



Citizens Working Together To Protect and Restore Water Quality

... success stories built upon innovation, cooperation, and commitment


The Alabama Nonpoint Source Pollution Management Program

The purpose of this document is to showcase some of the collaborative efforts of citizens, educators, landowners, and local, state, and federal agencies to reduce polluted runoff and improve, maintain, and protect water quality in Alabama. Many of the projects were initiated with Clean Water Act Section 319 grant funds provided by the U.S. Environmental Protection Agency—Region 4, to the Alabama Department of Environmental Management. Several activities were implemented using additional resources provided by other federal, state, and local agencies, academia, and private interest groups. Other projects were the result of direct citizen involvement with a desire to make a difference in protecting Alabama's environment.

No attempt has been made to document and identify every polluted runoff management measure effort. This document presents photos and information from eleven statewide NPS management program showcase tours. Additional information was provided by RC&D Coordinators, Watershed Project Coordinators, the editor, and from NRCS success stories highlighted at *http://.www.seweb.ga.nrcs.usda.nrcs.gov/al/SStories.html.*

The NPS showcase tours and this document were made possible in part by a Clean Water Act Section 319 grant from the U.S. Environmental Protection Agency to the Alabama Department of Environmental Management, to the Center for Environmental Research and Service at Troy State University.

Cover Photographs:

Upper Left - A volunteer uses a Alabama Water Watch water quality test kit to monitor dissolved oxygen during a Nonpoint Source Watershed Institute at Troy State University.

Top Center, Upper Photo - Detention ponds/wetlands at EARTH Park in Hartselle, AL., - a streambank restoration and outdoor environmental education project site.

Top Center, Lower Photo - A tour group hears about the history of an abandoned surface mine cleanup project from Robert Youngblood, during a CAWACO RC&D showcase tour.

Top Right, Upper Photo - A landowner proudly demonstrates pasture aeration equipment in the Flint Creek (Tennessee Valley RC&D) watershed.

Top Right, Lower Photo - Watershed Protection: Weeks Bay Watershed Project sign

Center - Shoreline erosion prevention and restoration at Camp Beckwith on Weeks Bay.

Bottom Left - Educators, NRCS, and SWCD personnel participate in Alabama Water Watch stream bioassessment training on a tributary to the Patsaliga River in 2001.

Bottom Right - Mike Roden , Coordinator, Tennessee Valley RC&D Council describes a wetlands onsite wastewater treatment project during a Flint Creek showcase tour.

Citizens Working Together To Protect and Restore Water Quality:

A Showcase of Success Stories Built Upon Innovation, Cooperation, and Commitment

Alabama Nonpoint Source Pollution Management Program

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A Brief Introduction to the Alabama Nonpoint Source Pollution Management Program

State Nonpoint Source Management Programs were authorized in 1987 when Congress amended the Clean Water Act (CWA) to include Section 319. The Section 319 program provides grant funds to assist states in managing nonpoint source or "runoff" pollution. The addition of Section 319 to the CWA resulted from a growing realization that despite the expenditure of billions of dollars to treat point sources of pollution such as industrial and municipal wastewater treatment plant discharges, management efforts were still not sufficient to meet the national policy objective of the CWA, "...*to restore and maintain the chemical, physical, and biological integrity of the nations waters,*" or to achieve CWA "*fishable and swimmable*" goals.

The Alabama Nonpoint Source Management Program was approved by the USEPA in 1989 and revised in 1999. The first Section 319 grant was awarded in 1990. The Alabama program supports a voluntary citizen-based local watershed protection approach. It promotes best management practices, education and outreach, technical assistance, and technology transfer to protect and improve water quality, and utilizes various environmental monitoring and assessment methods to assess program effectiveness.

Successful voluntary activities depend upon people who are interested in protecting aquatic resources. In order to illustrate how far the program has progressed, one has only to look back upon the very first significant nonpoint source (NPS) management program activity: a Section 319 mandated statewide assessment of NPS impaired waters. This first assessment was not entirely successful, in part, because very little cooperative relationships, collaboration, or trust existed between landowners, agencies and citizens, and the lead NPS program implementation entity. For instance, some stakeholders were reluctant to list waterbodies as impaired because they believed that it might result in an enforcement action being taken, or that it would create an undue economic hardship. Today, landowners and landusers realize that regulatory activities are separate and distinct of Section 319 funded demonstration and implementation project activities and that grant funding for cleanup may be available only for waters that are listed as impaired from nonpoint source runoff pollution. In addition, locally-led conservation teams in each county are now more willing to list and prioritize impaired waters based upon their own local assessments because of the trust, understanding, and spirit of cooperation that has developed since the initial assessment.

The success of Alabama's Nonpoint Source Management Program is the direct result of the voluntary efforts of resourceful, motivated, and caring people. A growing number of agencies, landowners, grassroots organizations and citizens are using a local community-based watershed protection approach to work together to develop and implement solutions to widespread problems and to develop opportunities that will help sustain local economies, improve communities quality of life, and protect water quality and natural resources.

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Resource Conservation and Development Councils

Alabama's nine USDA Resource Conservation and Development Councils (RC&Ds) play a key role in protecting water quality by implementing resource protection management measures, promoting local watershed protection initiatives, and delivering and supporting pollution prevention education and outreach. The RC&Ds assist local citizens by providing tools and technical support to balance and grow their own communities while protecting and developing natural resources. In addition, the Councils provide local direction and planning and coordinate implementation of specific projects within their boundaries.

Alabama RC&D Councils:

ALA-TOM RC&D
Phone 334-275-3185, Fax 334-275-8888

CAWACO RC&D
Phone 205—251-7739, Fax 205-324-3926

Coosa Valley RC&D
Phone 256-835-0685, Fax 256-835-3141

Gulf Coast RC&D
Phone 251-580-0195, Fax 251-580-0382

Mid-South RC&D
Phone 334-270-5504, Fax 334-260-8978

Northwest RC&D
Phone 256-383-1446, Fax 256-381-3318

Tennessee Valley RC&D
Phone 256-353-6146, Fax 256-355-8285

Tombigbee RC&D
Phone 205-759-4716, Fax 205-349-4994

Wiregrass RC&D
Phone 334-774-2334, Fax 334-774-2114

The USDA-Natural Resources and Conservation Service (NRCS) and the State Soil and Water Conservation Districts (SWCD) in each RC&D Council area are excellent additional resources for citizens interested in protecting water quality. Many Section 319 and other federal, state, and locally funded projects have been developed, coordinated and implemented as a result of the innovation and leadership provided by these agencies. The purpose of these projects are many and include: 1) natural resource improvement and protection, 2) community development, 3) education and outreach, and 4) recreation or tourism enhancement. Projects generally focus on economic development, natural resource stewardship, and protection of water quality.

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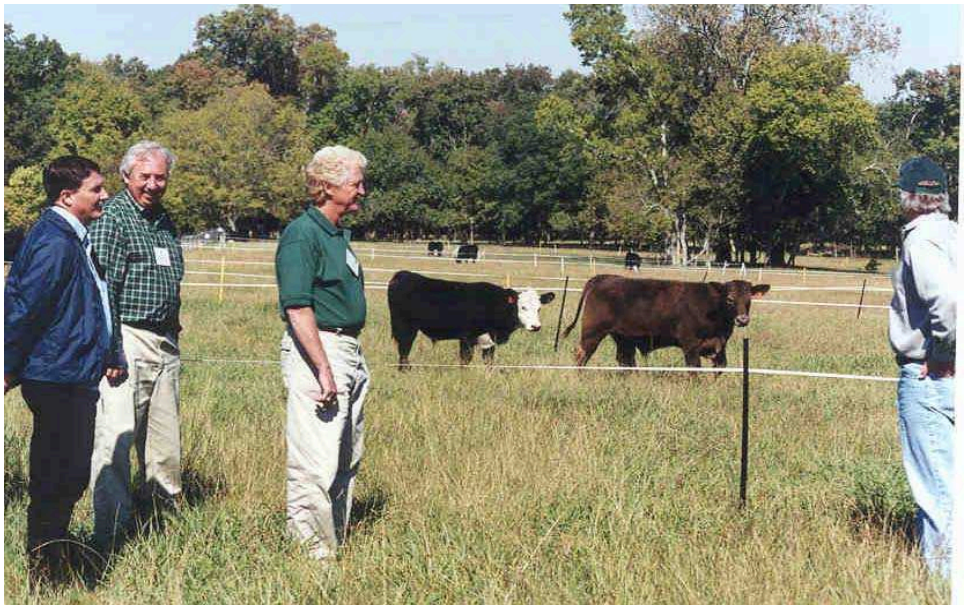
ALA-TOM RC&D COUNCIL AREA

The Ala-Tom Resource Conservation and Development Council serves nine counties: Choctaw, Clarke, Conecuh, Dallas, Marengo, Monroe, Washington and Wilcox.

