

Research shows enforcement is best BMP

If you were given a choice between strong enforcement of minimal erosion control practices and minimal enforcement of strong erosion control practices, which would you choose to protect your creeks and streams from sedimentation? If you chose stronger regulations, think again. A University of North Carolina scientist told the N.C. Sedimentation Control Commission in February that his research shows that stringency of regulation has less impact than inspection and enforcement activities in controlling sediment pollution.

Dr. Seth R. Reice, an experimental ecologist, and colleagues in the social sciences at UNC-Chapel Hill spent three and a half years sampling streams around construction sites in North Carolina's Research Triangle area and interviewing local erosion control officials and construction contractors. Their project represents the first attempt to link policy and regulations to ecological impacts in streams. It was funded by the U.S. Environmental Protection Agency and the National Science Foundation.

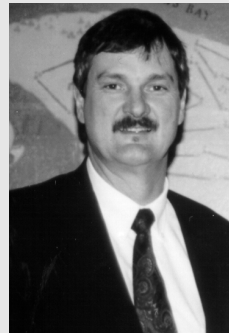
The researchers selected three jurisdictions in the fast-growing Research Triangle area for their project: Orange County, Wake County, and N.C. Department of Environment and Natural Resources (DENR) Region IV.

(In counties and municipalities where there are no local erosion and sedimentation control programs, DENR's

Division of Land Resources regional staff enforce the Sedimentation Pollution Control Act along with the Dam Safety Act and the Mining Act. In addition to being responsible for all government construction sites, DENR Region IV is responsible for private construction sites in 16 counties and their municipalities where there are no local programs)

The researchers analyzed the erosion and sedimentation control requirements and the staffing and resource levels in each jurisdiction. During the period covered by Dr. Reice's research, DENR Region IV inspectors had 250 active sites per inspector while Wake County had 125 sites per inspector, and Orange County had 33.

Both Wake County and DENR Region IV enforce the minimum regula-



Have a plan!

Tommy Burleson, member of the 1974 NCAA Champion Wolfpack basketball team and erosion and sedimentation control officer for Avery County, told local erosion control officers that one of the secrets of success is knowing what you intend to do. "Have a

plan and use it," Burleson said. "Don't try to make it up as you go." Burleson was keynote speaker at the Local Erosion and Sedimentation Control Programs Award Luncheon in January. See page 3 for Local Programs Award winners.

tions required under the N.C. Sedimentation Pollution Control Act. However, Wake County's staffing and enforcement are greater than DENR Region IV.

Orange County has regulations that are more stringent than the State mandated regulations and has intense enforcement.

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February action of the N.C. Sedimentation Control Commission

At its regular meeting on February 13, the N.C. Sedimentation Control Commission (SCC) took the following action:

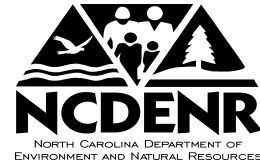
- Approved delegation of authority to implement the Sedimentation Pollution Control Act to the City of Newton (see article page 5).
- Approved local program assistance funds for Jackson County, The City of Newton, the Town of Cary, the City of Greensboro, Haywood County, and the City of Asheville. The N.C. General Assembly provided \$151,357 per year for 1999-2001 for cost sharing with local governments for local erosion and sediment control programs. (A small amount of cost-share funds may still be available for fiscal year 2000-2001 to local governments for startup or enhancement of local erosion and sedimentation control programs. For information, contact David Ward at the N.C. Land Quality Section headquarters in Raleigh [919/733-4574].)
- Approved priorities for research in erosion and sedimentation control. In 1999, the N.C. General Assembly provided a one-time appropriation of \$260,000 to fund research aimed at evaluating and improving erosion and sedimentation control technology and application. In August 1999, the SCC voted to provide about \$135,000 of these funds to the N.C. State University National Training Center for Land-Based Technology and Watershed Protection to fund field evaluation of several erosion and sediment control measures. The remaining funds (about \$125,000) will be used to fund competitive grants on topics related to erosion and sediment

control, with topics chosen by the SCC receiving priority. Those priority topics are:

- ✓ Evaluate the effectiveness and economics of new and existing erosion and sediment control methods.
- ✓ Evaluate the economic, technology, and environmental impact of turbidity.
- ✓ Develop economic incentives for good erosion and sediment control practices.
- ✓ Develop post-construction BMPs for sediment and nutrient reduction.
- ✓ Investigate the effectiveness of erosion and sedimentation control devices by physiographic regions of North Carolina.
- ✓ Investigate nutrient contribution from land-disturbing activities.
- ✓ Investigate the effect of land-disturbing activities on stream stability.
- ✓ Develop a better understanding of sediment transport to coastal waters.
- ✓ Investigate plunge pool systems as an alternative to traditional rip-rap armored culvert outfalls.

