## ALABAMA NONPOINT SOURCE MANAGEMENT PROGRAM ANNUAL REPORT



labama Department of Environmental Management

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## **Executive Summary**

Nonpoint source (NPS) pollution, also known as polluted runoff, is the largest cause of Alabama's water quality impairments, accounting for approximately two-thirds of the water quality pollution sources to our streams and lakes. NPS pollution is caused by rainfall or snowmelt moving over and through the ground, picking up and carrying pollutants to our streams, rivers, lakes, wetlands, coastal waters, and ground waters. Unlike point source pollution that enters waters from definable locations such as discharge pipes from wastewater treatment plants, nonpoint source pollution originates from many and varied sources. Nonpoint source pollution is usually associated with farming, logging, mining, urban and construction activities, land disposal, and onsite septage and wastewater disposal activities. Atmospheric deposition can also contribute to nonpoint source pollution.

Section 319(h) of the Clean Water Act authorizes federal grant funding to implement EPA approved state nonpoint source management programs. Since 1990, the Alabama Department of Environmental Management (ADEM) has used Section 319(h) grant funding to target a wide range of NPS problems and provide for their solutions. State and local agencies and governments, academia, nonprofit entities and others are eligible to apply for Section 319(h) grant funding through the ADEM. Grant funds may be used to address the implementation of watershed management plans to restore impaired waters. These watershed projects include on-the-ground implementation of best management practices, along with the provision of technical assistance, education and outreach, and local stakeholder capacity.

### TABLE 1: ALABAMA NPS PROGRAMMATIC GOALS AND OBJECTIVESFOR FISCAL YEARS 2014 - 2019

<u>Goal 1</u> :	Continue to collect surface water and groundwater data annually using the ADEM Statewide Water Quality Monitoring Strategy to assess whether state waters meet state water quality standards and use classifications.
<u>Goal 2</u> :	Target NPS pollution program resources to restore, protect, and maintain beneficial uses of waters.
<u>Goal 3</u> :	Implement nonpoint source best management practices to restore and protect watershed health and water quality.
<u>Goal 4</u> :	Enhance institutional capacity to implement a sustainable statewide NPS pollution management program.
<u>Goal 5</u> :	Facilitate statewide Education and Outreach (E&O) activities to increase the public's knowledge and awareness about nonpoint source pollution, watershed health, water quality protection and restoration, and natural resource stewardship.

## Alabama's Disbursement of 319(h) Funds

EPA awards Section 319(h) grant funding to the States each year according to an allocation formula that has been developed. The States determine the best possible use of their allocated funds. These funds are typically used for assessment and monitoring of Alabama's waterways, education, training, technology transfer, implementation of nonpoint source Total Maximum Daily Loads (TMDLs), and implementation of watershed projects and best management practices (BMPs).

ADEM 319 funding has continued to decline in overall funding, with a 10.3% decrease since fiscal year 2011. In FY2014, new EPA Section 319 Guidance required a 50/50 split in Project and Program funding. The Department continues to adjust to the continual decline of these essential dollars that are needed to oversee and manage the Project Implementation portion of the 319 program.

#### **Current grant balances (effective October 2015)**

Balances for active grants FY2011-FY2015 are listed in Table 2 and represented graphically in Figure below.

Grant	Award	Amount	Program	Project	Total #	FTEs
Year	Amount	Obligated	Funds	Funds	Projects	Supported
FY11	\$3,290,000	\$3,290,000	\$1,330,000	\$1,960,000	10	15.0
FY12	\$3,074,000	\$3,074,000	\$1,110,000	\$1,964,000	11	11.1
FY13	\$2,914,000	\$2,914,000	\$950,000	\$1,964,000	12	11.7
FY14	\$2,981,000	\$2,981,000	\$1,490,500	\$1,490,500	11	10.2
FY15	\$2,950,500*	\$2,950,500	\$1,475,250	\$1,475,250	10	9.5
Total	\$15,209,500	\$15,209,500	\$6,355,450	\$8,853,750	54	

 TABLE 2 - CURRENT 319 GRANT BALANCES

\*On hold awaiting EPA work plan approval.



# Pollutant Load Reduction Totals in FY2015

The projects/activities outlined in this report provide a brief overview of the Department's efforts to address nonpoint source pollution in Alabama. However, in order to provide a numerical measure of the effectiveness of these efforts, EPA 319 guidance calls for a report of the "annual reduction in nitrogen, phosphorus, and sediment from nonpoint sources to waterbodies." In cooperation with its 319 partnerships, pollutant load reductions have been estimated using developed methodologies for past and ongoing projects. Table 3 and the figure below contains data from EPA's Grant Reporting Tracking System (GRTS) database and gives an estimate of the positive impact these efforts have made on water quality in Alabama and overall grant program success. The pollutant load reductions for current individual projects are available on the GRTS interactive website at <a href="https://www.epa.gov/nps/grts">www.epa.gov/nps/grts</a>.

Fiscal Year	Nitrogen	Phosphorus	Sedimentation- Siltation
2011	88,562.58 lbs/yr	9,147.42 lbs/yr	6,492.07 tons/yr
2012	66,583.50 lbs/yr	6,448.50 lbs/yr	1,534.70 tons/yr
2013	46,939.00 lbs/yr	20,509.00 lbs/yr	21536.00 tons/yr
2014*	109.00 lbs/yr	16.40 lbs/yr	9.10 tons/yr
Total	202,194.08 lbs/yr	36,121.32 lbs/yr	29,571.87 tons/yr

\*FY2014 Projects are pending additional implementation.



## Section 319(h) Grant Program Success Story

#### **Riparian Buffers Decrease Sediment and Nutrient Loading to Crowdabout Creek**

#### WATERBODY IMPROVED

Changes in land use from forest cover to cropland. pastures, and residential development contributed to increases in siltation and organic enrichment and a decrease dissolved in levels oxygen in Crowdabout Creek. In Alabama placed 1996. Crowdabout Creek on the state's Clean Water Act Section 303(d) list of impaired waters for failing to support its Fish and Wildlife designated uses because of biological



community and habitat impairment. Implementation of agricultural BMPs resulted in decreased siltation and nutrient runoff and improvements in biological and in-stream aquatic habitat conditions.

#### PROBLEM

The Crowdabout Creek subwatershed (HUC 06030002-1006) is located in the Flint Creek Watershed near the town of Falkville in Morgan County, Alabama. It is 15.0-miles in length and comprises about 31,150 acres of the Flint Creek watershed. Agricultural practices associated with crop production and animal husbandry was identified as the primary sources of water quality impairments.

Crowdabout Creek received biological health ratings of *Poor* (macroinvertebrate) to *Poor/Fair* (fish) based on assessment data collected by the Tennessee Valley Authority (TVA) during 1994 and 1995. The same ratings prompted ADEM to place Crowdabout Creek and other tributaries to Flint Creek on the state's Section 303(d) list of impaired waters in 1996. Total Maximum Daily Limits (TMDL) for siltation, nutrients, organic enrichment/(low)dissolved oxygen, and pathogens for the Flint Creek watershed were approved in 2003 to help ensure water quality standards are attained in the Crowdabout Creek subwatershed. Nonpoint priority pollutants

of concern were attributed to agricultural sources. In addition to the "High" priority level assigned to sediment; nitrogen, phosphorus, and organic loading were identified as water quality improvement targets.

#### **PROJECT HIGHLIGHTS**

A Crowdabout Creek watershed-based management plan was developed by the Flint Creek Watershed Conservancy District (FCWCD). The U.S. Environmental Protection Agency - Region 4 and ADEM provided CWA Section 319(h) nonpoint source grants to the FCWCD to facilitate implementation of watershed management workplans from 2003 - 2007. Project resources were leveraged in cooperation with the USDA - Natural Resources Conservation Service, the Morgan County Soil and Water Conservation District, agricultural producers, and private landowners. Riparian forest buffers were established on 1,594.5-acres and within 300-feet of the stream banks of Crowdabout Creek and its tributaries. The riparian buffers were enrolled in the USDA - Farm Service Agency's Conservation Reserve Program (CRP) to enhance long-term protection and maintenance of this resource conservation practice. In addition, 132.4-acres of grassed waterways were planted to enhance habitat, control soil erosion, and improve water quality.