There are at least six water body segments identified on ADEM's 2000 Section 303(d) lists of impaired waters. Water quality impairments are generally related to organic enrichment, low dissolved oxygen, hydrologic modifications, and one is related to industrial pollution.

The area served by the Ala-Tom Council is sparsely populated and much of the land area is used for agriculture or is forested. The primary water quality protection focus generally emphasizes pollution prevention and protection of threatened waters in order to assure waters remain unimpaired. Increased monitoring and local stakeholder involvement in managing nonpoint sources of pollution and protecting natural resources on a watershed basis are needed to assure long-term solutions are implemented to address potentially threatening factors such as land use changes.

Above: Participants in a grazing "school" held May 8-9, 2001 at the Black Belt Research and Extension Center at Marion Junction (Dallas County). Training and instruction emphasized the intertwining relationship between environmental protection, good grazing management, and sustainable agriculture. The school was sponsored by the Alabama Forage and Grassland Coalition and was made possible by a Sustainable Agriculture Research and Education Program Producer Grant. Presenters included the NRCS and the Auburn University Departments of Agronomy and Soils; Economics and Rural Sociology; Animal and Dairy Sciences; and others.



Above: Grazing school participants observe effective, efficient, and environmentally protective and sustainable livestock production best management practices.

CAWACO RC&D COUNCIL AREA

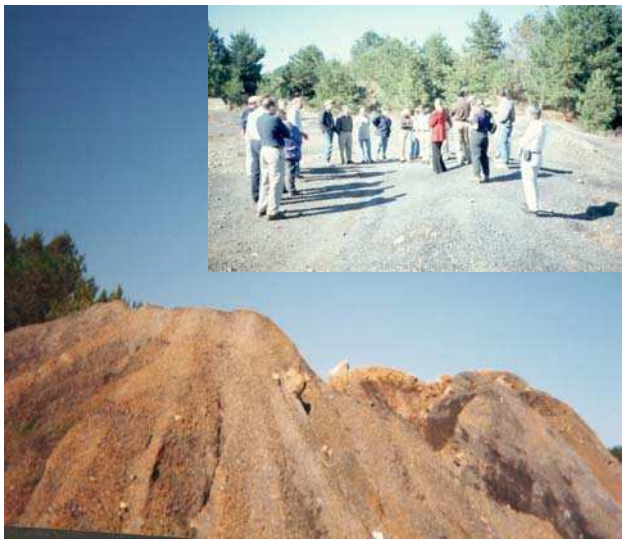
The CAWACO Resource Conservation and Development Council serves five counties: Blount, Chilton, Jefferson, Shelby and Walker.

The 2000 Section 303(d) list of impaired waters identify at least 31 water bodies that are partially or totally within the council service area. Nonpoint sources of impairment include: urban runoff, abandoned mine drainage, agriculture, onsite wastewater and industrial discharges.

The CAWACO RC&D is involved in many efforts to control nonpoint source pollution and hosts both the Cahaba River Basin, and the Black Warrior River Clean Water Partnership Project Coordinators. The Council also plays a leadership role in bringing together a multitude of urban planning and urban watershed management education initiatives such as bringing the *Your Town* workshops to Alabama. These workshops focus on community design and quality of life issues in changing rural communities, and provide ideas and options to help communities to retain the best of the past, while planning for future land use changes.

Above Left: Mr. Robert Youngblood, an educator from Walker County and participant in one of the first Alabama NPS Workshops for Educators, discusses water quality and monitoring efforts with CAWACO RC&D Council tour participants.

Above Right: Constructed wetlands and a limestone rock filter and drainage system treat acid mine drainage from the gob pile in the background (Walker County). A Section 319 grant to conduct classroom water quality education and volunteer monitoring of runoff from an abandoned coal mine site near Nauvoo (Walker County) ultimately resulted in additional grants to restore the above site. Management measures include limestone reaction beds (to neutralize acid runoff), and creating constructed wetlands to remove heavy metals and acidity remaining after limestone bed pH adjustment.



Abandoned Mine Land Reclamation

Acid runoff from abandoned mine sites can result in severe receiving water impairments. The CAWACO RC&D tour showcased several sites in need of management measures to treat water quality impairments, address public safety issues, and to discuss possible treatment options, opportunities for cooperation, and costs.

Right and Above: CAWACO RC&D tour participants examine a surface mining reclamation project. The previously mined land has been reshaped and contoured and serves as a land disposal area for sewage sludge from the City of Birmingham.

The sludge provides nutrients and organic materials for improving the soil and growing a hay crop. Proceeds from hay crop production help to defray mine reclamation and disposal project costs.

Left: Rod Goode, NRCS urban resident conservationist, speaks with CAWACO NPS showcase tour participants about the Camp Coleman Girl Scout Camp erosion and sediment control project (Jefferson County).

Erosion and Sediment Control Demonstration

A demonstration project site for erosion and sediment control best management practices is located near Trussville at the Camp Coleman Girl Scout Camp. The project reduced severe erosion and sediment problems and continues to be used for erosion and sediment control workshops and tour stop.

Right: Management measures stabilize this outlet and eliminate future erosion and gully formation from concentrated runoff flow at the Camp.

Left: Management measures in place to stabilize a formerly severely eroding slope at the Girl Scout Camp.

Right: CAWACO NPS tour participants are informed about the Kaki Simmons Hager Nature Trail at the T.R. Simmons School near Jasper (Walker County).

