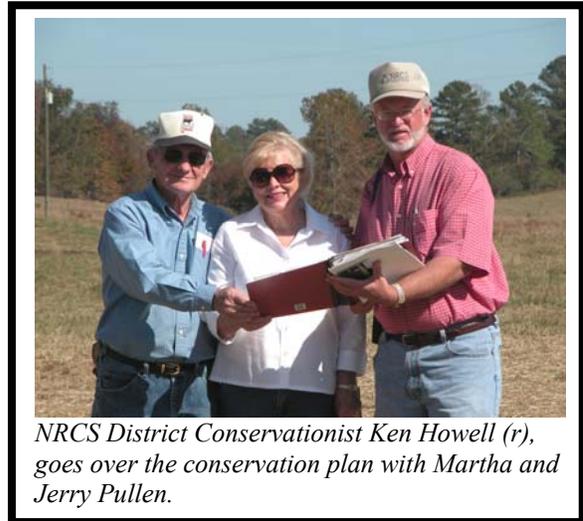


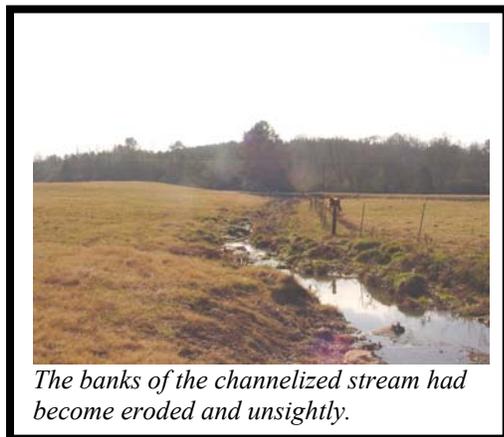
**Stream Restoration Improves Water Quality** by Julie A. Best, Public Affairs Specialist, USDA-Natural Resources Conservation Service, Auburn, AL

A desire to make things better—that’s what prompted the Waldrop Farm in Etowah County to enter into a demonstration project that was funded in part by the Alabama Department of Environmental Management (ADEM) and the Environmental Protection Agency (EPA). The Waldrop farm has been in the family for over 100 years and is recognized as a Century and Heritage



*NRCS District Conservationist Ken Howell (r), goes over the conservation plan with Martha and Jerry Pullen.*

Farm. The property is now managed by two sisters and a brother. According to Martha Pullen, one of the farm owners, “My granddaddy bought this farm, 40 acres and a house, in 1903, and my daddy was born here in 1913. The farm has grown over the years, but it’s been in the family since that time.” Like many early Alabama farms, the land was first used for row crops. After World War II, the emphasis changed from row crops to cattle.



*The banks of the channelized stream had become eroded and unsightly.*

Many years ago, the small stream that runs through the Waldrop property had been channelized. Over time, the cattle and nature had caused the stream banks to erode. The ditched stream was unsightly. Since the cattle had access to the stream, the area was also a contributor to nonpoint source pollution, such as, sediment, pathogens and organic enrichment. The

Alabama Nonpoint Source Management Program provides a good statewide foundation to

address nonpoint source pollution. Section 319 of the Clean Water Act provides for nonpoint source grant funds that can be used to install best management practice demonstration projects. The Waldrop Farm was fortunate to be selected to serve as one of those demonstration sites.

The demonstration plan on the Waldrop Farm was to restore the ditched stream to a natural state, to make the entire area more environmentally friendly, and to improve the water quality. To accomplish these goals, several conservation partners were involved.

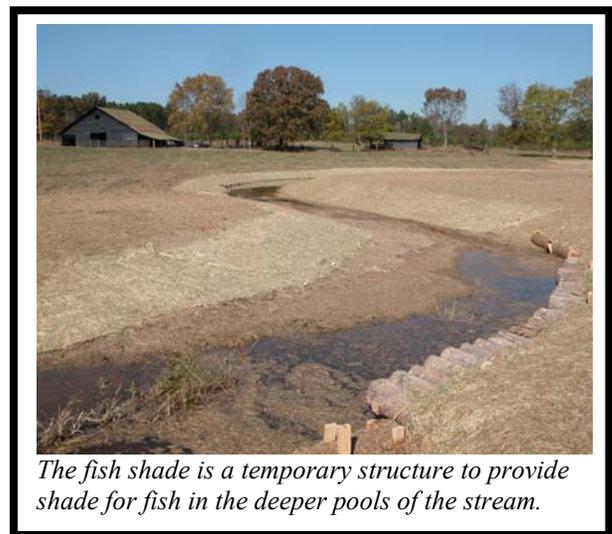
With 319 nonpoint source pollution grant funds from EPA and ADEM, the stream, which is a tributary of the Coosa River, was reconstructed in a size and configuration typical of natural streams in the vicinity having a similar drainage area. To monitor the stream conditions, ADEM performed chemical, physical, biological and habitat assessments prior to construction and they will follow up with additional monitoring after stream restoration practices are well established.