#### RESULTS

Water quality data was collected by the Geological Survey of Alabama (GSA) in 1996 and by ADEM in 2009. A comparison of the data indicated that implementation of best management practices (BMPs) resulted in decreased siltation and improvements in biological and habitat assessment conditions. Turbidity and specific conductance and median concentrations of total dissolved solids, total suspended solids, ammonia nitrogen, nitrate+nitrite nitrogen, and carbonaceous biological oxygen demand (CBOD) - 5 parameters all decreased. In addition, the dissolved oxygen concentration measured in 1996 was much improved in 2009 and exceeded the state's Fish and Wildlife water quality standard of 5.0-mg/L.

During 1996 and 2009, ADEM conducted physical characteristic and habitat assessments to document the current stream health condition of Crowdabout Creek. The 2009 data was also compared with fully supporting ecoregion reference sampling site information to help validate the effectiveness of BMP implementation. An evaluation of the available data indicated that installation of conservation resource practices improved in-stream habitat and water quality conditions. Reductions in siltation and improvements in substrate organic matter and canopy cover were also achieved. In addition, instream habitat quality, sinuosity, bank and vegetative stability, riparian buffer, and habitat assessment scores all improved. The overall habitat assessment rating improved from Poor to Fair from 1996 to 2009, respectively.

A computer model tool was used to calculate nutrient and sediment pollutant load reductions. The model estimated that installed BMPs reduce 3,035.1-lbs. of nitrogen; 3,537.2-lbs. of phosphorous; and 344.2-tons of sediment annually. Water quality monitoring and BMP assessments are expected to be sustained in order to document longer-term improvements in creek health as installed practices continue to grow and become more established.

#### PARTNERS AND FUNDING

Project cooperators included ADEM, the Flint Creek Watershed Conservancy District, USDA -Natural Resources Conservation Service, USDA - Farm Service Agency, Morgan County Soil and Water Conservation District, Alabama Cooperative Extension System, Morgan County Commission, Tennessee Valley Clean Water Partnership, and local agricultural producers and landowners.

The Crowdabout Creek watershed project was primarily funded by two Clean Water Act Section 319(h) nonpoint source grants. The grants provided a total of \$393,000 in federal funding with \$350,000 dedicated to implementation of BMPs, \$42,000 for project coordination and education and outreach, and \$1,000 for supplies. The Morgan County SWCD, farmers, landowners, and volunteers provided \$291,533 in non-federal project match. The total project cost was \$684,533. The 1,594.5 acres of riparian buffers were entered into the Conservation Reserve Program (CRP) through the Farm Service Agency. The CRP contracts extend from 2005 until 2020 and are expected to provide about \$1.2 million in incentive and annual payments.



Pasture land before tree planting (2006).



Pasture land after tree planting (2011).

## **TMDLs and Assessments Update**

#### TMDLs in Alabama

Total Maximum Daily Loads (TMDLs) are developed by ADEM as specified in the State of Alabama Water Quality Monitoring Strategy. TMDLs establish the amount of each pollutant, causing water quality impairments that can be allowed in a water body without causing exceedances of water quality standards along with reductions needed to meet these standards. Once the TMDLs are developed by ADEM's Water Quality Branch, the documents are submitted to EPA for approval and subject to public comment. The NPS Management Program uses TMDLs to help with establishing watershed priorities, leverage resources, and implement water quality protection and restoration activities. In FY2015, the TMDL Program of ADEM continued to make great strides in protecting Alabama's water resources. Alabama's cumulative total of approved TMDLs in FY2014 was 240.

#### **Current NPS Projects Implementing a TMDL**

Fiscal Year	Project Title	Total
2011	#14 Parkerson Mill Creek #15 No Business Creek	2
2012	#14 Village Branch Watershed Project #16 Hurricane Creek Watershed Management Project	2
2013	<ul> <li>#13 West Flint Creek Watershed Project-Phase 2</li> <li>#14 French Mill Creek Watershed Project</li> <li>#15 Harris Creek Watershed Project-Phase 2</li> <li>#18 Pintlala Creek Watershed Project</li> </ul>	4
2014	#8 Upper Scarham Creek Watershed Project #9 Graves Creek Watershed Project #10 Shoal Creek Watershed Project #11 Pursley Creek Watershed Project	4
2015*	<ul> <li>#7 Second Creek Watershed Project</li> <li>#8 Brindley Creek</li> <li>#10 Upper &amp; Middle Coosa Basins-Dekalb Co.</li> <li>*FY2015 Projects are currently awaiting EPA approval</li> </ul>	3
Total Projects In	15	

TABLE 4 – IMPLEMENTATION PROJECTS FY 2011 THRU FY 2015

#### **ADEM Surface Water Monitoring and Assessments Strategy**

Between 1996 and 2014, ADEM's overall strategy was implemented on a five-year rotation by basin and incorporated a combination of targeted, probabilistic, and long-term monitoring stations to meet state monitoring goals and objectives. Concentrating monitoring in one basin group enabled ADEM to identify opportunities to meet multiple monitoring objectives at a single site, increasing overall efficiency. It also created a comprehensive dataset to develop the criteria and indicators needed to meet other objectives. Progress made during the last ten years, as well as changes to EPA's program priorities, now allow ADEM to conduct monitoring within each basin each year, while continuing to meet monitoring goals over a five-year period. This change supports more frequent, intensive monitoring within each basin group to more accurately measure trends in water quality before and after implementation of restoration efforts, respond to data needs more quickly, and to minimize the impact of weather-related events on data collected within any one basin. The strategy also provides level loading for ADEM's labs and field offices, making better use of ADEM's available resources.

A prioritization framework was also developed to prioritize monitoring to meet program priorities within each basin group. Priorities identified monitoring included impaired, unimpaired, and unassessed waters; evaluating the effectiveness of restoration efforts; and collaborating with partner agencies and stakeholders when possible. Monitoring conducted within each basin group is planned and coordinated annually by ADEM's basin teams.

The Basin Teams were developed to improve communication among project managers, field staff, and ADEM



management within Field Operations, the Water Quality Branch, and the Nonpoint Source Unit. Participation provides opportunities for Team members to become familiar with data needs and issues within their basin. Responsibilities of each Basin Team includes development of the annual basin plan, tracking and documenting SWQMP decisions and revisions, basin team status summaries, data requests and reviews, and review of final reports.

#### **Rivers, Reservoirs, and Tributary Embayments Assessments**

Thirty-two mainstem reservoir stations on the Alabama, Cahaba, Tallapoosa, and Tennessee River Basins were intensively monitored in FY2015. Each station was sampled monthly, from April through October within a one-week period to reduce weather-related variability in water quality conditions. Data collected through this project provides an estimate of the current water quality and trophic state of the tributary embayments of the basin. It also allows for determinations of compliance with established water quality compliance criteria. This information is used to update the Department's Integrated Monitoring and Assessment Report (CWA Sections 303(d), 305(b), 314), the ADEM Water Resources System – Alabama Water-Quality Assessment & Monitoring Data Repository (ALAWADR), and exported to EPA's WQX (Water Quality Exchange database). Monitoring results are also used to determine which tributaries are most affected by nonpoint source pollution and to aid in the development of TMDLs for impaired tributaries.

At each sampling site, temperature, dissolved oxygen, specific conductance, and pH were measured in situ at multiple depths in the water column with a multi-parameter instrument. From this composite, water quality and water column chlorophyll A samples were collected monthly, hardness was collected semi-monthly, and agar gel precipitation test (AGPT) samples were collected once in August. Surface water *Escherichia coli* (*E. coli*) samples were collected three times during the sampling season for each station. Select stations were sampled for low-level mercury analysis in September.