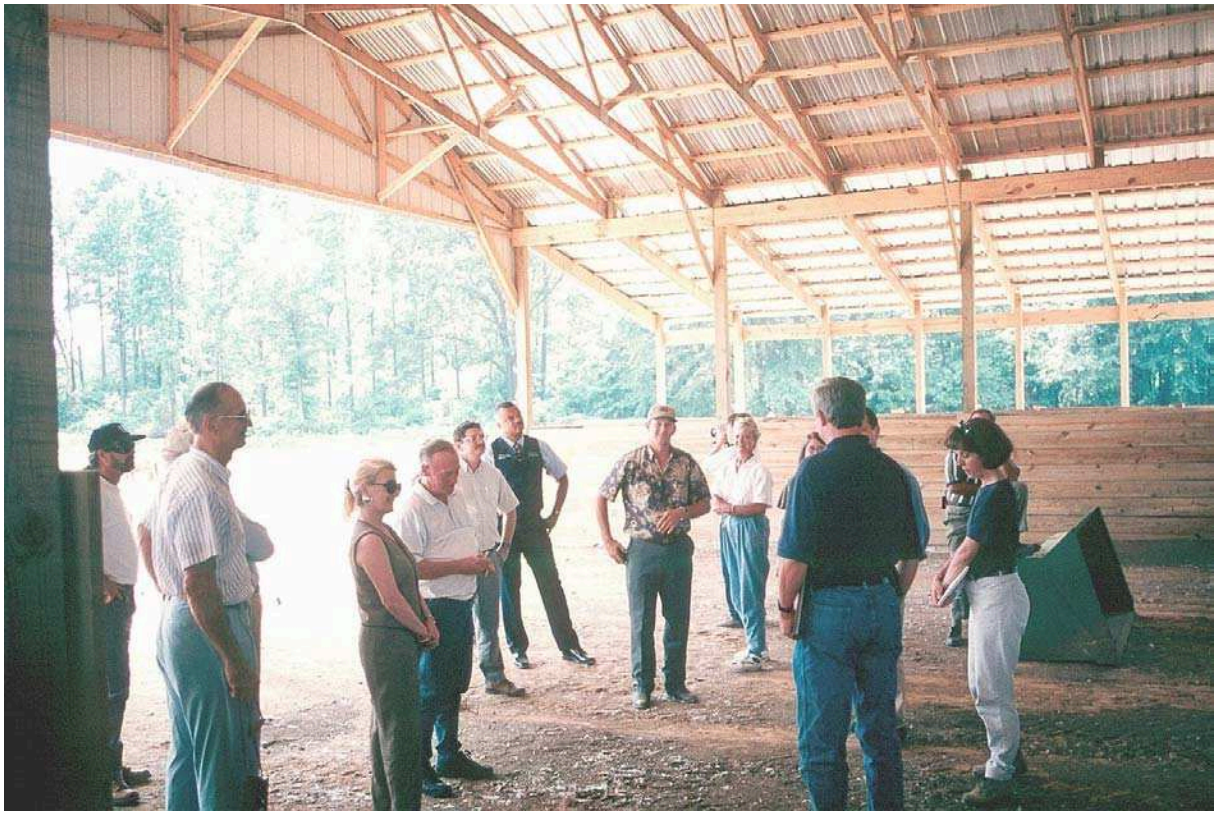
Outdoor Environmental Education

The T.R. Simmons Outdoor Environmental Lab Site near Jasper, was funded in part by a 1993 Section 319(h) grant with the Walker County Soil and Water Conservation District. The project included development of curricula for indoor and outdoor environmental education activities.

The outdoor site incorporates hands-on learning to educate students, teachers, parents, and others about the causes and effects of NPS pollution. The outdoor lab provides a natural setting that allows participants to become knowledgeable about their natural surroundings and resources, and provides for an acute awareness of the problems, solutions, and value of pollution prevention and holistic watershed management. The nature trail provides native plant identification, and incorporates a wildflower area, constructed wetland, reading/arts area, leaf-rubbing area, garden plot, and a picnic area.

Left: Educational kiosk for the Kaki Simmons Hager Nature Trail (Walker County).

Animal Feeding Operations



Above: CAWACO NPS Showcase Tour participants visit a dead bird composting and litter storage facility and learn about poultry (confined animal feeding) operations from Mr. Dorman Grace, at his farm near Jasper (Walker County).

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COOSA VALLEY RC&D COUNCIL AREA

The Coosa Valley Resource Conservation and Development Council serves eleven counties: Calhoun, Chambers, Cherokee, Clay, Cleburne, Coosa, Etowah, Randolph, St. Clair, Talladega and Tallapoosa.

There are at least 11 water bodies identified on ADEM's 2000 Section 303(d) list of impaired waters. Water quality impairments include contaminated sediments, urban runoff, industrial, municipal and agricultural sources. Of primary concern is PCB contaminated sediment in Choccolocco Creek and the Coosa River system.

Above: An alternative watering source for cattle. Cattle are restricted from streams to prevent physical damage to stream banks. Cattle depress the float to get to the water.

Below: These alternative livestock watering devices provide water. Pastures are divided into sections for rotational grazing. Rotational grazing improves pastures by reducing soil compaction and erosion, allows plants to better utilize nutrients, and thus reduces nutrient runoff. **Inset:** Choccolocco Creek Watershed Tour participants view alternative watering sources and cross-fencing demonstrations.

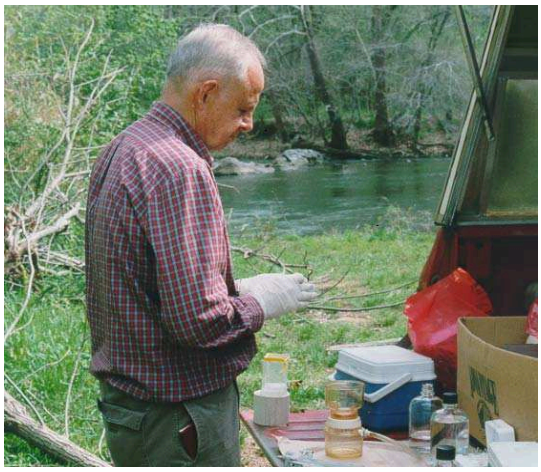
Choccolocco Creek Watershed Project

This Section 319 funded project is restoring impaired stream bank riparian areas, and providing NPS education and outreach to citizens in order to affect a positive change in attitude for local citizens to address runoff pollution in the Choccolocco Creek Watershed. Development of nutrient and pesticide management plans are promoted. Technical assistance is provided by the NRCS and implementation of management measures is coordinated by the Calhoun and Talladega County Soil and Water Conservation Districts. Water quality is monitored by ADEM and GSA and water quality improvements have been shown in bioassessments data.

Left: Early stages of willow-stake planting and root wad installation to restore an eroding shoreline on Choccolocco Creek (Talladega County).

Right: A combination of hard (riprap) and bio-engineered (willow stakes) management measures are used to stabilize a badly eroded shoreline section of Choccolocco Creek.

Left: Hungry critters create a need for special "engineering" (wire mesh) to protect willow stakes.



Left: The Geological Survey of Alabama (GSA). conducts bacteriological analyses as part of the Choccolocco Creek Watershed Protection project.

Water Quality Monitoring on Choccolocco Creek

Left: The GSA collects fish and macroinvertebrates as part of the bioassessments performed on Choccolocco Creek.

Below: A red-eyed bass collected from the creek.

Left and Below: Alabama Water Watch Workshops are conducted to teach local citizens to monitor water quality. After the Section 319 funding has ended, these volunteers will continue to monitor stream quality in the Choccolocco Creek watershed.

Agriculture

Left: Alternative livestock watering pond designed to limit livestock access to stream.

Poultry operations (below; upper left) need properly designed and constructed storage facilities such as dead bird/litter composting facilities and dry stack storage facilities (below; upper right, lower left) to insure poultry waste is applied in an environmentally safe manner. Proper weather and seasons, soil analyses, and calibrated equipment (below; lower right), are critical considerations for land application of materials.

Watershed Education...

Right: Tracy Cole (L), Dekalb County Soil Conservationist, and Ken Aycock (R), NRCS Hydraulic Engineer, discuss Choccolocco Creek NPS Watershed Protection Project and flood control efforts to Coosa Valley RC&D Showcase Tour participants. Also presenting information were (holding the sign); Jennifer Pettus Yates (L), Choccolocco Creek Watershed Project Coordinator, and Sharon Andress (R), Talladega County SWCD.

...and Outreach

Left: A television reporter interviews Randal Wilson, Calhoun County District Conservationist about animal waste management and NPS pollution. One purpose of the NPS Showcase Tours is to obtain wide-area press coverage to highlight management measures and to transfer ideas for solutions to watershed citizens, landowners, and local officials.

Sod Farms

Left: NPS Showcase Tour participants hear about Sod Farm Best Management Practices from Beth Guertal, Auburn University Department of Agronomy and Soils.

