



Currents

WINTER 2001

The Newsletter for the White Oak River Basin

BMP project complete

The White Oak River BMP demonstration project came to an end in the fall of 2000, but the research and education value of the work that was done will help coastal water quality professionals for years to come.

Project investigators found that stormwater — whether it originates at the farm, street or yard — is the single biggest pollution problem threatening water quality in the coastal zone. We learned that targeted best management practices (BMPs), such as retention, filtration and absorption of excess runoff, help, but they need to be implemented universally in residential, commercial and farm landscapes.

Recommendations generated from this research have been presented at conferences locally, nationally and internationally. And just as important, more than a dozen educational programs were conducted to convey this information to the local community. Workshops, field days and tours targeted local elected officials, agency officials, developers and students.

Furthermore, project partners have supported several other water quality projects, such as the work under way at Pettiford Creek, Jumping Run and other EPA 319 projects.

In addition to the scientific and

(Continued on page 4.)

Water quality efforts focus on Bear Creek



The project will enhance valuable shellfish waters in the Bear Creek watershed.

A new area project is geared toward improving shellfish waters in the Bear Creek watershed.

“The shellfish waters in this area not only serve as a beautiful natural resource but also allow many people to make a living,” says Katherine Oury, community design specialist with North Carolina State University’s College of Design. “We wanted to target an area that people really care about, and the shellfish waters are the community’s first choice.”

The Bear Creek shellfish restoration project objectives are twofold: First, best management practices (BMPs) will be put into place to reduce fecal coliform levels, sedimentation and nutrient impacts from stormwater runoff. Second, the

project aims to educate stakeholders in the watershed and throughout the basin about their role in protecting water quality.

The Bear Creek team is monitoring several sub-watersheds to characterize the nonpoint source pollution. Four demonstration BMPs — permeable pavement, wetlands, rain gardens and grassy swales — will be used to reduce the impacts from residential, roadway, agricultural and forestry runoff. Stream protection buffers will be used to reduce sediment.

The team also will develop and deliver educational programs with the help of local citizens and schools. Tours will be conducted to demonstrate the various BMPs.

Willis project shows profitable agriculture can coexist with clean water

The project has ended and the results are in: It is possible to have prosperous agriculture, protect water quality and keep a little more money in a small farmer's pocket.

That was the main conclusion of an agricultural water quality study begun in 1997 on the Ernest Willis family farm in Carteret County. His farmland lines the Newport River banks.

"There is still a lingering perception that agriculture in this area of the state leads to fish kills," says Ray Harris, director of North Carolina Cooperative Extension's Carteret County center. "That is just not true."

On-farm testing throughout the project revealed that water leaving the Willis farm had very low levels of dissolved nitrogen and phosphorous.

Willis carefully collects and recirculates irrigation water and rainfall through three ponds. This allows him to use the water more efficiently and to clean it before it either is used again or goes into the river.

"I don't know that I did anything out of the ordinary than from what other farmers do," Willis says. "I just wanted to be sure that if I was part of the water-quality problems in this area I would do what it takes to make things right."

His commitment to doing what is right, both by his livelihood and his environmental responsibility, is common among eastern North Carolina farmers, according to Harris. "Farmers have to drink and fish these waters just like everyone else. Most of them really do care about water quality."

In addition to shedding light



To thank Ernest Willis for his role in protecting water quality in the White Oak River Basin, project leaders installed this sign on his farm. Pictured (from left) are Dr. Bill Kirby-Smith of Duke University, Willis, and Cooperative Extension's Ray Harris, Nancy White and Dan Line.


on the positive relationship between agriculture and water quality, the project exemplified the ways that interagency and multi-university collaboration can meet local needs.

Says Nancy White, director of research and extension programs for North Carolina State University's College of Design, "Not only did this project show the cooperative spirit and attitude most farmers have about participating in water-quality studies, but it brought together scientists from major research universities and from a broad range of disciplines within those universities. It also showed how the university works well with other state agencies like our Department of Environment and Natural Resources in tackling real-world problems."