The Water Resources Research Institute of The University of North Carolina will issue an RFP on behalf of the SCC. Proposals will be reviewed by the SCC Education Committee and additional technical experts. The RFP is expected to be available by the end of February on the WRRRI website at <http://www2.ncsu.edu/ncsu/CIL/WRRRI/sedimentRFP.html>.

- Approved reprinting the *N.C. Erosion and Sediment Control Field Manual*. The stock of field manuals has been depleted. Additional manuals are expected to be available in summer 2001.



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Send comments to Caroline Medlin, NCDENR-Land Quality, 1612 Mail Service Center, Raleigh, NC 27699-1612. Email: Caroline.Medlin@ncmail.net. Send change of address to WRRRI, Box 7912, North Carolina State University, Raleigh, NC 27695-7912 (919/515-2815). Fifty-six hundred copies of this newsletter were printed at a cost of \$1,297.44 or 23 cents per copy.

Personnel of the Land Quality Section of the N.C. Department of Environment and Natural Resources provide information and assistance for implementation of the N.C. Erosion and Sediment Control Program. For assistance, please contact the Regional Engineer or the Raleigh headquarters listed below:

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The North Carolina
Sedimentation Control Commission

The Sedimentation Control Commission (SCC) was created to administer the Sedimentation Control Program pursuant to the N.C. Sedimentation Pollution Control Act of 1973 (SPCA). It is charged with adopting rules, setting standards, and providing guidance for implementation of the Act. The composition of the Commission is set by statute to encompass a broad range of perspectives and expertise in areas related to construction, industry, government, and natural resource conservation and quality. All members are appointed by the Governor and serve three-year terms, except for the Director of the Water Resources Research Institute of The University of North Carolina, who serves as long as he remains Director. The chairman of the SCC is named by the Governor.

Chairman:
Kenneth H. Reckhow
Durham

Director of Water Resources Research Institute

Commissioners:

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Winston-Salem
Rep. N.C. Environmental Management Com.

John R. Bratton
Knightdale
Rep. N.C. Mining Com.

Donnie W. Brewer
Greenville
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James Ferguson
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Rep. N.C. Soil and Water Conservation Com.

Phillip Ray Gibson
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J. Wendell Gilliam
Raleigh
Rep. NCSU Dept. of Soil Science

Ray B. Killough
Matthews
Rep. N.C. public utilities

Joseph A. Phillips
Raleigh
Non-governmental conservation representative

Kyle Sonnenberg
Southern Pines
Rep. Association of County Commissioners/
N.C. League of Municipalities

Ralph Stout
Greensboro
Rep. Carolinas Associated General Contractors

F. Roger Watson
Asheville
Rep. N.C. Home Builders Association

Local Program Awards go to High Point and Charlotte

At the local programs workshop in Southern Pines in January, awards for outstanding performance were presented to the City of High Point and the City of Charlotte.

The City of High Point received the Local Program Award for programs with fewer than three staff members. High Point was nominated by Winston-Salem Regional Engineer Matthew Gantt. Gantt cited



the program for its willingness to invoke restoration authority when streams are damaged by off-

Brian Sullivan, Erosion Control Inspector for the City of High Point (center), receives the Local Program Award for programs with fewer than three staff members from N.C. Sedimentation Control Commission member Phillip Gibson (right) The program was nominated by Matthew Gantt, Winston-Salem Regional Engineer (left).

site sedimentation and for its reliability. "I never have to worry about the way the High Point program is run," said Gantt. "They're doing it and they're doing it right."

The City of Charlotte received the Local Program Award for programs with more



Left to right: Doug Miller, Mooresville Regional Engineer; Mitch Maddox and Steven Gucciardi, Grading and Erosion Control Coordinators; Bill Miller, Construction Inspector, and John Geer, Administrator of the Charlotte Local Program; and Phillip Gibson, SCC member.

than three staff members. Charlotte was nominated by Mooresville Regional Engineer Doug Miller. Miller called the Charlotte program "steady." He said, "If there's a problem and they need help, they ask for it. They're not concerned about how things might

look, they're just concerned about getting the job done." Miller cited the program's new initiative to control sedimentation from single-family development as an example of its seriousness about protecting streams.

Enforcement *continued*

The researchers selected 17 small and large construction sites distributed among the three jurisdictions in Orange and Wake counties. The counties oversee all private construction, and DENR Region IV oversees all government construction in those counties.

