quality. Council staff members work with community representatives to organize committees to tackle water quality issues. In addition to the Scoop the Poop effort, the Council plans to develop CWC committees to address goose overpopulation (due in part to the public feeding the birds), disposal of household hazardous wastes, proper use of pesticides, herbicides and fertilizers, and other water-related activities in Anchorage.

Reducing Nonpoint Source Pollution with the Clean Water State Revolving Fund

Since its inception as part of the Clean Water Act Amendments of 1987, the Clean Water State Revolving Fund (CWSRF) Program has made impressive progress in funding wastewater treatment, estuary protection, and nonpoint source pollution control projects. Established to help address growing needs for general water pollution control funding, the CWSRF succeeded the Construction Grants Program, a direct grant program for funding wastewater treatment projects. Although initially used primarily for municipal wastewater treatment projects, the CWSRF continues to expand as a nonpoint source control tool in many states.

Under the CWSRF program, EPA provides grants or "seed money" to the 50 states and Puerto Rico for their individual CWSRFs. The program is managed by the state, and loans or other types of assistance for water quality projects are distributed according to each state's programs and priorities. As loans are repaid, the state reuses those funds for additional project loans. States work to reach a broad set of borrowers, including communities, farmers, homeowners, nonprofit organizations, and others to ensure efficient use of CWSRF funds. With more than 9,500 projects funded and more than $30 billion in cumulative assistance provided, the CWSRF stands today as one of the nation's most successful environmental financing programs.

Nonpoint Progress

To date, 28 CWSRF programs have funded more than $1.2 billion in NPS pollution control and estuary protection projects, most of them over the past five years. Projects focusing on NPS pollution include decentralized wastewater treatment, storm water management, wetlands/riparian zone protection, agricultural BMPs, and underground storage tank and soil remediation.

One of those successful programs is in the State of Washington. Washington used the CWSRF to address its problem with failing on-site sewage disposal systems, loaning $5.5 million to replace more than 360 septic systems (as of 2001). According to the Washington Department of Ecology, approximately 15 percent of Washington's 650,000 on-site sewer systems do not properly treat wastewater discharge. On-site system failures pose a potential health hazard because domestic wastewater can contain bacteria, viruses, protozoa, and parasites harmful to people. Buildup of aquatic weeds or algae in lakes or ponds adjacent to homes may also occur. These failures threaten entire watersheds, affecting groundwater, streams, lakes, and estuaries.

Since 1990, 10 counties in Washington have used the CWSRF to create local loan programs that help residents and small businesses pay for needed repairs and upgrades of faulty on-site sewage disposal systems. Most of these loan programs, administered by health agencies, apply for loan funding through the Washington Department of Ecology's Water Quality Financial Assistance Program. For more information, contact Washington Department of Ecology Water Quality Program at (360) 407-6400, or visit www.ecy.wa.gov/programs/wq/funding.

[For more information on the Clean Water State Revolving Fund, call the EPA National Center for Environmental Publications and Information at (800) 490-9198, and request a copy of The Clean Water State Revolving Fund: Financing America's Environmental Infrastructure – A Report of Progress *(EPA 832-95-R-001), or view CWSRF program fact sheets at www.epa.gov/owm/finan.htm.]*

Spotlight Shines on North Carolina State University Stream

The Rocky Branch Creek, long neglected and hidden beneath the pavement of the North Carolina State University (NCSU) campus, is finally seeing the light of day. Sections of the stream that were once confined by culverts, riprap, and gabions now course through meanders, riffles, pools, and wetlands in a restored floodplain. Exotic plants that once obscured the stream have been replaced by native plants that enhance the stream and provide food and shelter for birds and other wildlife. A new greenway path along the stream gives pedestrians the opportunity to appreciate and enjoy Rocky Branch's new found vitality.

These dramatic improvements can be attributed to a three-phase stream restoration plan initiated by NCSU in May 2001. NCSU hopes the plan will reverse the stream degradation caused by decades of nonpoint source impacts and strip Rocky Branch of its designation as the most polluted stream in the state. Along the way, the project will serve as a demonstration site for water quality professionals and the 34,000 students, faculty, and staff at NCSU. It will also educate the general public about urban stream protection and restoration.

The square-mile area of NCSU property covered by the restoration plan constitutes most of the Rocky Branch watershed. Predominantly urban, this area contains the associated impervious surfaces such as paved streets with curbs and gutters, expansive asphalt parking lots, sprawling athletic facilities with synthetic playing surfaces, and rooftops of scores of buildings. When it rains, such designs increase the amount and velocity of stormwater runoff and facilitate the transport of nonpoint source contaminants to Rocky Branch. Over time, these flashy, erosive flows have drastically altered the shape and dimensions of the channel, undercutting banks and toppling trees into the stream. Large volumes of sediment traveling to downstream waterways and seasonal algal blooms further degrade the stream's water quality.

Beginning the Restoration Process

As a first step in the restoration plan, NCSU restored nearly half of the 6,100 linear feet of stream channel flowing across the campus, relocating 1,100 feet of sewer lines, removing 7,100 square feet of parking lot, and improving several road-crossing culverts to allow high stream flows to spill to the floodplain. To reduce stream bank erosion, NCSU installed rock and log vanes, single-arm structures partially embedded in the bank that provide grade control and reduce pressure on banks during storms. Finally, NCSU used energy dissipaters to reduce erosion at stormwater outfalls and stabilized critical areas of the stream bank with natural materials such as rootwads, logs, and willow branches.

For the riparian buffer, NCSU selected a variety of floodplain, slope, and upland native plants. River birch, ironwood, flowering dogwood, spicebush, and sycamore were used for the floodplain; yellow poplar, redbud, hickory, green ash, northern red oak, serviceberry, and sourwood for the slope; and oaks for the upland. Once established, the trees and shrubs will form a canopy to shade the creek and protect temperature-sensitive macroinvertebrates and other aquatic organisms.

Realizing the Benefits Beyond the Campus

Adjacent to the restored riparian area, NCSU developed a new greenway path that connects the campus to the existing City of Raleigh greenway system, expanding the network of public green space throughout the city. The path serves as another campus access point while also increasing the public's awareness of the creek and its surroundings. NCSU plans to install interpretative signs along the greenway path to explain the concepts of natural channel design and to identify the flora and fauna.

