Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

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Strategic Partnership Announced at EC06
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Innovation in Erosion Control: Croft Pond at Nashville Zoo
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New Wildlife Habitat in Old Gravel Pit
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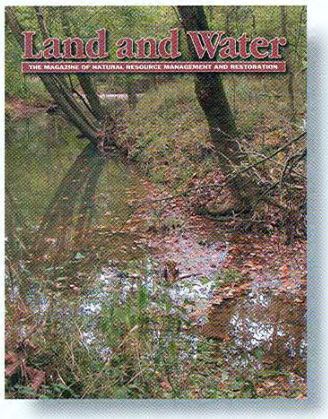

Cover Story

Cole Spring Branch, located in Jackson County, Alabama, is a tributary of the Paint Rock River and is a part of the Tennessee River basin. Cole Spring Branch is a small, headwater stream with a relatively small drainage area of 11.5 square miles. With assistance from the Wetland Reserve Program administered by USDA-Natural Resources Conservation Service, a segment of the channelized branch has been restored to the original stream bed. See story page 47.

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Changing with the Times

by Julie A. Best

THE houses we live in, the modes of transportation, and even the ways we use the land all change with the times. From the 1920s through the 60s, it wasn't unusual for landowners to channelize, or straighten, the streams meandering through their land. By straightening and enlarging a stream, landowners increased the flow capacity and the rate at which water drained away from their land. Straightening the channel also made their fields more farmable because now they could farm along a straight waterway. Back in the 1950s and 60s when there was a great deal of row crop farming in Alabama, USDA-Natural Resources Conservation Service (NRCS) provided assistance for stream channelization through its various programs. Farming, like any other business, changes as time goes on. The changes in farming operations are often a result of research or a different emphasis in the farming operation. Today, many of the fields that were once used for row crops are going back to pasture and wildlife uses. Through some of its current programs, such as the Wetlands Reserve Program which emphasizes wetland restoration and protection, NRCS now provides assistance to return streams to their natural condition.

In days gone by, streams were frequently channelized for flood control and to enchance farming operations.

Cole Spring Branch in Jackson County, Alabama, was channelized in the 1960s. A segment of the branch is on property owned by The Nature Conservancy (TNC) of Alabama, in the Paint Rock River drainage basin. The vision of TNC is to conserve natural resources within and across ecoregions. To accomplish that goal, TNC works with conservation partners to install and implement best management practices.

The Paint Rock River is a free-flowing tributary of the Tennessee River and is almost entirely located within Jackson County in northeastern Alabama. The watershed encompasses about 318 square miles and is one of the most biologically important regions in the state for both aquatic plant and animal associations.

The Paint Rock River supports an extremely diverse array of aquatic life, including some 98 species of fish and about 58 different mussel species. Five globally imperiled fishes and twelve globally rare mussels are found in the Paint Rock and its tributaries. Two of the mussel species are found nowhere else in the world and one fish species is confined to the Paint Rock River and one stream in Kentucky.

Because this is such a rich ecosystem, TNC saw the need to preserve the natural resources of the area and in 2001 established an office in the region. Doug Fears, Project Coordinator, speaks proudly of what TNC is doing in the area. "When the Paint Rock River Project set up an office here, most people in the area didn't have a clue about what we do. Information and education, and building relationships are important aspects of my job. Our objective is to lead by example—one job at a time, the best we can do—and let the people tell the story," says Fears. Leading by example resulted in the acquisition of a parcel of property known as the Whitaker Tract. Steve Northcutt, Director of Protection for TNC in Alabama says, "We had been looking at land acquisition throughout the southern Cumberlands. We decided that if we had a preserve, we could do some of the things that we have been talking to farmers about." Subsequently, TNC purchased the Whitaker Tract and established the Roy B. Whitaker Paint Rock River Preserve. TNC enrolled a portion of the land in the Wetland Reserve Program (WRP). WRP is a voluntary program, administered by NRCS, offering landowners the opportunity to protect, restore, and enhance wetlands

on their property. "Mr. Whitaker was a row crop farmer at that time. He had the old farm plan from 1964 which showed that, if he channelized the stream, he would have less flooding. We are looking for ways to protect the integrity of the Paint Rock River, and we were looking for a way to restore the stream," said Northcutt. Enrolling the land in the WRP program provides a way to accomplish this goal.