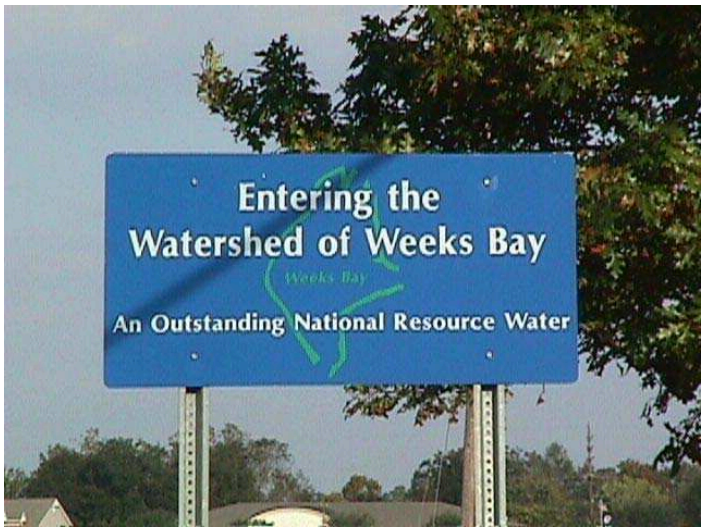
Edge-of-field NPS runoff monitoring and delivery of a golf course/sod farm best management practices manual are components of the Choccolocco Creek Watershed Protection Project.

Choccolocco Creek

GULF COAST RC&D COUNCIL AREA

The Gulf Coast Resource Conservation and Development Council serves three counties: Baldwin, Escambia, and Mobile.

There are thirty-two water body segments listed as impaired on ADEM's 2000 Section 303(d) list of impaired waters. Water quality impacts include urban runoff, land development, and municipal, industrial, and agricultural sources.



Weeks Bay Watershed Protection Project

Right: The Weeks Bay Partners for Clean Water Program. Landowners, businesses and homeowners who take steps to prevent or reduce polluted runoff are recognized by a Weeks Bay Partner for Clean Water sign to be displayed in front of their property or business. (Baldwin County)

Stream Bank Restoration and Stabilization

Above left: Livestock use a hardened creek crossing to drink. Access along the streams length is limited by fencing out livestock (Baldwin County).

Above right: Livestock exclusion fencing is used to restrict cattle from having free access to the creek at the Lipscomb Farm (Baldwin County).

Bottom left: Stream bank revegetation is initiated after livestock are restricted from the stream to stabilize the stream bank and control erosion and sedimentation (Baldwin County).

Bottom right: Weeks Bay Watershed Tour participants examine livestock crossing and stream exclusion fencing designed to reduce stream bank trampling and water pollution at the Lipscomb Farm (Baldwin County).

Top Left and Top Right: Weeks Bay Workshop participants observe a cattle crossing prior to implementation of management measures.

Right: Participants in a subsequent Weeks Bay Watershed Workshop examine improvements at the cattle crossing.

Shoreline Erosion Control

Left: A shoreline erosion control project at Camp Beckwith on Weeks Bay demonstrates how wooden barriers, with recycled Christmas trees placed inside the barrier, reduces wave energy and protects remaining and replanted shoreline vegetation.

Alternative Onsite Wastewater Treatment

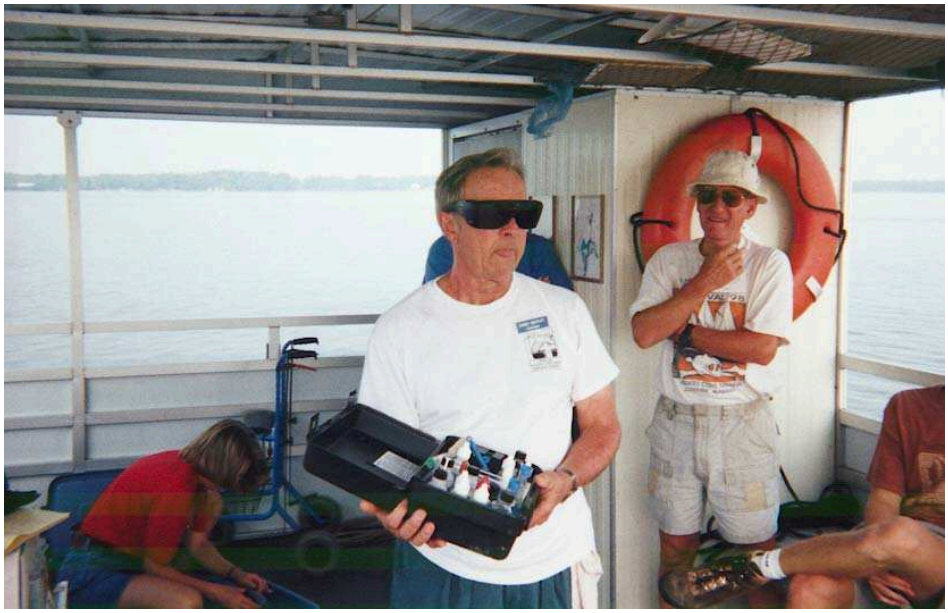
Failing septic systems is a problem in many places in Alabama where the soil does not support traditional septic systems. In Weeks Bay, this has been a problem due to a high water table and to the sandy soils in this coastal area. Examples of alternative onsite septic were installed as part of a project to demonstrate the effectiveness of alternative treatment systems. Wetland systems are not only efficient, but can also be aesthetically pleasing.

Left: Participants at a Weeks Bay Watershed Workshop observe one of a number of onsite systems installed at homes along Fish River (Baldwin County). This demonstration site features a Rock Reed Artificial Wetland System similar to the system installed at the Weeks Bay Reserve. Other demonstrations installed include Peat Filtration Systems.

Right: Mr. John Paul O'Driscoll with the Alabama Department of Public Health talks with Weeks Bay Showcase Tour participants about alternative onsite domestic wastewater treatment systems. A mound system has been installed in the background.

Left: Eve Brantley, former Weeks Bay Watershed Project coordinator, points out the onsite Rock Reed Wetlands System installed to treat waste from the classroom, office, and research living quarters addition at the Weeks Bay National Estuarine Research Reserve (Baldwin County). Visitors to the Reserve can also see a Minnesota Mound System utilized to treat waste from the Reserve Headquarters.

Citizen involvement is an important goal of the Weeks Bay Watershed Protection Project. Citizens are frequently provided opportunities to become certified as **Alabama Water Watch** volunteer monitors.



Left: Mr. Carey Bentley talks with Weeks Bay Workshop participants about the Alabama Water Watch program prior to demonstration of the Alabama Water Watch test kit.

Right and Below Right: Students in an Alabama Water Watch Stream Bioassessment Certification raining Session in the Weeks Bay Watershed learn citizen level protocols for assessing relative stream health.

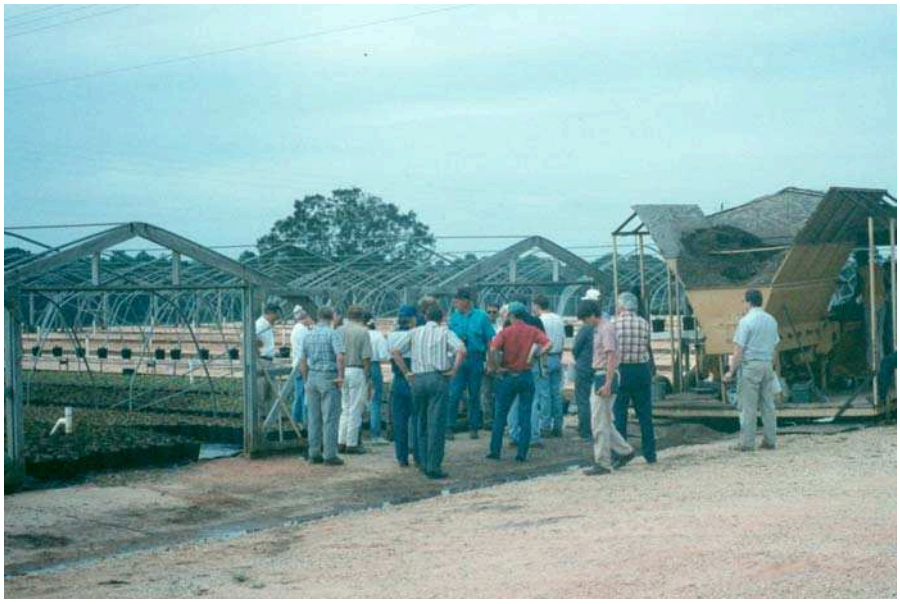
Below: Alabama Water Basic Test Kit Certification Training.