Future Plans

During Phase II and III of the project, NCSU plans to further improve water quality in the creek by installing a stormwater pond and three bioretention areas (rain gardens) to intercept, detain, and filter runoff from roads and parking lots before it reaches the creek. Once completed, the restoration project will demonstrate how storm water controls and riparian restoration can improve the health of an urban stream. NCSU hopes the newly spotlighted stream will cultivate a sense of stewardship and pride in the creek for its aesthetic and ecological values.

[For more information, contact Barbara Doll, P.E., Box 8605, NC State University, Raleigh, NC 27695. Phone (919) 515-5287; e-mail barbara_doll@ncsu.edu.]

Notes on Watershed Management

Grazing for Change: Implementing Environmentally Sensitive and Economically Viable Grazing Programs

Balancing environmental protection with economic growth can be an intimidating endeavor. But some California ranchers and environmentalists are working together to achieve that balance by implementing innovative grazing practices that are both environmentally sensitive and economically viable. A booklet called *Grazing for Change* highlights these efforts (www.calcattlemen.org/GC.htm).

Published by the California Cattlemen's Association and the High Sierra Resource Conservation and Development Council, the booklet had support from the USDA Natural Resource Conservation Service's (NRCS) Environmental Quality Incentives Program, the EPA, and the Livestock Memorial Fund.

The booklet features nine ranchers and their successful range and watershed management strategies. A steering committee representing the diversity of California's interests nominated the ranches featured in the booklet. "The individuals selected to be on the steering committee were chosen because they were open-minded and unbiased about grazing issues, contributed diverse perspectives, and were knowledgeable about rangeland issues," says Dan Macon, coordinator of the High Sierra Resource Conservation and Development Council. The individuals represented diverse groups, including the Cattlemen's Association, Humboldt State University, USDA NRCS, University of California, East Bay Municipal Utility District, Sierra Nevada Alliance, California Farm Bureau Federation, the Nature Conservancy, EPA, California Association of Resource Conservation Districts, California Rangeland Trust, Wildlife Conservation Board, private individuals, and several agricultural and environmental groups.

Spreading the Word

Case studies in *Grazing for Change* highlight practices and strategies that could easily be embraced by ranchers around California. For example, the landowners in Bridgeport Valley have teamed up with the Bridgeport Valley Ranchers Organization to develop an extensive water quality program that evaluates their efforts to implement rangeland water quality management plans. These plans typically include irrigation ditch and fencing repair, streambank stabilization, and the use of fire and weed control to enhance vegetation. By encouraging farmers to implement their plans, the self-monitoring program documents the efforts to protect waterways such as the Bridgeport Reservoir and the East Walker River, which are home to migratory duck species and internationally recognized as blue ribbon trout waters. To date, monitoring results indicate improved water quality.

The booklet also features the Nature Conservancy's (TNC) effort to monitor grasslands at its Vina Plains Preserve. By monitoring for both species composition and the amount of matter remaining after the grazing season ends, TNC hopes "to show that grassland can be managed for both livestock production and endangered species," explains TNC's Rich Reiner. TNC's monitoring results are used as part of an "adaptive management strategy" to annually adjust the Preserve's management. Monitoring to date shows a reduction in weeds, an increase in native plants, and higher forage protein in grazed and periodically burned pastures.

Other case studies feature ranchers that implemented various innovative grazing practices such as offstream rotational grazing, water development, brush and woody vegetation control and removal, implementation of rangeland water quality management plans and other management plans, riparian and native perennial grass restoration, controlled burning programs, and conservation easements. These practices increase riparian vegetation and mitigate watershed problems such as erosion, competition by invasive nonnative plant species, and poor water quality.

Expanding Beyond California's Borders

Other ranching states such as Colorado, New Mexico, Wyoming, and Oregon are also using *Grazing for Change* in their outreach programs. By sharing these examples of how ranching operations can work with multidisciplinary partners to meet environmental and economic goals, these states hope to realize the same success as the California ranchers.

[For more information, contact Dan Macon, High Sierra Resource Conservation and Development Council, 251 Auburn Ravine, #105, Auburn, CA 95603. Phone: (530) 823-5687 x115; e-mail: dan.macon@ca.usda.gov.]

Riparian Restoration Improves Water Quality in Vermont's Champlain Valley

Vermont's Lake Champlain is cleaner today, thanks to the Vermont Department of Environmental Conservation (DEC) and EPA's section 319 National Monitoring Program (NMP). The *Lake Champlain Basin Agricultural Watersheds Section 319 National Monitoring Program Project* was one of 23 special nonpoint source pollution control monitoring studies conducted across the nation in EPA's NMP. The project was designed to evaluate how effectively riparian zone restoration practices could reduce the concentrations and loads of nutrients, sediment, and bacteria from grazing land. Over the course of the project, federal, state, and local funding totaled more than $1.7 million. Completed in 2001, the 7-year project has demonstrated that implementation of simple and inexpensive pollution control measures can yield significant improvements in water quality.

Turning to the NMP for Help

The project was initiated in the early 1990s because of concerns about water quality impacts from agricultural land in the Lake Champlain basin. At that time, DEC's water quality monitoring data revealed that Lake Champlain consistently failed to meet Vermont's water quality standards for phosphorus, largely because of agricultural runoff. In addition, water quality data from the Missisquoi River, a tributary of Lake Champlain, showed high levels of phosphorus, bacteria, and organic matter, also from agricultural sources. Project investigators identified livestock access to streams as a significant source of this pollution and designed the project to address it. Intensive physical, chemical, and biological water quality monitoring recorded changes in a paired-watershed design. Project staff also tracked land use and agricultural management activity through landowner record-keeping, aerial photography, and direct observation.

The primary goals of the Lake Champlain project were the same as for all of EPA's NMP projects: (1) to evaluate the effectiveness of NPS pollution control technologies; and (2) to improve scientists' understanding of NPS pollution. Staff monitored water quality for three years prior to BMP implementation to establish baseline data. This was followed by one year of BMP implementation and then another three years of monitoring.