#### Wadeable and Non-wadeable Streams and Rivers Assessments

Fifty locations on wadeable flowing streams and rivers were sampled in FY2015. Biological, habitat, and water quality assessments were conducted at seven of these sites within four priority watersheds to assess the effectiveness of BMPs implemented through Alabama's CWA §319 Program. One site was monitored to document water quality conditions prior to the implementation of CWA §319 watershed plan. Ten locations were monitored to develop TMDLs for eight waterbodies located throughout Alabama. Biological, chemical, and habitat data were monitored at twenty established and candidate reference reaches located throughout the state to characterize least-impaired conditions within eight Level 4 and four Level 3 ecoregions. Monitoring locations were selected to provide data from priority Section 319 grant-funded projects, priority watersheds identified by Alabama's Soil and Water Conservation Districts and the Clean Water Partnerships, Strategic Habitat Units identified by the U.S. Fish and Wildlife Service, and an EPA/USD - National Water Quality Initiative priority watershed. Data generated during this project will be used in developing and prioritizing watershed management plan goals and documenting successes. It will also be used to categorize wadeable stream and river assessment units in the Alabama Integrated Water Quality Assessment and Monitoring Report. New and legacy least-impaired reaches monitoring data will support ADEM's Ecoregional Reference Reach Program and be used to develop nutrient and sediment criteria, biological condition gradients, and assessment criteria for wadeable and non-wadeable streams and rivers. As applicable, data will also be used to assign Section 303(d) listings (Category 4a and Category 5) for impaired waters and to develop TMDLs.

At each location, macroinvertebrate and habitat assessments were conducted once at each station in May through early July. In situ measurements (stream flow, dissolved oxygen, pH, conductivity, and turbidity) and water quality samples were collected monthly (including nutrients, water-column chlorophyll a, total dissolved solids, total suspended solids, and *E. coli*), semimonthly (total and dissolved metals), or quarterly (pesticides, semi-volatiles, and atrazine), March through October, to help identify any stressors to biological communities.

## **NPS Partnerships**

#### **ADEM Nonpoint Source Conference**

The 26<sup>th</sup> Annual Nonpoint Source Conference was held on January 15<sup>th</sup> at the Renaissance Montgomery Hotel at the Convention Center. Attendees included more than 250 environmental engineers, biologists, geologists, municipal leaders, and water quality specialists. The conference also included several exhibitors with displays and informative hand-outs. This past year's theme was "*The Great Confluence: Water, Issues, and People Coming Together*". Presentation topics included "*A Stream Runs Through It: Parkerson Mill Creek's Journey*", "*Class V Permitting Requirements*", "*Conservation Incentives to Improve Water Quality*", and "*ADEM's 2015 Statewide Water Quality Monitoring Strategy*". During lunch, participants learned about "*EPA Trash Free Waters*". A large number of organizations and agencies participated in the conference including the AL Cooperative Extension System, the Natural Resources Conservation Service, Auburn University, several local engineering firms and partners, and the ADEM Water Quality Branch.

#### National Water Quality Initiative (NWQI) in Alabama

ADEM and the Alabama Clean Water Partnership (ACWP) are partnering with the Natural Resources Conservation Service (NRCS) as part of the National Water Quality Initiative to target Cox Mill-Hurricane Creek (03140201-1004) within the Choctawhatchee River Basin in south Alabama. The Alabama Clean Water Partnership worked with NRCS to assist in selecting priority watersheds where on-farm conservation investments will deliver the greatest water quality improvement benefits. The NRCS is providing funding for the implementation practices, in addition to providing technical assistance and planning tools. ADEM will provide monitoring of water quality and assess results to document improvements.

#### **Other Federal Partners**

As the lead state agency of the Alabama Nonpoint Source Management Program, ADEM continues to work closely with many federal agencies across the state. While some efforts result in the direct leveraging of resources, many instances involve data/information sharing, technology transfer and collaborative dialogue. The following information highlights some of the unique federal partnerships the Department has established to implement projects and enhance water quality in Alabama:

- The **National Oceanic and Atmospheric Administration (NOAA)** is involved in specific nonpoint source projects through and with other state agencies. NOAA and ADEM work with the Gulf of Mexico Program on watersheds that directly affect the Gulf of Mexico waters. The Clean Marina Initiative is a voluntary, incentive-based program also promoted by NOAA.
- Weeks Bay Reserve and the Mobile Bay National Estuary Program (NEP) work in conjunction with the Alabama Department of Conservation and Natural

**Resources (ADCNR)** and ADEM in watersheds along the coast, implementing stream restorations, agricultural BMPs, and the restoration of wetlands.

- The U.S. Army Corps of Engineers (USACOE) provides technical assistance with several stream restoration and/or stabilization projects and workshops because of the oversight needed in conjunction with permitting requirements. In both the Moores Creek and the Mill Creek subwatersheds (Chattahoochee Basin), the USACOE provided advice on Section 404 permitting requirements, as needed, for a stream restoration project, and helped to identify solutions to siltation problems.
- The **Natural Resources Conservation Service (NRCS)** continues to assist with identifying areas of concern for nonpoint source pollutant sources and causes, supply technical guidance for developing Comprehensive Nutrient Waste Management Plans statewide, and provide technical and engineering assistance with Section 319 watershed projects involving implementation of agricultural best management practices.
- Through its Clean Water Initiative, the **Tennessee Valley Authority (TVA)** builds partnerships with community residents, businesses, and government agencies to promote watershed protection. TVA's Regional Watershed Offices are responsible for carrying out the program. TVA focuses on improving water and shoreline conditions so that people and aquatic life can benefit from having clean water. TVA has continued to work with several watershed projects in the Tennessee River Basin and is vital in gathering and providing water quality data.
- The U.S. Fish and Wildlife Service (USFWS), in conjunction with the Alabama Department of Conservation and Natural Resources and the Geological Survey of Alabama, have selected watersheds and river segments to focus conservation activities for managing, recovering, and restoring populations of rare fishes, mussels, crayfishes, and snails. The purpose of designating Strategic Habitat Units (SHUs) is to facilitate and coordinate watershed restoration and management efforts as well as to focus funding to address habitat and water quality issues. ADEM is working with the USFWS to coordinate these efforts through prioritization of data monitoring, information exchange, and in monitoring SHUs where 319 implementation projects have occurred.
- The **U.S. EPA-Region 4** provides administrative oversight and support for the Section 319 Program in Alabama. The EPA also assisting with the collaborative effort to evaluate the environmental conditions and solutions needed in the Village Creek Watershed in Jefferson County.
- The ADEM NPS Unit coordinates with the **Maxwell-Gunter Air Force Base** in Montgomery to assist with Earth Day events, provides stormwater coloring books for students, and BMP manuals, as requested. In turn, the Maxwell-Gunter Environmental Department participates in local watershed groups and educational programs in Montgomery.

#### Alabama Clean Water Partnership

The Alabama Clean Water Partnership (ACWP) continues to expand its efforts to coordinate statewide watershed planning and protection efforts. Onthe-ground projects in river basins across the state are key to the success of the Partnership Project, thereby improving water quality, increasing the visibility of the ACWP and providing stakeholders with ownership of the process.

#### Statewide Highlights:

The ACWP's Annual Watershed held Conference was in conjunction with the Home **Builders** Association of Alabama's ABLE (Alabama Living) Better Expo on  $18^{\text{th}}$ February the at Montgomery Convention Center. **Sponsors** included Alabama ADEM, Farmers Federation, Alabama Power, Alabama Forestry Association (AFC)-Sustainable Forestry Initiative, Alabama Wildlife Federation, Georgia-Pacific **Builders** (Brewton), Home Association of AL, Center for



Water Resource Economics: Troy University - Phenix City Campus, The Nature Conservancy, S&ME, Inc., Toray Carbon Fibers America, The Drummond Company, Goodwyn, Mills & Cawood, Alabama Soil and Water Conservation Committee and Tri-Rivers Waterway Development Association. The 2014 publication, *"The Alabama Clean Water Partnership: Celebrating 14 Years"* was released at the watershed conference.

• The ACWP continues to work with the USDA-NRCS to involve stakeholders in the prioritization of 12-digit HUCS in each of the ACWP designated river basins. The prioritized lists will be used to assist NRCS in implementation of the National Water Quality Initiative and may also guide state agencies and watershed groups in future project implementation.