Last summer, the project team installed a sign proclaim-

ing, "Willis Family Farms: Protecting Water Quality."

"I'm proud of the sign," says Willis. "But I'm sure there are other farmers around here that deserve one, too."



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Bio-retention holds promise for White Oak basin

As White Oak Basin communities continue to develop, the need to effectively handle the inevitable increase in stormwater runoff grows daily. Bio-retention, a new best management practice, holds promise as an aesthetically pleasing way to meet that need.

Bio-retention both redirects water flow and blends well into a community's existing landscape, says Bill Hunt, a stormwater specialist at North Carolina State University.

Bio-retention areas, also known as rain gardens, use vegetation to slow the flow of stormwater runoff and, by doing so, direct the runoff down *through* the ground instead of *over* it.

"Runoff will pond near the top of the bio-retention area. As the runoff infiltrates the soil, sediment and nutrients are



Also known as rain gardens, bio-retention areas direct runoff down *through* the ground instead of *over* it.

removed. The vegetation takes up some of the nutrients for growth," Hunt says. He adds that microbes in the soil also break down dissolved pollutants.

The end result: cleaner water reaching North Carolina's rivers.

Standard nurseries stock many of the plants needed for bio-retention areas. Red maples,

wax myrtles and many pines thrive in the rain-garden setting.

"This is a new practice. One of the most challenging aspects is convincing people that it works," Hunt says. "Current research suggests it does, and we expect that demonstration sites will support that."

Watershed board to kick off new project

With the new year has come a new stage in the White Oak River Watershed Advisory Board's investigation into increased shellfish area closures due to elevated fecal coliform bacteria counts. In early 2001, the board shifted its attention from researching the problem to implementing recommendations to reduce closures.

With the board's support, North Carolina Cooperative Extension's Watershed Education for Communities and Local Officials (WECO) program joined with North Carolina State University's College of Design, the town of Swansboro, the North Carolina Division of Environmental Health's Shellfish Sanitation Program, and Duke University to acquire an EPA 319 grant.

The grant will support work to protect and enhance sensitive shellfish waters in two specific areas of the watershed.

Best management practices (BMPs) will be implemented and educational signs installed in Swansboro, and a BMP-targeting and implementa-

tion effort will occur in the Pettiford Creek sub-watershed.

Throughout the project, the board will work with the scientific team to involve and educate the public about the project and to help identify specific locations where BMPs should be applied.

To officially kick off the project, the board will host a public meeting to hear community concerns about water quality in the watershed. The event will be held at 7 p.m. Monday, April 9, at the Western Community Center in Cape Carteret

The center is off of Highway 24. If you are traveling from Swansboro, take a left on Old Highway 58 before the intersection of Highway 24 and the new Highway 58 (which leads to Emerald Isle). If you are traveling toward Swansboro, take a right after passing through this intersection. The center is about a mile down the road on the left.

— Christy Perrin, *College of Agriculture and Life Sciences*

BMP project *(continued from page 1)*

educational merits of the project, the crux of the project was cooperation — a hallmark of the North Carolina Cooperative Extension Service. County extension centers, a broad array of North Carolina State University specialists and a host of private cooperators and state and federal agencies have made this a project successful one.

—Nancy White, *College of Design*

White Oak Project Cooperators

- North Carolina Department of Environment and Natural Resources
- North Carolina Division of Environmental Health, Shellfish Sanitation Program
- North Carolina Sea Grant
- Duke Marine Laboratory
- Carteret and Onslow Soil and Water Conservation Districts
- Carteret-Craven Electric Cooperative
- Coastal Carolina Community College
- Trott Family Farms
- Willis Family Farms
- City of Jacksonville
- Citizens of Jumping Run Creek and Wilson Bay areas



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