Treating the Problem

In 1997, after three years of pre-treatment monitoring, project staff spent one year helping farmers install treatment measures along selected agricultural sections of two Missisquoi River tributaries. A third control stream was monitored but not treated. To keep costs low in the two treated streams, the staff chose to implement inexpensive riparian restoration measures such as livestock exclusion, riparian restoration, and bioengineered streambank protection. Treatment areas were selected through baseline farm inventories, direct inspection of streams and riparian areas, and interpretation of aerial video imagery. Treatment measures were designed and funded with assistance from the USDA Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and EPA.

The combined efforts by participants removed cows from the streams and restored approximately 30 to 50 percent of pasture riparian zones in the treatment watersheds. On one farm, project staff built a new bridge to allow cows to cross into the pasture without walking through the stream; on another farm, a culvert was installed under a livestock travel lane to re-route water flow away from the cattle. On many other farms, local volunteer groups, landowners, and project staff installed new fencing or relocated existing fencing to areas where livestock should be excluded, constructed

livestock watering systems, and applied bioengineering measures like tree revetments and willow planting along streambanks to protect eroded areas. Protection of the riparian areas allowed growth of natural vegetation along the stream. The cost of these treatments totaled approximately $40,000 in the two treated watersheds.

Rapid Recovery

During the three years after BMP installation, streambanks healed dramatically and sections of the streams became narrow and deeper, offering better habitat for fish and other stream life. Growth of grasses, shrubs, and willows in the stream buffer increased after grazing pressure was removed. Areas where cows had trampled the banks and muddied the stream bottom stabilized quickly.

Project staff monitored the treated and untreated watersheds through November 2000. Data from the untreated control watershed helped account for the year-to-year variations in weather. In the first treated watershed, project staff found that average phosphorus, nitrogen, and sediment levels in the stream decreased by 12 to 34 percent, and *E. coli* and fecal coliform bacteria counts dropped by 30 to 40 percent compared to pre-treatment levels. Phosphorus, nitrogen, and sediment export from the watershed decreased 30 to 50 percent. The stream protection kept nearly 1 ton of phosphorus, 2 tons of nitrogen, and 126 tons of sediment out of the water each year. These changes, combined with the narrower and deeper stream, led to improvements in the macroinvertebrate community as well.

Results were less dramatic in the second treated watershed. Nutrients, sediment, and bacteria declined significantly during the first two years of treatment (1998-1999), but these improvements were overwhelmed in 2000 by severe erosion and concentrated polluted runoff from a non-cooperating landowner upstream of the treated area. This incidence of water quality deterioration despite riparian treatment emphasizes that researchers should monitor land use over the entire watershed and not just in the study areas.

Landowners Rise to the Occasion

Landowners participated in the project for various reasons. One farmer installed all the fencing with his own resources because he wanted his children to be able to "fish in clean water." Another farmer participated because a bridge allowed his herd to cross the stream easily without being blocked by high water during summer storms. Once the landowners began the process, they found the treatments to be simple to install and maintain, and easy to incorporate into their normal farm management practices. In addition, farmers were pleasantly surprised by the small amount of land that needed to be removed from grazing to protect the stream.

Of course, not all farmers in the watershed chose to participate. According to the DEC, some farmers believed that brush growing along the streambanks was unsightly and unacceptable. DEC hopes to change this attitude with future education efforts.

Despite the impact of the unplanned land-use changes in one of the treated watersheds, the study showed that riparian zone protection and restoration can be a cost-effective tool for reducing NPS pollution and loads from livestock grazing lands in the Lake Champlain Basin. This set of simple and inexpensive practices, applied as part of the overall NPS management effort in the Lake Champlain Basin, serves as an example for impaired watersheds across the country.

[For more information, contact Don Meals, an environmental consultant who formerly worked with the Vermont Department of Environmental Conservation, at dmeals@wcvt.com. Copies of the final project report may be obtained from Rick Hopkins, Vermont DEC Water Quality Division, rickh@dec.anr.state.vt.us. Additional information, including a copy of the project's Final Executive Summary, is available at: www.anr.state.vt.us/dec/waterq/VT319Watershed.htm.]

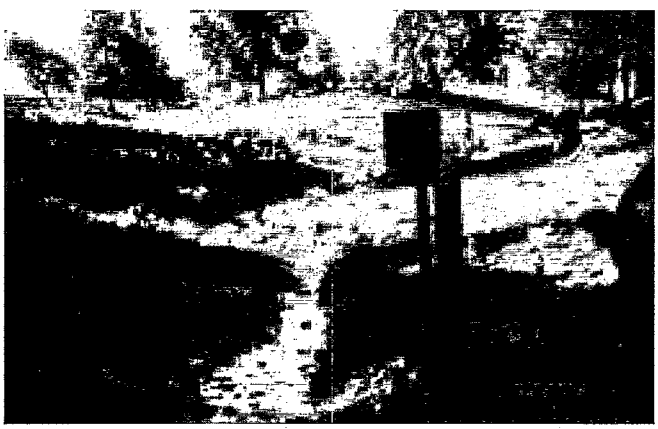
Agricultural Notes

Long Creek Watershed Goes to the Source

In September 2001, the North Carolina Cooperative Extension Service (Extension Service) marked the successful completion of an in-depth water quality monitoring and BMP project in the Long Creek watershed. The 28,480-acre watershed, located in the southwest part of the state, hosts a mixture of agricultural and urban/industrial activity. Nonpoint source pollution caused by these practices led Long Creek to be identified as a high priority for pollution control as early as 1991. Fortunately, the Extension Service applied for and was accepted into EPA's 319 National Monitoring Program, which provided funding through the state agency for the Extension Service's efforts to identify the sources of pollution and restore the waterway.

Testing the Water

Before implementing BMPs, Extension Service staff first identified sources of pollution in the watershed. Beginning in 1993, staff monitored water quality in several locations, assessing biological parameters, including macroinvertebrates and bacteria, and chemical parameters such as total suspended solids and dissolved oxygen. The data indicated that NPS pollution from farms, towns, construction sites, and eroding streambanks degraded fish habitat, drinking water supplies, and downstream lake quality. Because the agricultural component of the pollution was the easiest to identify and mitigate, project staff chose to focus on implementing agricultural BMPs in the watershed.