#### **Basin Highlights:**

#### Alabama:

- The *Fourth Annual Business Breakfast* was held on June 25<sup>th</sup> as a joint project between the Alabama and Tallapoosa Basins to involve new stakeholders, educate the business community about nonpoint source pollution, and develop relationships with potential sponsors.
- The official opening of the Genetta Creek Environmental Park Project was held June 11<sup>th</sup>, showcasing the daylighting of a stormwater culvert to a constructed wetland system.

#### **Black Warrior:**

- The facilitator provided administrative and project support for the North River Watershed Management Project.
- A STEPL workshop was coordinated with the ADEM Nonpoint Source Unit and held on June 14<sup>th</sup> at the Cullman County Economic Development office.
- The facilitator assisted the Cullman County SWCD in preparing a Section 319(h) proposal for the Brindley Creek Watershed.

#### Cahaba:

- The Cahaba and Coosa facilitators worked with the Chilton County SWCD to organize the Chilton and Coosa County Water Festival, held on March 13th.
- The facilitator is working with the 4-H program to get students out on streams and lakes by leading kayak trips on Hatchett Creek and on Minooka Park Lake.
- The Cahaba CWP co-sponsored the 1<sup>st</sup> Annual Cahaba Connections The State and Future of Our River Conference on May 15<sup>th</sup> at the Living River Facility.
- A streambank planting work day was organized at the Trussville Cahaba River Enhancement Project on April 6<sup>th</sup> in Veteran Park.

#### Chattahoochee-Chipola:

- In cooperation with the Mill Creek Watershed Project, the Chattahoochee-Chipola CWP agreed to cooperate with ACES for a National Fish and Wildlife Foundation grant to fund a stream restoration behind Phenix City Intermediate School.
- The facilitator participated in a field day at the Wehle Center for approximately 150 students from Barbour County.

#### Choctawhatchee-Pea-Yellow:

- The facilitator chaired the Crenshaw Groundwater Festival held at on April 24<sup>th</sup> and assisted with the Dale County Groundwater Festival held April 17<sup>th</sup>.
- The facilitator presented the *Classroom in the Forest* on May 5<sup>th</sup>-7<sup>th</sup> with over 200 fourth graders and educators in attendance.

• Rain barrel workshops were held on April 15<sup>th</sup> in Dothan and September 25<sup>th</sup> in Henry County.

#### Coastal - Escatawpa:

- The facilitator worked with the Alabama Coastal Foundation and other local partners to host watershed festivals in Mobile (March 17<sup>th</sup>) and in Baldwin County (March 18<sup>th</sup>).
- A 30-second PSA developed under the brand "Creating a Clean Water Future" created by CAST (Coastal Alabama Stormwater Team) has played on local TV and radio stations highlighting the impact of litter and other stormwater-borne pollutants have on local waterways. A print ad was also in local newspaper and magazines. A website has been launched with supporting materials. The logo and materials are designed to be a brand for all coastal partners to use in the stormwater education and outreach efforts, PSA: <a href="http://www.youtube.com/watch?v=6TveAP6O8vk&feature=player">http://www.youtube.com/watch?v=6TveAP6O8vk&feature=player</a> embedded. Website: <a href="http://www.cleanwaterfuture.com/">http://www.cleanwaterfuture.com/</a>
- Working with the Mobile County SWCD, local partners (Alabama Cooperative Extension System (ACES) and the Alabama Forestry Commission) held a forestry field day for local land owners on March 27<sup>th</sup>.
- The facilitator assisted with stream restoration projects implementation and planning within the D'Olive Watershed (Joe's Branch phase 1B completed and several more in the design phase). Watershed signage was installed throughout the EMC watershed. In TMC, several projects are underway including pathogen source monitoring and a flood-vulnerability assessment in the Toulmin's Spring Branch sub-watershed. A project proposal was also submitted to restore a section of Twelve Mile Creek.

#### Coosa:

- Five sub-basin meetings were held during this reporting period. Tammi East, a local farmer stakeholder, agreed to serve as the new chair for the Upper Coosa Basin. The Coosa Steering Committee is in the process of forming a Middle Coosa Sub-basin stakeholder group in partnership with the City of Gadsden.
- The facilitator is working with the City of Gadsden to assist with their education and outreach required for their MS4 permit. The facilitator also meets monthly with the newly formed Calhoun County Stormwater Cooperative and has brought in new partners which were not previously aware of this group. She also attends regular monthly meetings of the Choccolocco Creek Watershed Alliance and was able to introduce the group to MS4 partners, initiating a productive partnership.
- Walnut Creek in Chilton County carries a huge sediment load due to channelization and received a large number of nominations through the ACWP stream prioritization project with NRCS. As a result, the City of Clanton plans to submit a grant request to the AFC for tree planting within their city park. Partners in this project include the City of Clanton, Chilton County, U.S. Army Corps of Engineers, Lake Mitchell Home Owners and Boat Owners Association, and ACES.

#### Tallapoosa:

- The facilitator partnered with the Alabama Wildlife Federation to assist with water festivals in Elmore County.
- The Facilitator served on the planning committee for the Tallapoosa River Trail. The first phase of the project (24 miles) held the official ribbon cutting on July 24<sup>th</sup>.
- The Middle Tallapoosa CWP hosted a QCI Certification Course on February 10<sup>th</sup>. Tallapoosa County employees and local town and city employees attended.
- A Living Streams Volunteer Training course was held for stakeholders in the Middle and Upper Tallapoosa Basin, with 16 people completing training.

#### **Tennessee:**

- The Tennessee Basin CWP received the Power of Partnership award from the Tennessee Valley Authority at the Tennessee River Biodiversity Network Meeting.
- The WaterWorks Center for Environmental Education, an on-going project offers free programs to local students and professional groups. Twenty-four groups from local schools have participated in field trips this reporting period.
- The AL Mountains, Rivers, and Valleys RC&D have received a grant to install additional rain catchment systems on small farms in north Alabama. The catchments serve as demonstrations for using rain water as an irrigation source. The CWP will assist with hosting workshops and tours to show the benefits of these systems.

## **Education and Outreach Highlights**

#### Groundwater and Water Festivals in Alabama

A key to providing protection for our surface and groundwater resources is education. The goal of a water festival is to educate fourth grade students, and indirectly their guardians and the community, on surface and groundwater issues including water sources and its protection, uses of water, and how to protect water from pollution. The Groundwater and Water Festivals are a culmination of classroom study and hands-on activities, allowing students the opportunity to experience first-hand through experimentation and problem-solving, the complexity of surface and groundwater and its relationship to nature in general. This is the 19th year of Groundwater and Water Festivals in Alabama. Since October 2015, 31 counties have participated.



Students at the Montgomery County Water Festival learn about water filtration by building a water filter.

#### **Earth Day Activities**

The Alabama Department of Environmental Management celebrated Earth Day 2015 by hosting a special event for more than 180 middle school students from the Montgomery region. On April 22, visiting students received guided tours and hands-on demonstrations from ADEM staff related to a wide-range of environmental programs including water quality sampling, fish tissue monitoring, air monitoring, recycling, solid waste disposal, and efforts that ensure Alabamians are provided with clean water. On April 30, ADEM took the Earth Day event "on the road" by holding a special event in Selma for more than 120 middle school students at the School of Discovery in downtown Selma, not far from the historic Edmund Pettus Bridge. The Nonpoint Source Program staff assisted with the event organization and educated students on watersheds and polluted runoff using the Enviroscape.

#### Alabama Envirothon

ADEM's NPS Unit, in a joint effort with other agencies, continues to play a vital supporting role in the Alabama Envirothon competition by helping in event planning, developing test materials, and leading many of the training events, judging, and overall program implementation. This year's state competition was held April 9-11, 2015 at the 4-H Camp in Columbiana. The current issue of this year's Envirothon was "Urban/Community Forests". Nonpoint source staff taught about the importance of urban forestry in relationship to water quality protection, as well as information regarding low impact development. Bob Jones High School from Madison County was the overall event winner.