At the 17 construction sites, researchers evaluated water quality and biodiversity upstream, at the construction site, and downstream before, during, and after construction. "Before" samples were taken when sites were identified. "During" and "after" samples were taken within 48 hours following a rainfall event of one-half inch or more. At each site, researchers also measured site-to-stream

distance and site-to-stream slope and noted the presence or absence of vegetative buffers between the construction site and the stream.

Their overall analysis of biota most sensitive to sedimentation and other forms of pollution before construction and after site stabilization showed definite impacts from construction but higher abundance, richness, and diversity in streams where Orange County and Wake County had jurisdiction. Analysis of pollution sensitive communities upstream before and at-site during construction (adjusted for seasonal fluctuations) showed little effect of sedimentation at sites in Orange County and Wake County but a significant negative effect at sites under DENR Region IV jurisdiction.

The scientists also interviewed personnel of the three erosion and sediment control programs as well as contractor personnel. They asked agency personnel about their approach to enforcement and their perception of contractor compliance with regulations, and they asked contractors about their knowledge of erosion and sediment control regulations and their perceptions of enforcement agencies.

They found that Orange County takes a strict but flexible approach to

enforcement. Erosion and sedimentation control officers in Orange County allow developers to try innovative and site-specific BMPs but expect them to follow through and make sure the BMPs work. They do not impose frequent penalties, but the penalties they do impose are often severe. The agency's internal capacity provides the time and resources for attention to individual projects.

DENR Region IV, the researchers say, takes a "by the book" approach to enforcement. Because of the large number of projects each inspector must cover, inspectors cannot spend much time on plan review or inspections and cannot afford the extra time required to work out site-specific controls. While DENR Region IV actively imposes penalties, the penalties are not severe.

The investigators describe Wake County's enforcement approach as "routine," similar to DENR Region IV, but note that the weekly inspection hours and plan review hours per officer in Wake County is lower than in Region IV, meaning that inspectors can visit sites more frequently.

The researchers say that comparing Wake County and DENR Region IV, which have the same regulations but

continued next page

Wake Stone Corp. and Southern Seeding Service, Inc. receive award

Wake Stone Corporation of Knightdale and Southern Seeding Service, Inc. of Greensboro have received the North Carolina Landscape Association's 2000 Grand Environmental Improvement Award for the "Erosion Control in the Relocation of Mingo Creek" project at the Wake Stone Corporation Knightdale Quarry. The Grand Award is the most prestigious award presented in the erosion control category.

John Bratton, President of Wake Stone Corp., and Ralph Stout, President of Southern Seeding Service, are both members and former chairmen of the N.C. Sedimentation Control Commission.

The North Carolina Landscape Association, located in Raleigh, sponsors the annual Environmental Improvement Awards Program that (1) recognizes erosion control and landscape professionals who execute quality projects and citizens who underwrite such work, and (2) reflects the commitment to the creation and preservation of the beauty of North Carolina.

John Deere project wins Wake Soil and Water Conservation District award

Exemplary use of environmental protection measures on its construction site on Evans Road in Cary has earned John Deere the 2000 Urban Conservation Award from the Wake Soil and Water Conservation District (SWCD). Rick Bailey, Wake SWCD administrator cited the project for leaving a large portion of the site as undisturbed forest and for use of baffles and skimmers in its sedimentation basins, even though baffles and skimmers are not required.

"The company went the extra mile and its efforts are most deserving of this recognition," said Bailey.

John Deere and its contractor Daniel Corporation, credit Tom Horstman and Darin Eyster with the Town of Cary's erosion and sediment control program with suggesting the use of baffles and skimmers.

Every year, the Urban Conservation Award winner is selected from nominations made by erosion and sediment control programs in the Raleigh, Cary, Apex, Holly Springs and Wake County jurisdictions. To nominate deserving construction projects for next year's award, contact the Wake Soil and Water Conservation District at (919) 250-1050.

different inspection and enforcement intensities, allowed them to tease apart the relative importance of regulations and enforcement in protection of streams.

Interviews with contractors revealed that contractors consider flexibility to use site-specific and innovative controls a very important feature of an enforcement program because flexibility makes it easier to solve problems. These interviews also revealed that if contractors know an agency is understaffed and not likely to make frequent inspections, they may not feel obligated to follow their approved erosion and sedimentation control plans.

From this study researchers conclude that differences in laws and regulations have limited impact on reduction of sediment pollution. The key, they say, seems to be the frequency of on-site inspections and the swiftness and severity of enforcement procedures.