Before (top) and After (bottom): The Long Creek project has dramatically reduced sediment, nitrogen, and fecal coliform levels at this Kiser Dairy sampling site. Before work began, the stream eroded as cattle entered the stream. Now at the same site, a lush vegetative buffer filters out potential water contaminants.

Garnering Landowner Participation

The Extension Service strongly encouraged individual farmer participation throughout the watershed. Through a series of one-on-one visits, project staff explained the benefits and components of the project to the farmers, kept them aware of progress, and addressed questions and concerns. The outreach efforts succeeded — more than 20 farmers agreed to participate.

Kiser Dairy, near Bessemer City, which became one of the Long Creek Project's most successful efforts, is an example of the types of BMPs implemented throughout the watershed. In cooperation with owner Melvin Kiser, the Extension Service implemented a new waste management system and protected the stream from impacts from cattle grazing and crossing. They installed a waste holding lagoon and an underground main hydrant, fenced out cattle from the nearby stream, and planted a new buffer of trees along the stream. Following the implementation of these BMPs, monitoring data showed a dramatic reduction in bacteria, sediment, and nutrient levels. Data indicated that, on average, the total solid load decreased by 80 percent and the total phosphorus and total nitrogen loads decreased by 70 percent.

Taking the Project to the Public

Throughout its duration, the project provided many opportunities for the media, public, elected officials, and school children to learn about NPS pollution and water quality. To keep the public aware of the project's status, the Extension Service conducted several public meetings and media campaigns between 1993 and 2001. Project personnel visited farmers in the watershed to keep them aware of progress and address any concerns. More than 85 percent of the schools (100 percent of elementary and junior high schools) in the watershed toured various participating

Long Creek Watershed Goes to the Source (continued)

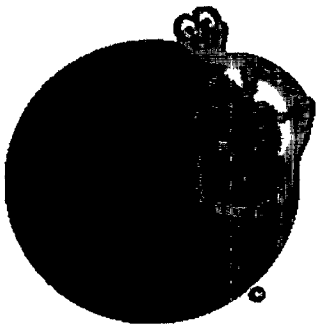
farms and attended special Extension Service-sponsored classes on soil and water cycles, NPS pollution, and surface and groundwater contamination.

Though the Long Creek Watershed 319 Project has formally come to an end, other watersheds in Gaston County continue to implement cattle exclusion, stream restoration, and constructed wetland projects. These new projects prove that the lessons learned from the Long Creek Project still inspire new ideas and enthusiasm.

[For more information, contact David Fogarty, North Carolina Cooperative Extension Service, P.O. Box 1578, Gastonia, NC 28056. Phone: (704) 922-2119; e-mail: david_fogarty@ncsu.edu. For more information about the section 319 National Monitoring Program, see www.epa.gov/owow/nps/Section319/overview.html.]

Notes on Education

The Awesome Aquifer Adventure



The Groundwater Foundation recently released the 2001-2002 Awesome Aquifer Club (AAC) kit for educators. The AAC, a classroom-based program, promotes groundwater education during the school year through classroom and community activities.

Classroom and community groups joining the program receive the Awesome Aquifer Club kit that includes:

- The Awesome Aquifer Club's Educator's Guide;
- One of two Groundwater Foundation publications, *Making Discoveries: Groundwater Activities for the Classroom and Community* or the brand new *Making Ripples: How to Put on a School-based Water Festival*;
- Three issues of the club newspaper, *The Groundwater Gazette*, for every student or youth member of the AAC;
- A Groundwater Foundation product catalog; and
- Stickers, membership cards, and other fun items for every member.

In addition, The Groundwater Foundation announced the availability of the new AAC video, *The Awesome Aquifer Adventure*. This lively and exciting 7-minute video features G.W. Geko, the official AAC mascot, teaching and learning about groundwater with students at the annual Children's Groundwater Festival at Grand Island, Nebraska. The video contains groundwater information and also serves as a promotional and recruitment tool.

[For more information, contact the Groundwater Foundation, P.O. Box 22558, Lincoln, NE 68542; e-mail: info@groundwater.org; Internet: www.groundwater.org/KidsCorner/AAC.htm.]

Nutrient-rich Education in Iowa

Iowa residents learn more about nutrient management every day, thanks to Iowa State University (ISU) Extension and its partners. The Nutrient Management Education Project (NMEP) helps Iowa citizens better understand nutrient pollution sources, the impacts of that pollution, and what management and regulation issues are involved in nutrient issues. Ultimately, the NMEP strives to reduce agricultural NPS pollution through changes in land management, including voluntary adoption of management practices by producers and crop management service providers. To do this NMEP partners focus on developing and marketing research-based educational materials and programs.

Initiated in December 1999, the NMEP is funded through September 2002 by a $116,640 grant from the Iowa Department of Natural Resources' section 319 funds. The grant pays for a staff position at ISU Extension, office space, travel, and project activities such as the development of publications and press releases.

In addition to the NMEP coordinator and other ISU Extension staff, the project receives technical support from the Nutrient Management Information Team, comprised of representatives from more than 20 diverse groups, including the Agribusiness Association of Iowa, Iowa Association of Farm Managers & Rural Appraisers, Iowa Bankers Association, Iowa Department of Natural Resources, Iowa Environmental Council, Iowa Manure Management Action Group, and the Leopold Center for Sustainable Agriculture. These groups partner in the NMEP because they are interested in nutrient-related water quality issues and are willing to help educate the public. Representatives meet at least quarterly to provide guidance for NMEP activities and to review articles, publications, and other educational materials.

Why the NMEP?