#### 2015 Clear Water Alabama Erosion and Sediment Control Workshop



ADEM continued to provide support in the planning and organization of the annual "Clear Water Alabama Seminar and Field Day" as part of the Alabama Erosion and Sediment Control Partnership. The goal of the Partnership is to help planners, designers, contractors, inspectors, and others learn about the latest erosion and sediment control practices. Members include the Alabama Soil and Conservation Water Committee, the Natural Resources Conservation Service, ADEM, and the Alabama Association of Conservation Districts, the Alabama Department

of Transportation, the Home Builders Association of Alabama, the Associated General Contractors of Alabama and Auburn University – Alabama Cooperative Extension System.

This year's Seminar and Field Days were held September 2nd-3rd in Tuscaloosa. The first day Seminar included a regulatory update on MS4 changes from ADEM, along with presentations on new erosion and sediment research from North Carolina State University and Auburn University, Low Impact Development (LID) and ALDOT case studies, and watershed partnership successes. An exhibit area showcased erosion and sediment control technology representatives from across the southeast. The second day of the workshop included a Field Day tour of several erosion and sediment control BMP and LID demonstration sites. The classroom training met the required 4-hour annual update requirements for the Qualified Credentialed Inspectors (QCI). QCI Training and Certification was also available to interested attendees.

#### **Volunteer Water Monitoring and Living Streams Workshops**

ADEM NPS Staff continued to provide support and assistance in training volunteer monitors from across the state in Alabama Water Watch Alabama Water Watch protocol. (AWW), coordinated through the Department of Fisheries and Allied Aquacultures of Auburn University, is a statewide program dedicated to promote community-based watershed stewardship through development of citizen volunteer monitoring of Alabama's lakes, streams, rivers, and coast.

ADEM staff helped with organizing *Alabama Living Streams Workshops*, also developed by AWW. The Living Streams curriculum is a handson approach in teaching students about macroinvertebrate assessments.



The Middle Tallapoosa Clean Water Partnership sponsored a Living Streams Workshop near Horseshoe Bend National Military Park.

## **Implementation of Watershed Plans**

#### Mill Creek Watershed Project – Phase Two

The Mill Creek Watershed (HUC 03130003-0101) drains an area of 24 square miles and is a major tributary to the Chattahoochee River-Bull Creek Sub-basin. In 2008, the entire 9.93-mile segment of Mill Creek was added to the Alabama §303(d) list of impaired waters, listed from the Chattahoochee River to its source. In 2010, ADEM determined that Mill Creek was impaired for organic enrichment/low dissolved oxygen due to urban development.

The Mill Creek Watershed Project is currently in its second phase of watershed plan implementation with the assistance of Section 319(h) grant funding. In the past six months, BMPs have been implemented at four sites in the watershed:

• At Lakewood Elementary School in Phenix City, gutters and cisterns were installed to handle a portion of the roof's stormwater runoff and control some of the erosion



occurring on the school grounds and to reduce the stormwater flow to the stream. The water from the cisterns will be used to water the plants that are located in the greenhouse and in raised beds. Any overflow stormwater will be directed through a grass swale to a 225-square foot rain garden.

- At Phenix City Intermediate School (PCIS), a constructed wetland was created to treat the water from the stormwater outfall before it flows directly into Mill Creek, which is adjacent to the school. This wetland was intended to capture the runoff from the first 1.2" of rainfall and release it slowly. Its anticipated water quality benefits are reduced peak flows, reduced sediment and nutrients, as well as treatment of oil, gas, and metals.
- A stream stabilization project that began in Phase One at the mouth of Mill Creek was enhanced by adding a log vane structure and by moving a previously placed log vane. This enhancement will help to increase dissolved oxygen, slow the velocity of the water, and redirect the water away from the stream banks, thereby reducing erosion and sedimentation.
- At the intersection of Mill Creek and 14<sup>th</sup> Street in Phenix City, a 100-foot stream stabilization project was completed which included the removal of a mid channel bar and placement of a boulder cross vane. The removal of sediment and installation of the cross

vane will help center the flow of the stream and narrow the base flow channel, thus reducing erosion and increasing dissolved oxygen. The eroding stream banks were also re-graded and stabilized. Planting for both stream projects and post construction tours are set to be completed in January/February of 2016.

The Watershed Coordinator has continued to facilitate several meetings, workshops, and education and outreach events to promote the project. Students at PCIS learned about the Mill Creek Project, NPS pollution, Alabama Water Watch (AWW) monitoring techniques, and were given hands-on experience with the installation and planting of vegetation at the rain garden and at the constructed wetland. A presentation on the Mill Creek Watershed Project was also given at the Alabama Water Resources Conference in Orange Beach. In addition, AWW volunteers are conducting water monitoring on five sites monthly to provide information to the stakeholders on the trend water quality data as the project progresses.

#### **Load Reductions:**

- 85.7 lbs/yr of nitrogen
- 31.1 lbs/yr of phosphorus
- 42.2 tons/yr of sediment



An island of sediment was remediated and a boulder cross vane installed at Mill Creek's intersection with 14th Street in Phenix City.

Photo: Katie Dylewski, Alabama Cooperative Extension System



Summer school students received handson experience planting the rain garden at Lakewood Elementary School in Phenix City.

#### **Moores Creek Watershed Project**

Moores Creek Watershed (HUC 03130002-0907) drains approximately 18.06 square miles (11,558 acres) within the Middle Chattahoochee-Lake Harding River Basin. ADEM identified Moores Creek as being impaired by siltation due to habitat alteration for a length of 11.4 miles, from the Chattahoochee River to its source. Moores Creek was first added to Alabama's §303(d) list of impaired waters in 2012 based upon 2007 habitat and macroinvertebrate data.

Phase one of the Moores Creek Watershed Project focuses on a stream restoration of approximately 800-linear feet on the main stem of the creek located in the City of Lanett, between South 8<sup>th</sup> Avenue and Veterans Memorial Parkway. The stream restoration project will include debris removal, streambank stabilization, riparian buffer remediation, habitat rehabilitation, and placement of in-stream



structures. The project implementation will also encompass about 200-linear feet of restoration of an unnamed tributary adjacent to the stream restoration area.

The Chambers County 4-H Director has been working to educate fourth and fifth graders within the watershed, discussing the impacts of urbanization on streams, information about the upcoming project, and ways to get involved and volunteer. The watershed coordinator and ADEM have also met with the adjacent Lanett High School principal, the environmental science teacher, and the student advisor about ways to get involved in the project.

Stakeholders are actively meeting and planning with the Alabama Cooperative Extension System (ACES), contractors, project engineers, and ADEM to discuss timelines and the steps to move the project forward. A site/stream survey was completed for the project in September 2015 and preliminary design plans for the restoration are currently being drafted.

#### **Load Reductions:**

- o lbs/yr of nitrogen
- o lbs/yr of phosphorus
- o tons/yr of sediment



Moores Creek stream stabilization site in Lanett.

Photo: Jason Zink, Zink Environmental, LLC

#### **Brier Fork and Beaverdam Creek Watershed Restoration Project** – Phase 3

Located in Madison County, the Brier Fork and Beaverdam Creek Watersheds (HUCs 06030002-0305, 06030002-0306, 06030002-0307) are just north of Huntsville in the Wheeler Lake Watershed. Brier Fork is listed as impaired from the Flint River to the Alabama-Tennessee State Line, while Beaverdam Creek is listed as impaired from Brier Fork to its source. The main goal of the Brier Fork and Beaverdam Creek Project is to implement agricultural BMPs for addressing nonpoint sources of impairment.

A kick-off stakeholder meeting for the third phase of the Brier Fork and Beaverdam Creek Watershed Project was held on March 18<sup>th</sup>, 2015 at the Alabama A&M University Agricultural Research Station with 20 people in attendance. A continuous sign-up was announced and advertised. To date, the Madison County SWCD has accepted eight applications for the implementation of best management practices, including applications for terracing, grazing land



improvement, and cropland conversion. One practice of 1,010 feet of broad bases terrace has been constructed on a row crop farm in the watershed. Farm visits have been performed on the other sites and cost estimates have been calculated.