Reducing NPS Runoff from Container Grown Nursery Operations

Several partners developed a BMP Manual for reducing NPS pollution from nursery operations.

The Manual has been adopted by professional nurserymen in the south-eastern U.S. and elsewhere nationwide.

Right: Container grown plants at a nursery in Baldwin County.



Left: Showcase Tour participants visit a container grown nursery in Baldwin County to observe pesticide and fertilizer NPS runoff management measures.

Left and Above: Rapid population growth contributes to a large amount of construction in coastal counties. Land disturbance activities, coupled with some of the highest rainfall intensity in the nation, produces a potential for significant water quality impacts associated with erosion and sedimentation. Several erosion and sediment control workshops have been provided by the Weeks Bay Watershed Project.

The Weeks Bay Watershed Protection Project have implemented many activities to protect or improve water quality. The most important of these activities is to bring stakeholders together to develop a holistic Watershed Protection Plan for restoring and protecting water quality and aquatic resources in Weeks Bay, and throughout the watershed. The plan provides a roadmap that can be used to stay on course as well as periodically evaluate progress toward meeting established goals.

Left: Weeks Bay Watershed stakeholders and others interested in the Weeks Bay Watershed Project gather to discuss the **Weeks Bay Watershed Management Plan.**

Citizen Outreach

Left: The Turtle Point Science Center in Flomaton, (Escambia County). Approximately 7,000 children in Escambia County have used this facility as an environmental study area.

This facility is the result of the hard work and dedication of numerous individuals and organizations including Ms. Shirley West, a teacher at Flomaton High School, the Gulf Coast RC&D Council (Chairman William C. America and Coordinator, Roland Perry), the Escambia County Soil and Water Conservation District, the Escambia County Board Of Education, the City Of Flomaton, Exxon, Alabama Power Company, Neil Trust, McMillian Trust, Legacy, Partners in Education, Inc., and Ms. Von Seal Bethea.

The facility organizes and hosts numerous water quality workshops and Alabama Water Watch training sessions.

MID-SOUTH RC&D COUNCIL AREA

The Mid-South Resource Conservation and Development Council serves eight counties: Autauga, Bullock, Butler, Elmore, Lee, Lowndes, Macon and Montgomery.

There are at least 8 water bodies identified on ADEM's 2000 Section 303 (d) list of impaired waters. Water quality impairments are generally associated with surface mining (siltation), storm water and urban run-off, land development, and industrial pollutant discharges. At least one site is impaired by toxicity from an unknown source.

Catoma Creek Watershed Project

Right: Buddy Morgan, Montgomery Water Works Director, presents information regarding a wetlands preservation and education project to NPS Showcase Tour participants. Mr. Morgan is a strong proponent of the Catoma Creek Watershed Project and NPS education and pollution prevention efforts.

Above, Left: John Ricketts with CH^2M-Hill speaks with Catoma Creek Showcase Tour participants about the Catoma Creek Watershed Protection Project.

Above, Right: Jerald Conway discusses water quality monitoring conducted by the Montgomery Water Works to insure that Montgomery's drinking water supply is clean and safe. A holistic watershed protection approach is promoted because it provides an effective and economical way to protect water supplies from pollutants.

Catoma Creek Watershed Project, (cont.)

Monitoring of biological, physical, and chemical water quality parameters of a water body is complementary. Together they provide a more complete picture of stream condition and health than a single parameter can provide alone.

Left: A tributary to Catoma Creek (Montgomery County).

Below: Dr. John Aho, (left) professor at Auburn University in Montgomery, identifies fish collected from a tributary to Catoma Creek **(above)** for Showcase Tour participants. The ecological health of Catoma Creek, impacts to the watershed, and pollution sources were also discussed.

Biological monitoring of macroinvertebrates and fish is conducted in the Catoma Creek Watershed to assess water quality, stream conditions, and management measure effectiveness and needs.

Above: Madtom sp. from a Catoma Creek tributary.

Catoma Creek Watershed Littering and Illegal Dumping

Upper Left: Showcase Tour participants listen as John Thompson discusses trash and litter cleanup activities in the Catoma Creek Watershed.

Middle Left: Trash deposited in Catoma Creek from drainage ditches, tributaries, and along roadsides.

The Catoma Creek Watershed Education Committee conducted a Catoma Creek Watershed Cleanup following the Showcase Tour. The effort not only cleaned up streams and other areas in the watershed, but also raised awareness that trash which is indiscriminately thrown on the ground can ultimately wash into and pollute streams. The cleanup effort has become an annual watershed event.

Left: Citizen volunteers pose in front of trash collected during the *1st Annual Catoma Creek Watershed Cleanup.*

Onsite Wastewater Treatment and Disposal

Left: John Paul O'Driscoll and others from the Alabama Department of Public Health demonstrate alternative onsite wastewater treatment strategies that are being implemented to address poor soil conditions in much of the Catoma Creek Watershed.

Failure of conventional onsite domestic septic systems is a significant NPS water quality concern in Alabama.

Catoma Creek Watershed Project Lessons Learned:

- Effective and efficient implementation is only possible when all stakeholders cooperatively work together to address the many and varied problems that impact water quality and other resources.
- Education and Outreach is a primary component of watershed protection and restoration strategies.
- Success will require long-term citizen and agency planning, commitment, and resources.
- Decision-making must be locally citizen-based and inclusive of all watershed interests.
- Management measures should be implemented using a holistic watershed based planning approach.

Alabama Chapter of the Soil and Water Conservation Society Showcase Tour

Left and Above: The SWCS Showcase Tour participants examine gully erosion control management measures utilizing a variety of materials and techniques.

A "hide-a-bale" technique (hay bales buried flush with the ground's surface) at the top end of the project restoration site helps to spread runoff flow and dissipate energy. Erosion control blankets protect soil disturbance areas during and after the time needed to establish vegetation. An underground perforated pipe wrapped with geotextile assist in controlled drainage flow.

Erosion and Sediment Control

Left: A long-lasting geotextile capable of protecting soil at higher water runoff velocities was utilized to stabilize this drainage swale in a new Auburn (Lee County) subdivision. The "hide-a-bale" was installed at the top of the geotextile blanket.

Above: SWCS Showcase Tour participants observe a livestock watering area **(Insert)** stabilized with a cellular confinement geotextile.

Above: Skip Ragsdale, founder of Sunshine Supplies, Inc., an erosion and sediment control products firm, talks with SWCS Showcase Tour participants about cellular confinement geotextiles overlain with sod that is being used for light traffic use and overflow parking areas at a demonstration site at the Auburn High School (Lee County) football facility. The material provides a pervious parking surface for overflow parking and a grassed emergency access-way. Sunshine Suppliers have donated many of the materials used by the SWCS for this and other erosion and sediment control projects.

Right: Participants in the SWCS Showcase Tour examine a field entrance that utilizes a "honeycomb" or cellular confinement material filled with crusher run to stabilize a problem erosion site.

Appreciation is expressed to the many stakeholders that sponsor and participate in Alabama Chapter of the Soil and Water Conservation Society tours including Chapter members, current and retired NRCS staff, and product suppliers that donate materials and personal time.

These projects provide good examples of the kind of cooperation that exist and that is needed in Alabama to successfully address nonpoint source pollutant runoff.