Although residential homeowners benefit from the educational material they see and hear, the NMEP aims its efforts primarily at agricultural producers throughout Iowa. More than 91 percent of Iowa's land is farmed, with 81.6 percent managed as cropland. A 1998 ISU Extension Farm and Rural Life survey of Iowa producers found that only 47 percent of crop producers reported they adjusted commercial fertilizer rates after applying manure to a field, and 59 percent used judgment alone when determining manure application rates. "There are certain management practices that all farmers should be implementing, such as testing soil and manure for plant-available nutrients, and applying manure and commercial fertilizer according to soil test recommendations. Manure should serve as a resource rather than a waste product," explained Dr. John Creswell, NMEP Coordinator. "Our first goal is to reach those who are not yet implementing the basics."

Educating as Many People as Possible

The NMEP partners channel nutrient information through many sources, including radio, printed media, and the Internet. During the past two years Creswell and the NMEP partners produced a series of 60-second radio spots called the Nutrient Management Minute (available in audio and text versions online at www.extension.iastate.edu/Pages/markets/nmm.htm). Creswell explained the purpose of the spots in the first radio spot released the week of April 3, 2000:

"During this minute, we'll talk about ways that all Iowans can help improve water quality in Iowa. We'll talk about ways to use nutrients like nitrogen and phosphorous, so that you're not over-applying fertilizer and wasting money in addition to polluting Iowa's lakes, rivers, and streams. We'll give you research-based information to use on your farm and your lawn and garden that will help you raise a good yielding crop or have a great lawn while practicing good environmental stewardship. We'll tell you more about the Clean Water Act — and talk about it in ways that we can all understand. It's time to face it — we're all going to hear and learn more about improving the quality of Iowa's surface waters in coming years. We'll help you learn what you need to know to protect and improve Iowa's waters."

Since then Creswell has delivered more than 60 radio spots on a weekly to bi-weekly basis (depending on the season) on topics such as pasture management, manure management, Iowa's surface water quality, carbon sequestration, soil testing, fertilizing lawns, and buffer strip use. Sixty-four radio stations of varying formats throughout Iowa and surrounding states receive each completed spot. Of these, Creswell estimates that at least 40 play the spots as public service announcements on a regular basis. "We've received positive comments from the listeners and good reviews from the surveyed radio stations." In 2001 this outreach effort was rewarded by being selected as the national communications radio program winner in a contest sponsored by the National Association of County Agricultural Agents.

NMEP partners also rely on printed media such as press releases, information/fact sheets, and other publications, to share the educational messages. Press releases issued through Iowa State University are frequently featured in partners' newsletters, Iowa newspapers, and regional farming magazines. To complement the existing information, Creswell plans to release a series of 11 BMP information sheets on basic nutrient management issues, such as soil testing, phosphorus and nitrogen management, no-till farming, crop rotation, nutrient management plans, equipment calibration,

Nutrient-Rich Education in Iowa (continued)

the Conservation Reserve Program, and the use of riparian buffers and other conservation practices. The fact sheets are available in hard copy and on the Internet.

For those with Internet access, ISU Extension offers a comprehensive NMEP web site titled "Nitrogen and Phosphorus Knowledge" (extension.agron.iastate.edu/npknowledge). This site provides nutrient research and BMP information, publications, and educational tools, either directly or through links to other sites. For example, links to Purdue University and the USDA NRCS help visitors investigate BMP information. A series of ready-made power point presentations features topics like nutrient management basics, nutrient criteria/standards, and TMDLs. The site also offers a valuable real-time resource — daily soil temperature and weather forecast information for locations throughout Iowa to help producers plan fall nitrogen fertilizer application. "We had over 27,500 hits during the last quarter of 2001," said Creswell. "We've found that the soil temperature forecast information page is the most popular."

Building on existing relationships contributed to the Iowa NMEP's success, noted Creswell. "I've found over the past 28 years of working for ISU Extension — and especially in the past 2 years as coordinator of this project — that Iowans communicate and work together to solve problems. There is disagreement, but for the most part individuals representing the many public and private agencies and organizations concerned about water quality issues do listen and respect each other's opinions." As in many areas of the country the Iowa NEMP serves as a model for those functioning partnerships seeking to achieve a mutual goal through voluntary means.

[For more information contact Dr. John L. Creswell, Coordinator, Nutrient Management Education Project, Iowa State University Extension, 10861 Douglas Avenue, Suite B, Urbandale, IA 50322-2042. Phone: (515) 727-0656; e-mail: creswell@iastate.edu.]

Riparian Event Becomes School-wide Celebration

For the past three years, an elementary school in rural Bridgewater, Virginia has held an outdoor environmental fair to educate the entire student body about riparian buffers, NPS pollution, native plants, and other environmental issues. Begun as a simple riparian restoration project at Wildwood Park, a local park devastated by flooding, the event has grown into an annual school-wide environmental celebration and educational event.

Once a homestead, Wildwood Park is located on 11 acres along the North River, a tributary of the Shenandoah River in the Chesapeake Bay watershed. The town of Bridgewater bought the land in the 1970s and dedicated it as a community park shortly thereafter. Major floods in September 1996 and January 1997 roared through a large, wild portion of the park acreage, knocking down trees and dropping debris from upstream. After the floods, the town of Bridgewater cleaned the area — removing the debris and downed trees, plus all the existing understory vegetation. To make the area aesthetically pleasing, the town then planted the entire area with grass. The once wild area known as Wildwood had become only tall trees and grass — it looked park-like, but was not very friendly to wildlife or the environment.

Local Organizations Get Involved

In April 1998 John Wayland Elementary School (JWE) planted trees in the park as part of the school's natural resources awareness program. Realizing the educational opportunity available at the park, JWE teachers decided to incorporate outdoor science lessons into the school's curriculum for the next two years. They began planning ways for students, through lessons and cooperative activities, to begin restoring the park as they learned about habitats, life cycles, conservation, effects of weathering, soil erosion, and water quality.

At the same time, members of the Shenandoah Chapter of the Virginia Native Plant Society (VNPS) worked with the town, Bridgewater College, and a local watershed organization, the Shenandoah Valley Pure Water 2000 Forum (Forum), to raise funds to restore the wetland and riparian areas destroyed as a result of flooding. JWE joined as a partner in the restoration project.

The Alliance for the Chesapeake Bay's Small Watershed Grant Program awarded the Forum approximately $5,000 in grant funds for the project with the town matching funding.

The First Park-wide Planting and Learning Day is Born!