The goal of increasing public awareness of the water quality concerns of this watershed continues with the education and outreach efforts conducted by the project coordinator and all of the local watershed partners. These efforts will play a vital role in the success of this project. In addition to hosting the public kickoff meeting held on March 18<sup>th</sup>, the watershed coordinator participated in the City of Huntsville Earth Day activities in April, the Madison County Drinking Water Festival in May, and a grazing clinic for the agricultural community in August.



#### **Load Reductions:**

- 650.0 lbs/yr of nitrogen
- 325.0 lbs/yr of phosphorus
- 325.0 tons/yr of sediment

Broad bases terraces reduce the slope of an area thus reducing erosion

#### Hurricane Creek Watershed Project (Flint River)

Hurricane Creek Watershed (HUCs The 06030002-0401 and 06030002-0402) is located east of the City of Huntsville in Madison County. It is a tributary of the Flint River in the Wheeler Lake Reservoir of the Tennessee River Basin. Hurricane Creek was initially placed on the state's 1998 §303(d) list as being pathogen (fecal coliform) impaired after data collected by TVA in 1997 indicated a violation of the water quality standard. Monitoring of Hurricane Creek by ADEM in 2003 also indicated E. coli impairment. A pathogen TMDL was developed by ADEM in 2006. It is 7.31-miles in length and impaired from its confluence with the Flint River to Gurley Pike Road.

To date, 14 applications have been submitted and conservation plans for 13 cattle farms have been written. The following BMPs have been implemented on nine farms: 14 alternative watering sources, 8,412 square feet of heavy use areas, 13,240 feet of fencing, 700 feet of broad-



based terracing, and 28 acres of pastureland improvements. Additional advertising of the project continues throughout the watershed and sign-up will be continuous until all monies have been obligated.

In addition to the multiple BMPs that have been implemented, the water coordinator has also been involved in various public education and outreach activities. In 2015, the coordinator participated in the City of Huntsville's Earth Day activities, the Madison County Drinking Water Festival, and four Madison County Watershed Advisory Committee Meetings. A rotational grazing clinic was also conducted at the Alabama A & M University Research Station which was co-sponsored by the Flint River Partnership, Madison County Soil and Water Conservation District, Natural Resource Conservation Service, and the Alabama Cooperative Extension System.

#### **Load Reductions:**

- 3,150 lbs/yr of nitrogen
- 1,128 lbs/yr of phosphorus
- 52.1 tons/yr of sediment

Approximately 13,240-feet of fencing was installed for cattle exclusion in the Hurricane Creek Watershed.



#### **Graves Creek Watershed Project**

Graves Creek Watershed (HUC 03160111-0202) is a tributary to the Upper Locust Fork Watershed in the Black Warrior River Basin. Graves Creek begins approximately 1.5-miles northeast of the Town of Liberty in Blount County. It has a linear distance of 9.62-miles, a total of 9,486.03-acres, and a drainage area of 14.4-square miles. Graves Creek was originally placed on the 1992 §303(d) list of impaired waters for organic enrichment/low dissolved oxygen (OE/DO) from sources. primarily agricultural Α TMDL completed in 2002 calls for a 70% reduction from nonpoint source loads. The goal of the Graves Creek project is to implement agricultural best management practices that address TMDL sources and causes.

After the initial project kick-off in March 2015, several applications have been received for costshare funding. To date, a 6,272-square foot heavy use area for cattle feeding has been completed.



There are currently two other applicants working on their practices, which will include a heavy use area, alternative watering facility and eight acres of pasture planting.

The watershed coordinator has also facilitated several meetings, workshops, and education and outreach events to promote the project. A presentation was given at the "New and Beginning Farmers Outreach Workshop" in Blount County in order to provide examples of the cost share practices available for funding. Students in the watershed were taught about the importance of soil and water conservation by crawling through the Soil Tunnel at the 2015 Kid's Day on the Farm at the Blount County Fair. In addition, Alabama Water Watch volunteers are conducting water monitoring on four sites to provide education and information to the stakeholders on the trend water quality data as the project progresses.



#### **Load Reductions:**

- 109.0 lbs/yr of nitrogen
- 16.4 lbs/yr of phosphorus
- 9.1 tons/yr of sediment

A 6,272-square foot heavy use area for cattle feeding has been installed.

#### French Mill Creek Watershed Project

The French Mill Creek Watershed is within the Wheeler Lake watershed of the Tennessee River Basin (HUC 6030002-0802). In 1998, French Mill Creek was placed on the §303(d) list for pathogens. Further sampling of French Mill Creek by ADEM in 2003 also resulted in a violation of the five-day geometric mean criterion of 200 col/100 ml. Based on the dominate land uses of agriculture and forest, the most likely sources of pathogen loadings are from agriculture and/or failing septic systems.

An Alabama Water Watch monitoring site has been set up through the AWW website and an Alabama A&M University graduate student will be the monitoring lead. Both the project coordinator and the student attended an AWW certification course for bacteriological monitoring at Auburn University in January 2013. The AWW site chosen is located at French Mill Creek and Cambridge Lane just upstream



of the confluence to Piney Creek at Canebrake Golf Club. The site has been sampled 13 times since September 2013 for E. coli. An average of the three samples in taken in September 2015 indicated 233 colony forming units of E. coli/100 ml.

To date, four terraces covering 12,620 feet have been installed, 12 acres of planned grazing systems have been planted, two watering facilities have been installed, 300 feet of cross fencing has been constructed, and eight heavy use areas covering 11,835 square feet have been installed.



#### **Load Reductions:**

- 41,149.00 lbs/yr of nitrogen
- 19,822.00 lbs/yr of phosphorus
- 17,944 tons/yr of sediment

A heavy use area along with a watering facility has been installed.

#### **Shoal Creek Watershed Project**

Shoal Creek is located within the Sleighton **Branch-Shoal** Creek Watershed (HUC 06030002-1005) in Morgan County. It is a tributary to Flint Creek within the Wheeler Lake Basin. Shoal Creek has a linear distance of 10.9 miles, a total of 10,140 acres, and a drainage area of 15.8 square miles. It was originally placed on Alabama's 1996 §303(d) list of impaired waters for organic enrichment/low dissolved oxygen (OE/DO) and pathogens. The OE/DO and pathogen TMDL for Shoal Creek is part of the larger 2003 Flint Creek Watershed TMDL that consists of seventeen stream segments.

A low impact development (LID) workshop was held on August 4, 2015 at Hartselle High School in Hartselle, Alabama. Dr. Eve Brantley from the Alabama Cooperative Extension System facilitated the four hour class. Twelve participants attended from a wide range of



occupations, including teachers, engineers, federal and state conservation partners, and urban education specialists. Water quality pollution problems, an introduction to LID, a rain garden overview, and a design and vegetation plan activity were the topics discussed during the classroom portion of the workshop. After the basics were covered, a "walk around" of the school campus was led by Dr. Brantley to identify and plan possible LID practices that could be installed to correct problem areas.



#### **Load Reductions:**

- o lbs/yr of nitrogen
- o lbs/yr of phosphorus
- o tons/yr of sediment load reductions

Participants of the LID Workshop tour and identify possible implementation sites at Hartselle High School.

#### **Village Branch Watershed Project**

Village Branch is located north of the City of Hartselle in Morgan County and is a tributary to Flint Creek within the Tennessee River Basin. The Village Branch Watershed (HUC 06030002-1014) covers 10.8 square miles (6,925 acres) and is primarily agricultural, although increasing population growth from the City of Hartselle and Morgan County continues to threaten natural resources and water quality in the watershed. The entire length of Village Branch (5.7 miles) is identified on Alabama's §303(d) list from its source to its confluence with Flint Creek. The primary causes of impairments are nutrient enrichment and sediment runoff from agricultural lands. An organic enrichment/dissolved oxygen (OE/DO) TMDL was developed by U.S. EPA in 2003. A siltation TMDL was developed by ADEM and Tetra Tech, Inc., in 2002.