Tim Williams, Resource Engineer with USDA-Natural Resources Conservation Service (NRCS), designed the stream restoration plan. Williams explains how the restoration plan was developed. “We used the Rosgen method of stream restoration. The thought is to measure parameters of similar streams, such as: belt width, meander wavelength, radius of curvature, bankfull width, and depth, and then try to mimic these measured parameters on the restored stream. We also looked at regional curves of these measured parameters, compared these measurements with similar type streams in the southeast, to determine measurements for our layout,” says Williams.

According to Ken Howell, NRCS District Conservationist in Etowah County, “The original channelized ditch was about 400 feet; the restored stream is about 650 feet.” The design called for a consistent series of riffle/pool reaches that would be attractive to fish and other aquatic species.

To control erosion after the construction phase, the restoration plan called for the use of several erosion control products. Erosion control blanket material was installed along the disturbed banks. Coir (coconut fiber) logs were installed at the toe of the stream bank along the outside of curves. Polyacrylamide (PAM), a synthetic, organic polymer or “glue”, was broadcast over the construction area. The organic components of PAM chemically control erosion by bonding fine soil particles together to increase the particle size. The result is increased water infiltration through the particle spaces, decreased erodibility of the soil particles, and reduced turbidity of the runoff water. There is no indication of any adverse impact on soil, plant or aquatic systems when anionic PAM is used to control soil erosion.

The restored stream will improve the quantity and quality of aquatic habitat. In addition to having the natural meander of a stream, the restoration plan called for the installation of fish shade structures in the deeper pools of the stream. According to Howell, “The stream runs through the pasture, and there is little natural shade. The fish shade structures will provide cooler water and



protection for the aquatic life.” The fish shade structures are designed to be temporary. They are constructed of six foot logs that are placed side by side along the outside bank of the deeper pools.

Howell says, “A second part of this project involves installation of best management practices through the Environmental Quality Incentives Program (EQIP) of NRCS.” The next phase of the project consists of fences to keep the cattle off the floodplain and planting of

hardwood trees and shrubs to make the floodplain a wildlife refuge. These best management practices will be funded in part with cost-share assistance from EQIP. “The fish shade structures are expected to last for several years. Eventually, those logs will decay and the structure will disappear. By that time, there should be some natural shade from the trees that will be planted in the floodplain,” says Howell.

With assistance from EQIP, a stream crossing has been installed. This is an environmentally friendly way of moving cattle from one side of the stream to another by limiting their access to the stream and providing a non eroding surface. The program will also install water troughs and heavy-use areas. All of these best management practices will help improve water quality.



Martha Pullen says, “We are thrilled with the project. My dad would be so pleased. He wanted to improve the stream, but he didn’t have the resources to do something of this magnitude. They called us two and a half years ago to see if we wanted to participate in this demonstration project. We were ready to begin work right then! It was well worth the wait. We figured they knew what they were doing, and we were willing to wait for the plan to come together.”

According to ADEM, nonpoint source pollution is the number one contributor to water quality degradation of Alabama’s waters. Unlike point source pollution that enters waters at definite locations such as discharge pipes from wastewater treatment plants, nonpoint source

pollution originates from numerous, often scattered sources. Nonpoint source pollution is often associated with farming, urban and construction runoff/sedimentation, and streambank erosion.

The work on the Waldrop Farm is another example of partners working together to accomplish a common goal of good water quality. The work was the culmination of efforts from ADEM, EPA, NRCS, Etowah County Soil and Water Conservation District, Alabama Cooperative Extension System, U.S. Fish and Wildlife, Army Corps of Engineers, and the Gadsden Water Works. All of these agencies represent different segments of the conservation effort. Collectively, they can accomplish so much more than any of them can accomplish alone.



*When vegetated, the restored stream will not only be beautiful to the eye but will enhance the water quality and wildlife habitat.*

Even without vegetation, the newly reconstructed stream is pleasing to look at. What was once an unsightly, eroded ditch will soon be an attractive, meandering stretch of stream. The area is being restored to a place that appeals to the human eye. The improved stream conditions are also conducive to good water quality and wildlife habitat.