The Forum, VNPS, JWE, and other partners planned the first riparian planting event for October 1998. VNPS developed a plant list and staked out planting locations for hundreds of plants. JWE teachers, with administration cooperation, devoted an entire school day around an outdoor educational fair at the park. Over 600 students, their teachers, and many parent volunteers descended on the park at pre-arranged times, taking part in education stations including native plant education and riparian planting, macroinvertebrate identification, and geology, fishery, and erosion studies. Local environmental organizations, VNPS, the Department of Game and Inland Fisheries, and others developed and supported each science station. Stories, songs, and snack stations rounded out the day. "The students loved spending the day at the park," explained JWE teacher Joan Kenney. "That is all they could talk about for weeks. Their enthusiasm was incentive for us to repeat the event."

Students and teachers join forces to plant trees.

Some students even went out of their way to volunteer in the park throughout the year. In March 1999 the Forum, Bridgewater College, and VNPS organized the second of two planting events supported by the grant — this weekend event encouraged participation by local residents. Over 60 community members came out to plant, including many students who had participated the previous fall. "The first planting event made an impression on the students," noted VNPS president Carol Gardner. "They cared about the project and wanted to continue to help. Many of the students came back for our early spring planting day, this time with their parents in tow."

Out of Money? We'll Find Our Own!

Once the initial source of funding for purchasing plants was depleted, JWE struck out on its own. Throughout March and April 1999, a number of JWE classes took field trips to the park to continue restoration on a small scale. A few classes planted water lilies and other wetland plants in a "Monet Garden" as part of a $300 Virginia Commission for the Arts grant received by a JWE teacher. Other classes used money that they raised selling crayons to plant a butterfly and hummingbird garden. But that wasn't enough. In 1999 the teachers at JWE applied for and received a $5,000 grant from the Virginia Environmental Endowment (VEE) to help them establish and equip a Science and Art Learning Center at the school and continue to restore the park so that it could be used as an outdoor classroom. Since 1999 the teachers have secured additional funding from the school PTA and solicited donation of trees and mulch from the town.

Using these resources, JWE held all-day environmental education events in May 1999 and October 2000. Each event included science lessons such as planting native plants, identifying and weeding invasive plants, conducting plant surveys, and understanding soil and erosion. In 2001, individual classes remained active, visiting the park to maintain the planted areas and assess the health of the plants despite the absence of an all-day event. Throughout the month of May, the school plans to host grade-level field trips. Students will work with the town parks and recreation staff to plant, clean up, and investigate changes in the park. Teachers plan to provide additional class activities during school visits.

Well Worth the Effort

Although working with so many volunteers of different ages was sometimes challenging, the benefits to the park and the participants made the effort rewarding. "With the help of the students and our

Riparian Event Becomes School-wide Celebration (continued)

other partners, the restoration project has come a long way," explained Gardner. "We've planted almost 850 perennials and 450 trees and shrubs. Most of these plants have survived, despite drought years, and we are seeing wildlife and birds that were not seen here before. Because the school remained involved while the restoration project developed, the students have been able to see the results of their efforts. This has helped them to respect and understand their environment."

JWE teachers feel the same way. "I would recommend this type of educational approach to teachers in other schools. Although the preparation is time intensive, the learning, interaction, and results made it worthwhile," explains Kenney. "The children are very proud of what they have accomplished. During several of my visits, I have seen children with their parents pointing out the tree that they planted, or the snake in the river, or explaining why the weeds are a problem. We are very proud that this project has had such an effect." One student, Jordan Sites, expressed his opinions in a note to one of his teachers. "Wildwood Park is a place where families can help the environment. It is a place where different animals can share the same home. It is a place that people can care about."

[For more information, contact Joan Kenney, John Wayland Elementary, 801 N. Main Street, Bridgewater, VA 22812. Phone: (540) 828-6081; e-mail: jkenney@rockingham.k12.va.us.]

Maine Campaign: Soil Erosion Awareness

For years the Maine Department of Environmental Protection (DEP) has worked to educate the public about soil erosion and its detrimental effects on water quality. However, years of phone surveys had shown that the public knew very little about the effect soil erosion has on water quality or how to address it. To help raise public awareness, Maine DEP recently introduced a successful advertising pilot project.

Before implementing a statewide educational campaign, Maine DEP worked with Market Decisions and Burgee Advertising to develop the advertising pilot project. According to Kathy Hoppe, Maine DEP Nonpoint Source Project Manager and Outreach Coordinator, "we knew that the citizens knew virtually nothing about soil erosion as a pollutant so we needed to try to reach large numbers of people. The question was could we do this effectively using mass media. Rather than risk the money to go statewide, a pilot project was conducted. If project staff could prove they could effectively raise awareness and hopefully start people down the road of behavior change, then management was willing to look for the financial support to take such a project statewide. The project used social marketing techniques, including phone surveys, focus groups, and media tools to develop and evaluate the project. Using $60,000 in funding, from a variety of sources, including Clean Water Act section 319 federal grants and state money, Maine DEP set off to enlighten the masses.

Testing the Market

Based on recommendations from Burgess Advertising and Market Decisions, and with input from the project team, the DEP selected a geographical area or media market that represented the entire state and could be effectively reached with available funding. The team selected the greater Augusta area as the major focus because a major newspaper and several radio stations served the area, which represented a demographic cross-section of residents and rural/urban areas. The team also selected Portland, Monmouth, and Litchfield for additional parts of the campaign.

The team then worked with two focus groups to provide citizen input on their ideas, thoughts, and behaviors with regard to soil erosion and water pollution. The focus groups helped the team decide which communication materials to use in the advertising test. The first group focused on an urban/suburban area in Portland, and the second group worked with rural/suburban participants in Augusta. Based on the focus group results, the team launched an advertising test including newspaper and radio ads and direct mailings. Four separate mailings were sent to approximately 2,000 households in the nearby towns of Monmouth and Litchfield.

Maine Campaign: Soil Erosion Awareness (continued)

To evaluate the effectiveness of the advertising campaign, the organization conducted follow-up telephone surveys. The survey included 20 questions repeating previous surveys on sources of water pollution. A total of 300 interviews was conducted, including 75 interviews of residents who received the direct mailings.