To date, the following has been completed as part of the Village Branch Watershed Project Implementation:

- A watershed project coordinator has been identified and hired.
- Two public/private sector meetings have been facilitated in order to promote the project, to seek continued input/partnering, and to leverage other funds and resources.
- High-yielding non-point source pollution sites have been identified.
- Forty acres of trees have been planted.
- Twenty acres of cover crops have been planted.
- 340 acres of pasture/hay land has been planted.
- 17,290 feet of cross fencing has been installed.
- 1,350 feet of livestock stream-crossing has been installed.
- Three heavy use areas covering 3,950 square feet have been installed.



#### Load Reductions:

- 60,219.6 lbs/yr of nitrogen
- 4,633 lbs/yr of phosphorus
- 1,038 tons/yr of sediment

Three heavy use areas for cattle have been installed.

#### North River Watershed Project - Phase Two

The North River Watershed (11-digit HUC 03160112-204) drains an area of about 1,110 km<sup>2</sup> in Favette and Tuscaloosa Counties and is a major tributary of the Black Warrior River. A 43.48-mile segment of the North River has been identified on the §303(d) list for nutrients, siltation, and habitat alteration impairments from abandoned surface mining. A watershed assessment conducted by the Tuscaloosa Soil and Water Conservation District Advisory Committee also ranked North River as their number one priority impaired subwatershed, estimating that 93,600 tons of sediment is coming from erosion each year. Erosion from forest harvesting and streambank degradation was identified as primary contributors to instream sedimentation. The goal of this project is to initiate a phased watershed management approach to help restore North River.



Many reconnaissance visits continue to be

conducted in the watershed in 2015 to identify BMP sites and note BMPs requiring maintenance. Additional field activities conducted during this period included measurement of captured sediment, replacement of stolen benchmarks, the cleaning out of selected BMPs, and the construction of four new BMPs. As of September 30, 2015, a total of 55 unpaved road BMPs are in operation in Fayette and Tuscaloosa counties. A total of over 1019 tons of sediment has been retained.

Two USDA/NRCS forestry BMP projects were completed during the period. The first is a 42.2acre tract in Tuscaloosa County. Site preparation and tree planting for erosion, water quality concern and forestry need was carried out. The second project consisted of two tracts, a 40.1acre pine reforestation and a 32.2-acre hardwood tree planting site and open grassland. Site preparation and tree planting for erosion, water quality concern and forestry need was carried out.

Education and outreach efforts have also been an integral part of this project. On April 1, 2015, the NRW Coordinator presented to approximately 20 members of the Tuscaloosa YMCA's Men's Club at their weekly lunch meeting. The informal presentation focused on accomplishments of the plan to date and the implications for Tuscaloosa's continued economic prosperity. Members were very interested in the continued success of the project and requested that regular updates be given to their members. On April 22, 2015, the North River Watershed exhibited at the Mercedes-Benz US International Environmental Awareness Fair for employees at their Vance Facility. The Coordinator also presented at the 2015 Clearwater Alabama Seminar and Field Day held in Tuscaloosa.

#### **Load Reductions:**

- 188 lbs/yr of nitrogen
- 72 lbs/yr of phosphorus
- 118 tons/yr of sediment



Abner Patton with Patton, Geologics, measuring sediment retained in an unpaved road BMP.



Forestry Operations and BMPs Workshop led by Jim Jeter, AL Forestry Commission

#### **Broken Arrow Creek Watershed Project**

Broken Arrow Creek is a small Fish & Wildlife stream located near Pell City within St. Clair County. Broken Arrow Creek Watershed (HUC 03150106-0602) discharges into Logan Martin Lake of the Coosa River. It was first listed on the 2010 §303(d) list for siltation due to habitat alteration. During the 2005 Assessment of the Alabama, Coosa and Tallapoosa Basin Study, ADEM performed biological and water monitoring within Broken Arrow Creek and found that the overall habitat quality was poor. This project provided resources to implement needed best management practices to address the 303(d) listing and protect and improve water quality.

Several best management practices have been implemented, including hardwood, planting, and a heavy use area for cattle. A stream stabilization project has also been designed and implemented. Additionally, two no-till seed drills were purchased and are being utilized



throughout the watershed to reduce siltation from row crops.

Educational activities include helping with the St. Clair County Water Festival, articles in various newspapers and newsletters, and helping to plan the Coosa River Basin-State of our Watershed Conference in the fall of 2015. A silviculture workshop has been conducted and additional workshops are being planned. The "AG in Action" simulator has been demonstrated on numerous occasions to students in St. Clair County and several rain barrel workshops have been conducted as part of the educational component of this project.



#### **Load Reductions:**

- 725 lbs/yr of nitrogen
- 100 lbs/yr of phosphorus
- 67 tons/yr of sediment

A streambank stabilization project was implemented on a farm in the Broken Arrow Creek Watershed.

#### **Upper Scarham Creek Watershed Project**

Scarham Creek is located in the northeast portion of Alabama near the Guntersville Lake Reservoir. The Scarham Creek Watershed is approximately 90-square miles with the headwaters in DeKalb County and the downstream in Marshall County. The two major populated areas in the watershed include the towns of Geraldine and Crossville. This project will focus on the Upper Scarham Creek Watershed in DeKalb County (HUC 06030001-0803) which includes 9.12-miles of the total 24mile stream length.

Scarham Creek was first listed on the 1996 §303(d) list of impaired waters. The stretch of Scarham Creek from Short Creek to its source was identified as being impacted by pesticides, ammonia, siltation, low dissolved oxygen/organic enrichment (OE/DO) and pathogens from numerous agricultural sources. TMDLs that address pesticides, ammonia,



OE/DO, and pathogen impairments were approved in 2002, and a siltation TMDL was approved in 2003. The sources of impairment include non-irrigated crop production, specialty crop production, feedlots, and animal holding/management areas.

This project will implement BMPs identified in the watershed management plan with matching funds provided by the DeKalb County Soil SWCD and private landowners. Since the project began in September 2015, the DeKalb County SWCD has been busy getting the word out to local landowners about the project through newsletters and news articles. Thus far, the SWCD has received seven applications for agricultural BMPs with two practices nearly completed, including 29.6-acres of improved pasture planting.



#### **Load Reductions:**

- o lbs/yr of nitrogen
- o lbs/yr of phosphorus
- o tons/yr of sediment

Cattle with direct access to streams is one of the potential sources of pathogens identified in the Upper Scarham Creek Watershed Management Plan.

#### Pintlala Creek Watershed Project

Pintlala Creek begins in northern Crenshaw County and flows through Montgomery County into the Alabama River. Pintlala Creek, a Fish and Wildlife stream, is approximately 49-miles in total length, of which 26-miles is impaired. The drainage area of the impaired segments is 86.56-square miles. Pintlala Creek was first listed on the §303(d) list in 2006 based on data collected in 1999 and 2000 by the USGS, which indicated the stream was impaired for fecal coliform. In 2010, further sampling studies by ADEM identified Pintlala Creek as being impaired by pathogens due to pasture grazing, from its source to Pinchony Creek. A TMDL was developed from the *E. coli* data collected.

The Pintlala Creek Watershed Project addresses two sub-watersheds: Upper Pintlala Creek (03150201-0401) and Headwaters Pintlala Creek (03150201-0404). Recent site reconnaissance and stakeholder meetings identified additional sources of pathogens,



including wildlife, illegal dumping, and improperly functioning septic systems, though agricultural land uses remain the primary targeted sources. To date, the Montgomery County SWCD has received are five applications for installing BMPs to include exclusion fencing, alternative watering sources, heavy use areas, critical area planting and stream crossings. These practices have been identified in the management plan and will be implemented using Section 319 grant funding from ADEM, with matching funds provided by the Montgomery County Soil and Water Conservation District, public and private entities, and private landowners. In addition to the agricultural BMPs, two septic tank maintenance workshops have been planned to address the problem with runoff from septic tanks in the black belt soils of southern Montgomery County.