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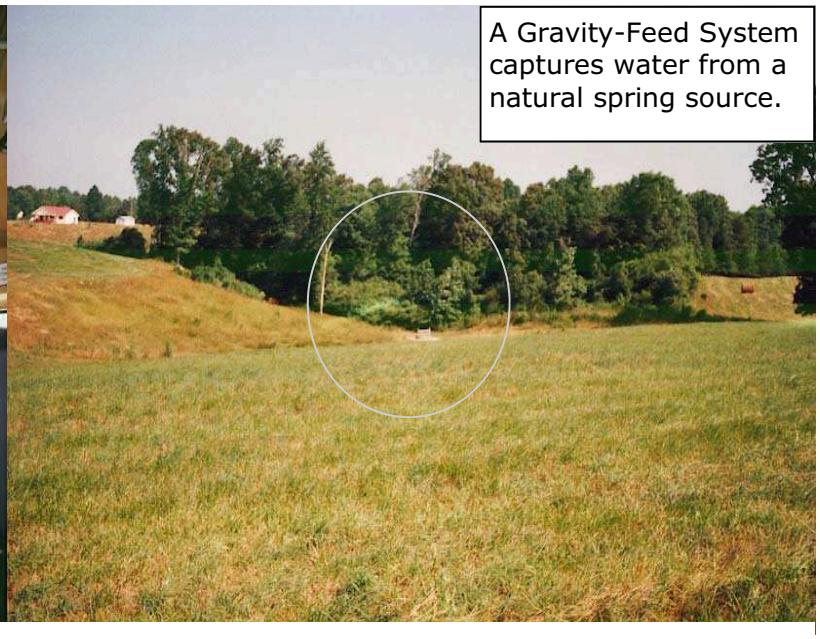
NORTHWEST RC&D COUNCIL AREA

The Northwest Resource Conservation and Development Council serves five counties: Colbert, Marion, Franklin, Lauderdale, and Winston.

There are at least 12 water bodies identified on ADEM's 2000 Section 303(d) list of impaired waters. Water quality impairments are generally related to abandoned coal mines and pasture grazing. Other sources include urban runoff, storm sewer overflows, and agriculture.

Right: An alternative livestock watering system was demonstrated for Bear Creek Watershed (Franklin County) participants during the Northwest RC&D Council Tour. (Cross-section of the device on the truck.)

Above: Showcase Tour participants hear about and see some of the pressurized and gravity types of livestock watering devices being used in the Bear Creek Watershed.

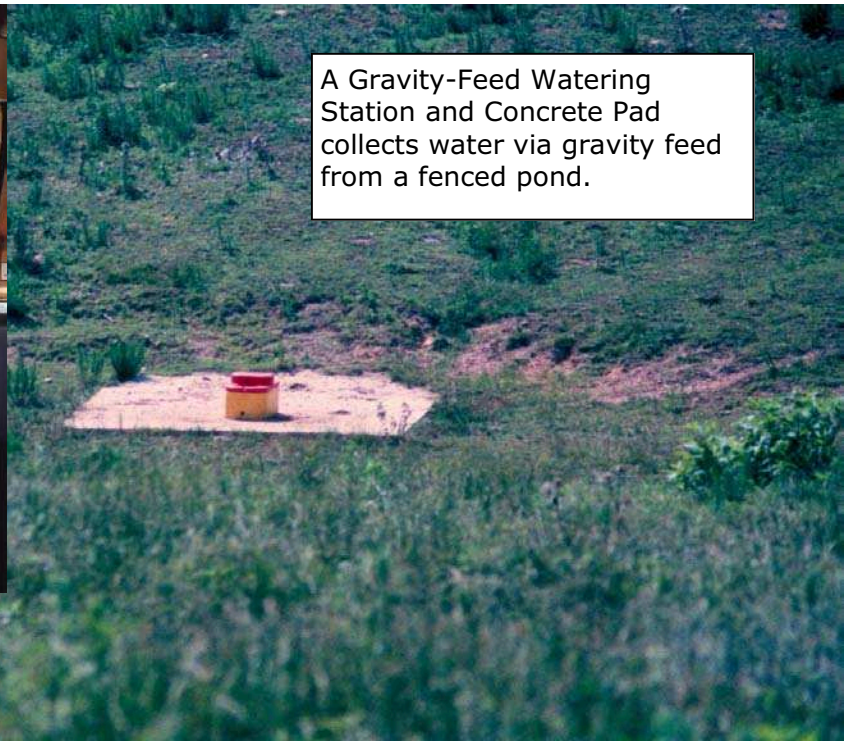


A Gravity-Feed System captures water from a natural spring source.

Alternative Livestock Watering Systems:

Keeps Streams Cleaner, Ponds Suitable for Fishing, and Reduces Risk of Disease Transmission.

Above and Below: NPS Tour speakers discuss the Bear Creek Watershed Project and demonstrate alternative livestock watering systems.



A Gravity-Feed Watering Station and Concrete Pad collects water via gravity feed from a fenced pond.

Unpaved Roads: Design and Maintenance

Above: NW RC&D Showcase Tour participants learn about the design and construction of better forest roads designed to reduce erosion and stream sedimentation in the watershed.

In many counties, unpaved roads contribute the largest source of sediment to streams. Proper design and maintenance of unpaved roads can greatly reduce this NPS pollutant source.

Agriculture: Composting and Recycling

Above: Demonstration of aeration of composting materials.

Left: Tour participants learn about a recycling program near the City of Florence (Lauderdale County) that recycles yard waste and poultry litter.

Artificial Wetland Treatment Systems

Left: Participants in the NW RC&D Council Tour visit the Tennessee Valley Authority's Artificial Wetlands Research Facility in Muscle Shoals (Colbert County). The site is used for research and development of alternative and advanced onsite wetland wastewater treatment systems for septage and hazardous wastes.

Threats to groundwater contamination from septage is relatively high due to the karst topography of the Tennessee Valley.

Marina Septage Pump Out

Left: A portable septage pump out station is demonstrated by Leslie Garner from the Alabama Onsite Wastewater Training Center.

Installation of septage pump out stations at marinas minimize pollution and potential health threats that may occur when untreated waste from boats is discharged to rivers, lakes, and coastal waters.

Forested Streamside Buffers

Above Left: Landowner B. Wayne Haggard discusses forested streamside buffers with Russell Harper, Lauderdale County District Conservationist.

The Lauderdale County Soil and Water Conservation District has a successful forested streamside buffer and restoration program.

Above Right: A Lauderdale County stream bank in the early stages of restoration.

Forested streamside buffers stabilize stream banks, reduce water temperature by providing shade, and may increase dissolved oxygen concentrations in the water by lowering the temperature. In addition, buffers trap soil particles in runoff that contribute to stream turbidity and sedimentation, and reduces transport of nutrients and chemicals to the receiving water.

Trees and other vegetation planted as streamside buffers can reduce large surges of nutrients into the stream during rainfall, flooding, or other runoff events. Streamside vegetation also returns nutrients to streams in forms (leaves and woody debris) that provide food and habitat for aquatic organisms that may ultimately be utilized as food for higher forms of fish and animals on the food chain.

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TENNESSEE VALLEY RC&D COUNCIL AREA

The Tennessee Valley Resource Conservation and Development Council serves eight counties: Cullman, DeKalb, Jackson, Lawrence, Limestone, Madison, Marshall and Morgan.

There are at least 75 water bodies listed on ADEM's 2000 Section 303(d) list of impaired water bodies. Water quality impairments are generally related to mine drainage, pasture grazing and other agricultural activities, urban runoff, contaminated sediments, and municipal discharges.

Above: A Flint Creek Watershed landowner proudly discusses water quality BMPs installed on his farm with TN RC&D Showcase tour participants.

Right: Landowner demonstrates pasture aerator to reduce NPS runoff and to increase nutrient uptake by vegetation.

Left: Flint Creek RC&D Showcase Tour participants observe an agricultural heavy use area BMP (gravel covered pad) used to reduce erosion and NPS runoff from a cattle feeding area. Additional BMPs on this farm include livestock exclusion, alternative water sources, and pasture aeration to reduce runoff and increase nutrient utilization.

Left: Eroded shoreline prior to stabilization.

Waterloo Erosion Control Project

In response to a critical shoreline erosion control problem, many stakeholders cooperated to complete a shoreline stabilization project at the Waterloo Park on Pickwick Lake (Lauderdale County). Cooperators included the Tennessee Valley Authority, Alabama Department of Conservation and Natural Resources, The Rogers Group, Tennessee Basin Clean Water Partnership, Tennessee Valley RC&D Council, Natural Resources and Conservation Service, Lauderdale County Soil and Water Conservation District, and the Town of Waterloo. Within weeks after the initial cooperators meeting, funding and other resources were identified and secured, and the project was successfully completed.