Northcutt says, "When we first purchased this property and looked at aerial maps, we saw that the stream channel was still there. We knew we wanted to restore that stream. It was just coincidental that this Farm Bill program [WRP] and this project began to fit together like a puzzle."

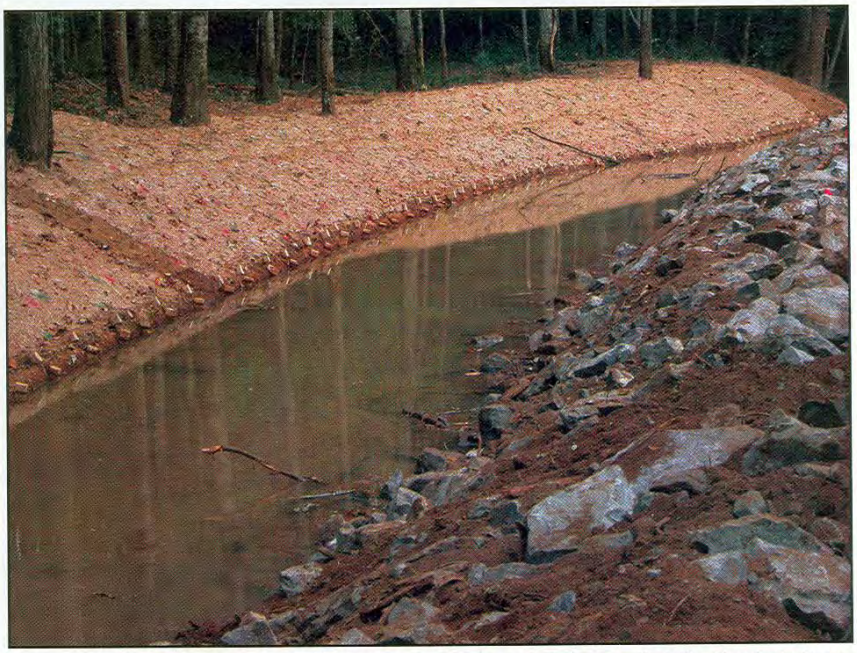
TNC purchased the Whitaker Tract in 2003 and began working with NRCS to prepare the plan to restore Cole Spring Branch. "Working with NRCS through the Wetlands Reserve Program has enabled us to do so much," says Northcutt. "We don't have private funding to do this sort of restoration. We couldn't have done it without their contribution. The engineering design work that NRCS brought to this project was huge. The federal dollars provided through the WRP program to restore this wetland made this restoration goal a possibility and allowed us to do more projects."

"Working with NRCS through the Wetlands Reserve Program has enabled us to do so much," says Northcutt. "We don't have private funding to do this sort of restoration. We couldn't have done it without their contribution."

Mac Nelson, Design Engineer for NRCS, drew the plans to restore the channelized stream to the natural meander. Talking about the plans for the project, Nelson said, "When we looked at the area, we could tell where the stream bed had been. Most of it was still very evident. The upper end had filled in quite a bit. We did surveys to determine what the original cross section looked like—stream shape, size, depth, and grade. We used that information to help us determine where to set the bottom grade where we had to excavate some of the old sediment. We computed water surface profiles to see what effect this work would have on the upstream property owners. We didn't want this work to have an adverse effect on other landowners."

The old stream bed was very evident.

When looking at the point where the channelized stream was diverted back to the meander, Nelson said, "We really didn't know how much flow would be



The cut-off dam was constructed to form a complete seal to insure that the flooded stream would not divert back to the channelized ditch.