#### **Load Reductions:**

- o lbs/yr of nitrogen
- o lbs/yr of phosphorus
- o tons/yr of sediment

#### Harris Creek Watershed Project - Phase 2

Harris Creek (HUC 06030006-0201) was placed on the §303(d) list in 1998 for sedimentation and low dissolved oxygen. The TMDL was completed in February 2002. The Franklin County SWCD completed the first phase of this project in 2010. The current Harris Creek Phase 2 Project was initiated in November 2013 with a mission to continue to restore the impaired segment of the creek. More effort is being made to prioritize project funding for best management practices located within 300-feet of the creek and its main tributaries. A secondary mission of the project includes education and outreach programs that will educate the public about the importance of clean water and how nonpoint source pollution affects the environment.

Since the kickoff meeting in December 2013, six applications have been accepted and at least four landowners have expressed an interest in the project. The applications are ranked according to the water quality impact on Harris Creek.



In March 2015, the watershed coordinator took a position with another agency. Consequently, the remainder to the project will be completed by the Franklin County District Administrative Coordinator (DAC), the Franklin County SWCD Board Members, and the NRCS. Currently, the DAC and the NRCS are working with existing stakeholders to ensure the installation of best management practices. To date, 352.2-acres of cover crops involving three separate landowners have been planted.

Plans are also underway for the upcoming 2016 Envirothon that will be hosted by the Franklin County SWCD. The Envirothon is a unique opportunity to give students "hands-on" training in a wide variety of environmental subjects.



#### **Load Reductions:**

- 5,140 lbs/yr of nitrogen
- 360 lbs/yr of phosphorus
- 5,892 tons/yr of sediment

Over 350-acres of cover crops have been implemented in the Harris Creek Watershed.

#### Joe's Branch Watershed Project

The Joe's Branch stream is a tributary of D'Olive Creek near the point where the latter empties into D'Olive Bay. The Joe's Branch Watershed (within HUC 03160204-0505) is approximately 661 acres in area and includes portions of the Cities of Spanish Fort and Daphne. In 2008, a 1.57-mile segment of Joe's Branch from its source to D'Olive Creek was first added to the §303(d) list for siltation (habitat alteration) as a result of land development. In August 2010, a Watershed Management Plan for the D'Olive Creek, Tiawasee Creek, and Joe's Branch Watersheds in Daphne, Spanish Fort, and Baldwin County was completed. Partners of this project include the Mobile Bay National Estuary Program, Thompson Engineering, ADEM, U.S. Environmental Protection Agency, Baldwin County, City of Spanish Fort, City of Daphne, Mississippi-Alabama Sea Grant Consortium, Alabama Power, Alabama Department of Transportation, Alabama Department of



Conservation and Natural Resources, Geological Survey of Alabama, NFWF (Gulf Environmental Benefit Fund, the University of South Alabama (USA), and the Lake Forest Property Owners Association.

The goal of this project was to help restore the natural hydrologic function of this severely degraded drainage, prevent further damage, and reduce the transport of NPS pollutants (primarily sediment) via the impaired Joe's Branch stream to D'Olive Creek, and ultimately to help improve the quality of the water that is discharged from the into D'Olive Bay and Mobile Bay. Recognizing that the technology being employed is new in Alabama and could be effectively employed in other areas of the watershed, it also serves as a demonstration to public officials, engineers, and other professionals of how water quality protection and economic benefits of natural "green infrastructure" practices provide a multi-purpose alternative to traditional, hard-engineered stormwater containment and conveyance systems. The project is expected to reclaim many of the ecological features and services that have been lost to urbanization.

Construction of a 1,000-foot regenerative step pool storm conveyance (SPSC) has been completed. Wetland restoration down slope of the SPSC was incorporated into the construction contract and has also been completed. The NFWF Gulf Environmental Benefit Fund provided additional resources to add a downstream restoration, from the head cut that was impinging upon the restored wetland area to 1,700 feet downstream. Additional stabilization and maintenance of these sites began in March 2015 and continues as needed. The USA Engineering students worked to design detention ponds improvements in the City of Spanish Fort to reduce the amount of flow to the project. The remediation of the detention ponds were funded and were completed in September 2015. Educational signage has been designed and will be placed to educate the public about the project.

The Geological Survey of Alabama conducted a pre- and post-assessment study of the site to document the effectiveness of stream restoration involving construction of a step-pool conveyance system and downstream wetland restoration. Post-restoration turbidity values averaged approximately 89 percent lower. This demonstrates the effectiveness of the step-pool conveyance system in reducing erosion. Sediment load reductions of approximately 20,001 tons/yr were achieved with the implementation of this project.

#### **Load Reductions:**

- o lbs/yr of nitrogen
- o lbs/yr of phosphorus
- 20,001 tons/yr of sediment



The step-pool conveyance system and temporary grass emergence at Joe's Branch post-construction.



Joe's Branch stream stabilization site one year post-construction with emergence of permanent vegetation.

#### **Alabama Coastal Nonpoint Source Pollution Control Program**

The State of Alabama continues to develop its Coastal Zone Management Program under the Coastal Zone Management Act (CZMA) of 1972. The CZMA requires the state to develop and implement its Alabama Coastal Nonpoint Pollution Control Program (ACNPCP) under Section 6217 of the Coastal Zone Act Reauthorization Amendment of 1990 (CZARA). Section 319 funds are to assist in the implementation of management measures contained in these programs. The ADEM NPS program staff works closely with coastal nonpoint program staff to integrate and coordinate the ACNPCP with the AL NPS Management Program.

Section 319 program funds are obligated in the coastal area to address priorities of the AL NPS Management Program, assist stakeholders in identifying specific coastal OSDS problem areas, and to provide resources to plan and implement corrective NPS management measures and practices. Focused targeting of Section 319 program funds advances the goal towards full approval of the ACNPCP under CZARA by:

- Identifying specific OSDS NPS stressor locations including GIS mapping and data layers (with consideration for maintaining citizen privacy issues).
- Strategically focusing on and clearly articulating BMP remedies to meet state water quality standards.
- Leveraging, integrating, and aligning planning and priority-setting funding to make the best use of available human and financial capital to control NPS pollution.
- Facilitating key stakeholder "ownership" of NPS problems and concerns by balancing NPS staffing and actions to deliver measurable environmental results.
- Facilitating delivery of targeted-audience education and outreach and technical assistance.
- Partnering to improve project accountability, tracking and reporting results (including success stories) to demonstrate project progress and success.

In FY2015, two no-till seed drills were purchased to help reduce erosion impacts or NPS impairment of identified local waterbodies; e.g., Fish River Watershed (Baldwin County) and Eightmile Creek Watershed (Mobile County). The SWCDs in Mobile and Baldwin Counties will facilitate this technology through the purchase, maintenance, and stewardship while providing public access to readily use the no-till drill machinery. The Baldwin County and Mobile County SWCDs, with the help of local partners, have also held several successful workshops and field demonstrations to enhance and provide informative presentations and or handouts to assist agriculture land users, including topics on soils information and soil health along with technical information to improve water quality, reduce soil loss and reduce the use of synthetic fertilizers.

Section 319 program funds are also being provided to address coastal onsite sewage disposal systems (OSDS) nonpoint source programmatic priorities, partnerships, opportunities, and challenges. Coastal sewer entities will address onsite sewer systems pollutant load reductions in order to protect water quality and restore impaired waters to state water quality standards. Specifically, Section 319 set-aside program funds will be used by the Baldwin County and Mobile

County Public Health Departments and the Baldwin County and/Mobile County Soil and Water Conservation Districts to:

- 1. Implement an intensive "on-the ground" county-wide septic tank inspection and maintenance program in priority eight-digit HUC sub-watersheds
- 2. Identify hydric soils region profiles as Geographic Sewer Areas (GSAs) in prioritized eight-digit HUC watersheds.

Implementation delays of this portion of the project have occurred due to unexpected contractor staff vacancies and other resource limitations. For project coordination reasons, the work agreements for all four contractors required extensions until Sep 15, 2016. Other products and results will be reported in following reports per the contract extension into 2016.



#### The Alabama Nonpoint Source Management Program

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