Right: Shoreline after stabilization with sloping and riprap.

Hartselle E.A.R.T.H. Park

In 1996, the City of Hartselle Beautification Association, partnering with Flint Creek Watershed Conservancy District, Morgan County SWCD, and the Tennessee Valley RC&D, received a Section 319 grant to develop the town's E.A.R.T.H. (**E**nvironmental **A**wareness **R**eaching out **T**o **H**artselle) Park. The objectives were to demonstrate urban storm water treatment management measures and to provide runoff pollution education and outreach to local watershed citizens. Project efforts include stream cleanup, creation of 3 wetland cells for temporary storage and treatment of storm water, stream bank stabilization, walking trails, gas and oil separation filters in parking lot storm drains, a park access bridge, and landscaping. Citizen volunteers, city employees, students, Boy Scouts, and others worked to complete the Park. It is used as a NPS outdoor education site by Students/teachers, civic clubs, municipalities, and others from across the state.

Above, Left: Town Branch (a.k.a. "Nasty Branch") in downtown Hartselle before restoration. **Above, Right:** Volunteer students plant constructed wetland plants.

Above, left: After restoration. **Middle:** Gabion baskets solve undercutting problem (left bank); sloped and grassed (right bank). **Above, right:** Constructed Wetlands

Flint Creek Watershed Tour

Left: Flint Creek Watershed Showcase Tour participants listen as Mike Roden, RC&D Coordinator, discusses a constructed wetlands wastewater treatment project at Veterans Park (Morgan County).

Due to the local karst geology in much of the TN Valley RC&D Council, there is a very high potential for groundwater contamination from failing onsite septic systems. Improving onsite treatment of domestic waste is a very significant issue in this area. Providing demonstration projects, and training for septic tank Installers, maintenance personnel and homeowners is a high priority.

Left: Showcase Tour participants view an alternative onsite domestic wastewater treatment system.

Right: Showcase Tour participants visit an observation deck and water quality sampling site at Mallard Point Park in Decatur (Morgan County).

Left: Showcase Tour participants listen as Oak Park Middle School students (Decatur) describe their shoreline and creek bank restoration efforts and view the wetlands plant nursery at the school. Students also documented their efforts in a series of videos.

Stream Bank Restoration and Stabilization

Left: Initial preparation work and reshaping for a Section 319 bioengineered streambank stabilization project at the Pete Peterson project site (Morgan County.)

Right: Project personnel and Boy Scout volunteers utilize willow stakes and willow branches to initiate re-vegetation of the reshaped stream bank.

Left: Project site lacking only vegetative growth to complete restoration efforts.

Above, Left: RSVP (Retired Seniors Volunteer Program) members, trained in Alabama Water Watch protocols, monitor a stream in the Piney Creek Watershed near Athens (Limestone County). The RSVP are among the largest and most active groups in the Alabama Water Watch Program.

Above, Right : Cindy Moorehead discusses the City of Decatur's (Morgan County) recycling and hazardous waste collection program with Flint Creek Showcase Tour participants.

Below, Left: A Relief Model of the Flint River Watershed constructed by teachers and volunteers at Central School (Madison County). Educator Rahonda Everett, one of the Alabama NPS programs first NPS educator workshop participants, obtained grants to build the watershed model as a 7th grade project. The model is used to help educate students about watersheds and control of runoff pollution.

Below, Right: Participants in Huntsville's erosion and sediment control workshop observe impacts of urbanization upon hydrology (Madison County).

Nutrient Management

Left: Composted poultry mortalities and litter is stored in a covered composting bin in the Duck River Watershed (Cullman County).

Below, Left: Mechanical aeration and mixing of compost at a Section 319 site on Sand Mountain (Dekalb County).

Below, Right: Calibrated Litter Spreader in use (Cullman County).

Right: Mechanical processing and utilization is demonstrated as an alternative to burning, burying, or composting dead poultry (Morgan County).

Right: Livestock is excluded from a stream with fencing in the Flint Creek Watershed (Morgan County).

Bottom Left: A spring drains to a gravity-feed watering station used as an alternative livestock water source Morgan County).

Bottom Right: Water trough using gravity feed to exclude livestock from stream (Morgan County).

Above: Brad Bole, Flint Creek Watershed Project Coordinator, shows tour participants the Oil and Gas Filter demonstration installed at a school parking lot (Morgan County).

TOMBIGBEE RC&D COUNCIL AREA

The Tombigbee Resource Conservation and Development Council serves eight counties: Bibb, Tuscaloosa, Pickens, Greene, Hale, Fayette, Lamar, and Sumter.

There are at least 9 water bodies identified on ADEM's 2000 Section 303(d) list of impaired waters. Water quality impairments are generally related to abandoned surface mine sites. However, other sources of impairment include storm water runoff, municipal wastewater discharges, land development, and hydrologic modification.

A significant threat to water quality impairment is failing onsite septic systems. However, due to limited water quality monitoring data, this potential pollution source does not appear on the 2000 Section 303(d) list.

Above and below: Demonstration of treatment systems at the Alternative Onsite Wastewater Training Center on the campus of the University of West Alabama (Livingston, Sumter County).

A combination of very unfavorable soil conditions and socio-economic factors cause an estimated 70-90% of onsite wastewater treatment systems in the Black Belt region of west Alabama to fail. This failure rate, and associated public health risk and water quality problems were deemed unacceptable to citizens and leaders in the Tombigbee RC&D Council. In response, they did what successful communities do - they set a goal for a solution and are committed to reaching it through planning, innovation, and cooperation!

Alabama Onsite Wastewater Training Center

Left: Participants receive alternative wastewater treatment field training.

Right: Participants receive alternative wastewater treatment classroom training.



Installation of an alternative onsite wastewater treatment system (drip irrigation tubing) at a Black Belt residence in Sumterville (Sumter County). Note the direct discharge from the pipe onto the ground in the upper left picture.




Agriculture

Above: Mrs. Abraham Plenty proudly displays new fences installed on her farm in Hale County. The fencing allows her to improve pasture and grazing efficiency **(Right)** using a rotational grazing approach. Exclusion of livestock from streams and alternative watering systems substantially reduces polluted runoff from cattle operations. These management measures were installed using NRCS Environmental Quality Incentives Program (EQIP) cost-share funding.

Volunteer Monitoring

Top Left: Charles Holmes, Perry County Soil and Water Conservation District Chairman, presents a check to Dr. Thomas Wilson, Ruth Kastenmayer, and Judson College students for the purchase of an Alabama Water Watch Test Kit. Students receive lecture **(top right)** and hands-on instruction **(bottom right)** during Alabama Water Watch Basic Certification.

Clean Sweep Pesticide Collection Program

Each year, large quantities of pesticides are purchased and used by farmers and the general public. Some of these materials do not get used and are stored away - usually for long periods of time in barns or sheds. As these materials accumulate over time, labels are lost or become unreadable, containers may deteriorate, and/or the material becomes unstable. Accidental spills and the potential for illegal disposal pose very real threats to water quality and natural resources. This project provides citizens an opportunity to safely, economically, and legally dispose of pesticides stored on farms and at residences.

Clockwise from Top Left: Citizens dispose of pesticides and other hazardous materials at the Agricultural Chemical Storage and Mixing Facility in Bibb County.

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WIREGRASS RC&D COUNCIL AREA

The Wiregrass Resource Conservation and Development Council serves ten counties: Barbour, Coffee, Covington, Crenshaw, Dale, Geneva, Henry, Houston, Pike and Russell.

There are at least 12 water bodies identified on ADEM's Section 303(d) list of impaired water bodies. Additional water bodies or segments may be identified subsequent to evaluation of river basin data collected by ADEM in 1999, and as field measurements of water quality, fish and macroinvertebrate samples in the Choctawhatchee River Watershed by Troy State University students, faculty, and others during Spring 2001 are evaluated.