Evaluating the Results

Prior to the ad campaign, focus group participants cared a great deal about the environment. They knew about environmental issues and sources of water pollution, though soil erosion was not at the top of their list and rarely mentioned. Focus group participants received most of their knowledge from the media and asked for credible information about soil erosion, knowing that the media tended to sensationalize environmental issues. Participants also suggested that soil erosion prevention was often impractical or unclear, meaning that they wanted to fix the problem but didn't know how.

Following the campaign, results showed that the advertising project achieved a high level of awareness. Thirty-one percent recalled the advertising with or without assistance from the surveyors. The newspaper and radio advertising was the most effective, and the direct mailings did not appear to be effective at all. Twelve percent of survey respondents mentioned soil erosion when asked about important sources of water pollution (a 12 percent increase over previous phone surveys). Of those who remembered the ads, almost 70 percent could describe at least one action that could be taken to reduce soil erosion.

Looking Towards the Future

Because of the project's success, Maine DEP now has a plan for maintenance and evaluation of their outreach program. Hoppe said, "We no longer say we distributed X number of brochures, which doesn't tell us if we have raised awareness, nor does it tell us if we are moving toward or have achieved behavioral change. Rather we measure change in awareness and ask if there has been any behavioral change." Maine DEP plans to further the success of the project by implementing it in other locations around the state.

[For more information, contact Kathy Hoppe, Maine DEP, 1235 Central Drive, Presque Isle, ME 04769. Phone: (207) 764-0477; Fax: (207) 764-1507; e-mail: kathy.m.hoppe@state.me.us.]

1 + 1 = H_2O

"Sharpen your pencil, brush up on your math skills — and win a free Water Conservation Kit." This is the challenge the Swatara Creek Watershed Association (SCWA) posed to the nearly 300,000 people living in its southeastern Pennsylvania watershed. SCWA published a math quiz about household water use in their quarterly newsletter, and in just two months, the SCWA's plan to reach every household has, in the words of SCWA President Jo Ellen Litz, "really taken off. Adults are filling out the quiz we printed in our newsletter, and teachers are copying it to give to their students." She adds that "we set up this quiz for success. It's not easy, you have to think, but so far over 90 percent of the entries have been correct." SCWA delivers the kits as prizes to winning students at their schools; adult winners pick up their kits at the SCWA office.

The Water Conservation Kits include:

- 1 toilet tank bank capable of saving one gallon of water per flush;
- 1 fill cycle diverter capable of saving 1.5 gallons of water per flush;
- 1 motion flow showerhead capable of saving 2.5 gallons of water over conventional models;
- Leak detection tablets to help pinpoint costly toilet tank leaks; and
- Faucet aerators for both the kitchen and bathroom capable of saving 2.5 gallons of water per minute over conventional faucet sink aerators.

SCWA used a state grant to purchase the 800 kits from Niagara Conservation, a 22-year-old New Jersey firm specializing in energy and water conservation. "They will customize the kits to the

1 + 1 = H_2O (continued)

buyer's needs," Litz says. "They are great to work with, and I would recommend them to other watershed associations."

Municipalities and utilities, Niagara's principal clients, purchased a large number of kits ranging from 5,000 for Roanoke, Virginia to 200,000 for El Paso, Texas, which distributed them to every household in the perennially dry city.

[For more information, contact Jo Ellen Litz, 2501 Cumberland St., Suite 2, Lebanon PA 17042; Phone: (717) 274-1175, or Arty Toleno, Niagara Conservation, 45 Horsehill Road, Cedar Knolls, NJ 07927. Phone: (973) 829-0800; Internet: www.niagaraconservation.com.]

Web-based Program Educates Pennsylvania Students

The numbers are impressive for the Watershed Education Program sponsored by Pennsylvania: Over the past three years, more than 2,000 teachers and students from 50 schools — 446 teachers participating in 28 teacher workshops — and civic groups, as well, have used the web-based program to select a waterway they can study, learn from, and craft an appropriate stewardship program to help the waterway. For an overview of the watershed program, visit www.dcnr.state.pa.us.

Best Management Practices for Storm Water Phase II Menu

As part of its public outreach program, EPA recently completed its National Menu of Best Management Practices (BMPs) for Storm Water Phase II, the Phase II referring to the second phase implementation of NPDES requirements. The menu, intended as guidance only and available online at www.epa.gov/npdes/menuofbmps/menu.htm, provides information to regulated small Municipal Separate Storm Sewer Systems (MS4s) about the types of practices they could use to develop and implement their storm water management programs.

The Phase II rule describes six minimum control measures which most regulated small MS4s will need to implement. EPA anticipates that these minimum control measures typically will be implemented by applying one or more BMPs appropriate to the source, location, and climate. The practices listed in the menu of BMPs have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the minimum control measures. The six measures are:

- public education and outreach on storm water impacts,
- public involvement/participation,
- illicit discharge detection and elimination,
- construction site storm water runoff control,
- post-construction storm water management in new development and redevelopment, and
- pollution prevention/good housekeeping for municipal operations.

Reviews and Announcements

Texas Smartscape

Texas Smartscape is an interactive CDROM created by a multi-disciplinary team to help homeowners and developers in North Central Texas learn how to landscape with native and adapted plants. The team hopes that by encouraging landowners to use attractive native plants that require little maintenance, the landowners will prevent pollutants from entering local watersheds and will protect the water supply during hot, dry summers. To help meet people's aesthetic needs, many of the plants featured on the CDROM will also attract butterflies and hummingbirds.

Texas Smartscape (continued)

The North Central Texas Council of Governments, Tarrant County, Texas Agricultural Extension Service, Tarrant Regional Water District, Texas Parks and Wildlife, and Weston Gardens developed *Texas Smartscape*. To ensure maximum distribution of the information, the team has made the CDROM freely available. In fact, more than 90 entities, including local cities, county agencies, some area nurseries, and other organizations in North Central Texas have ordered 84,105 copies of the CDROM and will distribute them for little or no cost. Additional copies of the CD can be produced and distributed for free without registration restraints.