The bank is raked to ensure a smooth surface prior to installing the erosion control blanket.

coming through here when we diverted the water back to the natural streambed. We knew if we had a large flow, there needed to be a solid structure that we could install quickly to minimize turbidity and insure that the stream did not divert back to the channelized ditch." In order to ensure a complete seal, Nelson designed a dam that included a plastic membrane. The dam is constructed with six-inch rock and then covered with gravel to provide a smooth surface. Six mil plastic sheeting went on top of the gravel surface, followed by more gravel to hold the plastic in place, and another layer of larger rock. That formed a complete seal in the area where the water used to flow in the channelized stream. "We wanted to put in some kind of structure that would divert the water quickly and cleanly. A rock dam alone wouldn't seal the water out; the water would seep through. The plastic provided a complete seal," said Nelson.

Tina's Dozer Work, a construction company owned by Tina and Donnie Brown, performed the construction work. According to Donnie, "The way we diverted the water, there was no muddy water at all. When we cut the channelized stream, it took two days for the water to run about a half-mile down the old stream bed; the channelized stream in this section was about a thousand feet. By the time the water made its circle to the connection point with the channelized stream

Coir logs were installed near the water edge to control erosion.

again, the water was just as clear as it can be."

The greatest land disturbance along the stream is in the area where the channelized stream was diverted back to the old stream bed. In order to minimize the land disturbance, the contractor used small excavation equipment so he could get in the creek bed to do the work. He salvaged some of the material to use as fill dirt for the ditch plug.

When the ditch was dug back in the 1960s, the spoil was piled to the side. The contractor also used that soil to fill in the ditch after the creek was diverted back to the original creek bed.

To control erosion along the highest excavated stream banks, the design called for installation of coir log, made of coconut fiber, along the toe of the bank.

To control erosion along the highest excavated stream banks, the design called for installation of coir log, made of coconut fiber, along the toe of the bank. The log is held in place by 36 inch wooden stakes. Nelson says, "The coconut fiber doesn't deteriorate very fast, and it will be there two or three years. By that time, we should have vegetation to hold the bank in place. Abruzzi rye and Alamo switchgrass seed was broadcast on the banks immediately after installation of the coir logs. The Abruzzi rye should provide a temporary vegetative cover within four to six weeks. The switchgrass, a native species, was added to the seed mix to see if it will establish in this particular environment of open woods. Since the area will be allowed to revert to a natural condition, the grasses are anticipated to provide only short-term cover. When the creek overflows, other grasses, weed, and tree seeds will wash in. Based on our experience on similar sites, there should be trees starting to grow along this bank within a year or two."

After grass seed was broadcast on the shaped banks and covered by raking, erosion control blanket was installed. A double net straw blanket was used. The blanket is class 2.D in accordance with the Erosion Control Technology Council guidelines. The blanket was held in place with wooden stakes and metal pins spaced according to the manufacturer's recommendations. In addition to pinning, the ends of the blanket were buried in six-inch deep trenches. According to Donnie Brown, "Before the erosion control blanket is put in, the bank is raked and smoothed. The smoother the bank when the erosion control blanket is installed, the better the chances are that the blanket will stay in place." Nelson adds, "In this high disturbance area, we put in quite a lot of rip rap and other stabilization measures because there is such a short distance from this point back to the old channelized ditch. We want to make sure that there is no chance that the creek will cut through and go back to the straight ditch when it floods. Once we get a good flood down the Cole Spring Branch, the restored streambed will begin to adjust and make its own little pools. The rock will start filling up with sediment, and eventually, you probably will not see the upper part of the rock at all."

The restored Cole Spring Branch will be a real asset to the Paint Rock River Project. The Roy B. Whitaker Paint Rock River Preserve is designated as Site #40 on the North Alabama Birding Trail. In talking about the work of TNC, Fears says, "Anyone that wants to be a good steward of the land, we are interested in talking with them. We try to work with people in harmony with the land. The message is getting out there. NRCS has been in the conservation business for many years, and working with them is a win/win situation."

In addition to restoring the stream to its original meandering course, financial assistance from the WRP program will also enable TNC to plant hardwood trees in the bottomland area. These best management practices will improve the wildlife habitat and enhance the aesthetics of the area.

Changing with the times—as the use of the land changes, so do the environmental issues. Preserving, using, and enjoying our natural resources to the fullest is the goal of both The Nature Conservancy and USDA-Natural Resources Conservation Service. **L&W**

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