Citizen Volunteer Monitoring

Right: Citizen volunteers from the Choctawhatchee River Basin attend an Alabama Water Watch Basic Certification Course sponsored by the Alabama NPS Education Program, Wiregrass RC&D Council, and the Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority.

Left: Mara Balkcom (right), Wiregrass RC&D Council Administrative Assistant and NPS Educator, discusses Alabama Water Watch Basic Water Quality Certification with local citizen volunteers.

Upper Choctawhatchee Watershed Project

The Upper Choctawhatchee Watershed Project in Barbour County is partially funded by a Section 319 grant. The primary goal is to address excessive erosion and sedimentation from highly erodible soils in the watershed.

Activities such as crop production, timber harvesting, dirt road maintenance and construction, and livestock operations are major nonpoint source contributors to poor water quality. The project provides for implementation of on-the-ground best management practices, citizen education and outreach, and water quality monitoring efforts.

Above: Baker Hill Elementary (Barbour County) 5th and 6th students learn to conduct aquatic assessments. Troy State University graduate students and faculty demonstrate water quality and biomonitoring techniques.

Left and Below Left: Ed Holley, Barbour County District Conservationist, observes McSwain Creek dirt road stabilization sites. Roadside swales have been installed and vegetation is established along this highly erodible dirt road near stream crossings.

Below, Right: The water quality educational display, "Hook a Healthy Fish" attracts a child in Clayton (Barbour County) as part of an Upper Choctawhatchee Watershed Project educational and outreach activity.

Above: Stabilized outfalls to prevent erosion from runoff are installed on a Barbour County poultry farm as part of the Upper Choctawhatchee Watershed Project.

Agriculture NPS Management

Left: Freezers are used as an alternative method of dead bird disposal for poultry operations in Barbour County. Dead birds are refrigerated and collected for rendering into pet food products.

Right: Animal waste and management issues are discussed during a tour of the Upper Choctawhatchee Watershed Project organized by the Barbour County Soil and Water Conservation District and the Wiregrass RC&D.

Unpaved Roads Maintenance Workshops and BMP Manual

Above: Unpaved Roads Workshop participants listen as John McCullah, CPESC, relates how to properly design bridges to reduce erosion and alteration to habitats.

The Section 319 program has funded state-wide education efforts through Troy State University's Center for Environmental Research and Service since 1990. One of these statewide efforts included delivery of a workshop on control of erosion from unpaved roads and partial funding for a BMP manual for maintenance of unpaved roads. The BMP manual was developed for the Choc-tawhatchee, Pea and Yellow River Watershed Management Authority (CPYRWMA) by Polyengineering, Inc., in cooperation with the USFWS, and county governments and county engineers. The manual and training video has been distributed nationwide and to other countries. An enormous difference can be seen already in some counties of S.E. Alabama. The USFWS has requested copies of the manual for repair projects funded by FEMA.

Below: Stabilized road with water turnout.

Right: A roadside sediment detention basin at Stephens Ferry Road (Geneva County) helps to protect Sandy Creek, one of the CPYRWMA's first projects to control sediment from unpaved roads.

The BMP Manual can be viewed and downloaded from the EPA web-site at: http://www.epa.gov/owow/nps/unpavedroads.html .

Left: The City of Florala (Covington County) and numerous public and private partners worked together to restore a wetlands area and develop a wetlands educational park.

Wetlands Protection

Right: Mara Balkcom speaks with NPS Tour participants about an educational trail project at the Ed Lisenby Public Lake in Ozark (Dale County). Ms. Linda Dees **(second from left)** and her students at Carroll High School in Ozark conceived the project and worked with the Wiregrass RC&D and other partners to make the trail a reality. The students developed and did much of the construction of the signs and educational displays. The walking trail includes a wetland area and educational display.

Erosion and Sediment Control

Above: Tour participants examine an erosion control project at Elba High School (Coffee County) during a Wiregrass RC&D Tour.

Left: A drip irrigation system is demonstrated during a Water Conservation Education Workshop in Troy (Pike County) sponsored by EPA, Troy State University, and the City of Troy.

Reducing Risks of Nonpoint Source Pollution From Livestock and Poultry Farming Operations in Priority Watersheds in Southeast Alabama

Above Left: The NPS Tour group view a poultry composter facility at the Mike Hines farm (Coffee County).

Above Right: A dry stack composting facility at the Mack Scott farm (Pike County).

This Section 319 project targeted the Little Choctawhatchee and the Choctawhatchee/Pea priority watersheds located in parts of Covington, Crenshaw, Pike, Dale, Houston, Henry, Coffee and Geneva Counties. Cooperating agencies included the NRCS, Soil and Water Conservation Districts, Choctawhatchee/Pea Rivers Watershed Management Authority, ADEM, Alabama Farmers Federation, Alabama Poultry and Egg Association, Alabama Pork Producers Association, Alabama Dairy Producers Association, and the Alabama Cattlemen's Association. Industry cooperators included ConAgra Poultry, Wayne Poultry, Southland Poultry, and Showell Poultry. The project focused on two critical NPS issues:

1. Demonstration of best management practices and associated technologies, and
2. Establishment of information transfer programs to enhance awareness and understanding of water quality issues and practices appropriate for preventing the pollution of surface and ground water from livestock and poultry farming enterprises.

Edge-of-field monitoring was used to determine the effects of long-term broiler litter application on soil nutrient levels from three Coastal Plain Poultry Farms in Coffee and Geneva Counties. This project is presented in two reports by the Alabama Cooperative Extension System:

1. *Phosphorus Runoff from South Alabama Pastures Receiving Poultry Litter Fertilization*. Charles Mitchell, David Harkins, Greg Mullins, and Jim Donald.
2. *Effect of Long-term Broiler Litter Applications on Three Coastal Plain Soils*. C.C. Mitchell, S.T. Windham, D.B. Nelson, and M.N. Baltikauski.

Urban NPS Runoff and Management

Above: The Red Eagle Golf Course near Eufaula, and the City of Eufaula (Barbour County) cooperated with the Audubon International Cooperative Sanctuary Program to address golf course polluted runoff abatement. Polluted runoff and habitat protection management measures include minimizing unnecessary removal of streamside vegetation (as depicted in this picture) and avoiding use of chemicals unless absolutely necessary. The project decreases environmental impacts by reducing pollutants in runoff and minimizing hydrologic changes to the urban watershed. Additional Audubon Sanctuary Program and related information can be found at: www.audubonintl.org/.

Above: This urban project in the "Wiregrass" involved monitoring of storm water runoff from different landscapes in the City of Dothan (Houston County). This USEPA funded project was conducted by the Troy State University's Center for Environmental Research and Services with critical support provided by the City of Dothan. This project led to publication of a storm water BMP guide for Phase II storm water communities. The guide is available on the ADEM website at: www.adem.state.al.us/enviroprotect/watershedman/watman/documents/watershed/strmwtrphaseiiman.pdf.

Water Quality and Citizen Involvement

Upper Left and Right: Alabama's future generation getting involved and excited about the diversity of aquatic life as her parents conduct water quality monitoring and aquatic bioassessments.

Left: Mr. Frank Arnold, an Alabama Water Watch volunteer, detected a wastewater treatment system discharge problem upstream of his land and was instrumental in getting the problem resolved. Mr. Arnold constructed a work table for water quality monitoring, offers his property and home for training workshops, and provides workshop participants transportation to monitoring sites.

Right: Mr. Thomas Fuqua (on left), was a respected resource protection leader in his community, as the Barbour County Soil and Water Conservation District Supervisor, and as a member and chairman of the Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority (CPYRWMA) Board.

Mr. Joe Parker (on right), member and past Chairman of the CPYRWMA, has been an important factor in the WMA's success in completion of many projects to reduce impacts to water quality from unpaved roads.

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