Personnel changes

On January 16, Governor Mike Easley named Greensboro attorney **William G. "Bill" Ross** as Secretary of the N.C. Department of Environment and Natural Resources and retired Raleigh City Manager **Dempsey Benton** as Chief Deputy Secretary.

Corey Priddy is the new Environmental Technician in the Mooresville Region.

Shannon Leonard has joined the Winston-Salem Region as an Environmental Technician.

Lindy Leonard, Assistant Regional Engineer in Winston-Salem, retired effective Feb. 28, 2001.

Tabitha Brown is the new Sediment Education Intern in the Raleigh headquarters. She is majoring in soil science at NC State University.

In presenting the results of the study to the SCC, Dr. Reice noted that all the erosion and sedimentation control officials he came into contact with were conscientious and hard working, but he said that in many instances they have an enormous work load that prevents them from being effective.

"I urge you to lobby the governor and the General Assembly hard to get more sedimentation inspectors out in the field," he told the SCC. "Because it's not the way the law's written, by and large it's not slope and buffers, it's enforcement and the frequency and nature of inspections that makes the difference for our streams."

Following Dr. Reice's presentation, Division of Land Resources Director Charles Gardner told the commission, "This study emphasizes the great need for more and better local programs."

Gardner said that given the current state budget problems it is unlikely funding can be made available for additional DENR regional inspectors any time soon. He said that getting more inspectors on construction sites is likely to depend on local governments stepping up and taking responsibility for construction activities in their jurisdictions.

Dr. Reice presented the results of his research at the EPA National Conference on Tools for Urban Water Resources Management and Protection held in February 2000. His presentation, titled "Regulating erosion and sediment pollution in streams: What really works and why?" is included in the proceedings of that conference. The document, Proceedings: National Conference on Tools for Urban Water Resource Management & Protection (EPA/625/R-00/001) (EPA/625/C-00-001 CD-ROM), can be obtained free from ORD Publications, U.S. Environmental Protection Agency, NCEPI, P.O. Box 42419, Cincinnati, OH 45242. The publication can also be ordered online at <http://www.epa.gov/ttbnrmrl/625/R-99/002.htm>.

City of Newton establishes local erosion and sedimentation control program

At its February meeting, the N.C. Sedimentation Control Commission delegated authority to implement the Sedimentation Pollution Control Act to the City of Newton in Catawba County. This delegation brings to 44 the number of local erosion and sediment control programs in North Carolina.

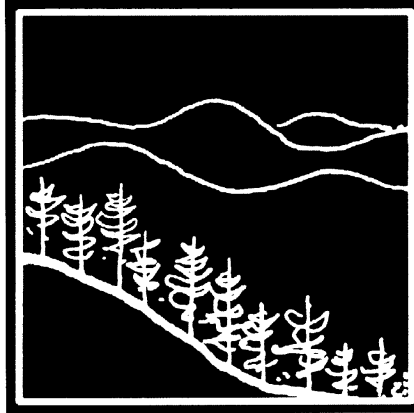
Each local government awarded delegation has adopted a local erosion and sediment control ordinance deemed equal to or more restrictive than the State's model ordinance and each has demonstrated a commitment of resources to implement its ordinance. Because local erosion and sedimentation control ordinances vary in content and scope, those contemplating land-disturbing activities should be familiar with local ordinances.

The City of Newton applied for and received Local Program Grants to help initiate their programs. Funds for cost-sharing for local program start-up were provided by the N.C. General Assembly in the 1999-2001 State government budget. Local governments may receive 40% of the cost of operating a new local erosion and sediment control program for up to 18 months.

The City of Newton's Erosion and Sedimentation Control Program will be headed by Glenn J. Pattishall, Assistant City Manager and Planning Director. The address is P.O. Box 550, Newton, NC 28658. Phone is (828) 465-7400.

A toll-free hotline
has been
established
statewide for
concerned
citizens to
report possible
violations of the
North Carolina
Sedimentation
Pollution
Control Act.
To report problems
call
**1-866-
STOPMUD
(786-7683)**

Mountain Home Guide



eleven factors to consider

**BEFORE YOU
BUY OR BUILD**

Western North Carolina Tomorrow

Every year in the mountains of North Carolina, people lose money and suffer hardships due to the lack of awareness of important factors when purchasing land or a mountain home. This booklet shares some examples of those hardships and provides a guide to making wise investment and development decisions.

It can be downloaded in pdf format from the Western North Carolina Tomorrow website at <http://www.wnct.org/mountain.html> or ordered for \$3.00 (make check payable to Western Carolina University) from Western North Carolina Tomorrow, P.O. Box 222, Cullowhee, NC 28723.

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