[For more information, see www.dfwstormwater.com/smartscapecd.html or contact John Promise, Director, NCTCOG Environmental Resources, 616 Six Flags Drive, Suite 200, Centerpoint Two, Arlington, TX 76005-5888; Phone: (817) 695-9231; e-mail: Jpromise@dfwinfo.com.]

Watershed Success Stories

The latest edition of Watershed Success Stories is available online at the Clean Water Action Plan web site (www.cleanwater.gov/success). The 68-page report contains pictures and summaries of community water quality improvement projects from across the U.S. Each project involves active participation by the local community with assistance from varying government agencies and funding sources, including Clean Water Act section 319 grants. The 30 success stories presented in this report demonstrate how coordinating efforts of federal, state, and local partners can lead to innovative restoration solutions for a wide variety of water quality problems.

Assessing the TMDL Approach to Water Quality Management

The National Research Council (NRC) issued a report on the total maximum daily load program (TMDL) program in the summer of 2001, called *Assessing the TMDL Approach to Water Quality Management*, which included a number of recommendations for improving the TMDL program. However, NRC generally found the TMDL program to be sound and recommended that the program should proceed while science continues to improve. Congress asked NRC to examine the program's scientific basis for (1) determining which waters are impaired and (2) for developing TMDLs.

The most important conclusion of the report is that "scientific uncertainty is a reality within all water quality programs, including the TMDL program, that cannot be entirely eliminated. The states and EPA should move forward while making substantial efforts to reduce uncertainty." The report also stressed that the goal of attaining designated uses "should not be limited by unreasonable expectations for predictive certainty among regulators, affected sources, and stakeholders."

The report is available from the National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418. Phone: (800) 624-6242 or (202) 334-3313. Internet: www.nap.edu/books/0309075793/html.

New Video Explores How TMDLs Keep Our Waters Clean

"By combining science and technology with education and community involvement, TMDLs are making a difference around the country." These facts, quoted by narrator Ed Berliner, are brought to life in a new video targeted at the public, politicians, and local decision makers.

TECHNO 2100: Keeping Our Waters Clean, produced and released by the Information Television Network, introduces the issues surrounding TMDLs. The video first provides the viewer with basic background information, including the hydrologic cycle, what makes up a watershed, and the types of water quality monitoring used by agencies and citizen groups. The video then introduces the viewer to the TMDL approach by defining it as an approach that represents the next step in protecting the nation's lakes, rivers, and streams ." After outlining the parts and purpose of a TMDL, the video explains the need for ongoing research into potential water pollutants and stresses the importance of cooperation between all stakeholders. Learn about coastal pollution problems in California's Monterey Bay and algae blooms in Missouri's famous Table Rock Lake — and how TMDLs are being used in these and other regions to identify the pollution problems and develop solutions. Farmers, environmentalists, state agency personnel, and others across the

New Video Explores How TMDLs Keep Our Waters Clean (continued)

country share their experiences with the TMDL program and underscore the need for and the importance of TMDLs.

The video, which premiered in December 2001 on CNBC during sponsored programming, was developed with support and cooperation from EPA, America's Clean Water Foundation, the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), and state environmental agencies in Arizona, California, Florida, Kansas, Louisiana, and Missouri.

The video is available for purchase for $29 by calling (888) 380-6500. It is also be available on the Internet at www.itvisus.com/broadcast/techno/keepwatersclean/index.htm and at webevents.broadcast.com/informationtvnetwork/cetr.html. For more information contact Jamie Wood, ITV Program Development, Boca Raton, FL. Phone: (561) 997-5433; e-mail: info@itvisus.com; Internet: www.itvisus.com.

Websites Worth a Bookmark

The Guardian Newsletter: www.guardiannewsltr.com/eguardian.htm

This online bimonthly newsletter, created in 1995, provides information for volunteers interested in environmental service. It lists national and international environmental service trips involving research assistance, repairing hiking trails, wildlife habitat restoration and preservation, rebuilding of international communities, and teaching languages to other cultures.

Great Lakes Commission Water Quality: www.glc.org/wquality.html

The Great Lakes Commission, a binational agency, promotes the orderly, integrated and comprehensive development, use and conservation of the water and related natural resources of the Great Lakes basin and St. Lawrence River. The Great Lakes Commission homepage provides area information including sustainable watershed planning, sediment and soil erosion, and more.

Nonpoint Source Pollution Contacts: www.epa.gov/owow/nps/contacts.html

EPA has posted contact information for federal, regional, and state nonpoint source contacts in Word Perfect and Rich Text Format..

Datebook

DATEBOOK is prepared with the cooperation of our readers. If you would like a meeting or event placed in the DATEBOOK, contact the *NPS News-Notes* editors. Notices should be in our hands at least two months in advance to ensure timely publication.

Meetings and Events

July 2002

1–3 *AWRA's Annual Summer Conference: Ground Water/ Surface Water Interactions*, Keystone, CO. Contact Michael J. Kowalski, AWRA Director of Operations, 4 West Federal Street, P.O. Box 1626, Middleburg, VA 20118-1626. Phone: (540) 687-8390; Fax: (540) 687-8395; E-mail: mike@awra.org.

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Nonpoint Source NEWS-NOTES is an occasional bulletin dealing with the condition of the water-related environment, the control of nonpoint sources of water pollution and the ecosystem-driven management and restoration of watersheds. NPS pollution comes from many sources and is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural pollutants and pollutants resulting from human activity, finally depositing them into lakes, rivers, wetlands, coastal waters, and ground water. NPS pollution is associated with land management practices involving agriculture, silviculture, mining, and urban runoff. Hydrologic modification is a form of NPS pollution which often adversely affects the biological integrity of surface waters.

Editorial contributions from our readers sharing knowledge, experiences and/or opinions are invited and welcomed. (Use the COUPON on page 27.) However, *NEWS-NOTES* cannot assume any responsibility for publication or nonpublication of unsolicited material nor for statements and opinions expressed by contributors. All material in *NEWS-NOTES* has been prepared by the staff unless otherwise attributed. For inquiries on editorial matters, call (703) 548-5473 or FAX (202) 566-1333.

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