

2014



SOUTH CAROLINA NONPOINT SOURCE MANAGEMENT PROGRAM 2014 ANNUAL REPORT

**SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL**

December 2014

(This page intentionally left blank.)

TABLE OF CONTENTS

Nonpoint Source Pollution - NPS	4
History of South Carolina’s Nonpoint Source Management Program	4
South Carolina’s Strategy	5
Meeting the Goals of the NPS Program.....	8
NPS Management Program PLAN UPDATE FOR 2015-2019	12
Relating Progress to EPA’s Strategic Plan	13
EPA NPS success STORY	15
Installing Best Management Practices and Educating Stakeholders Improves Water Quality in the Enoree River Watershed	15
Watershed-Based Plan Implementation – ongoing projects.....	17
Burton Hill - Battery Creek.....	17
Boggy Creek	18
CRane Creek.....	18
Crabtree Swamp	19
Hollow Creek.....	20
Horry, Aynor & Dog Bluff (HAD)	20
May River - Phase II	21
Middle Saluda River	22
Owens Field	23
Toogoodoo Creek	23
Twelve Mile Creek	24
Walnut Creek.....	24
Watershed-Based Plan Implementation – Closed projects	25
Little Eastatoe River	25
Little Saluda River, Clouds Creek, Big Creek	26
Okatie River	26
Pacolet River	27
Nonpoint Source Partner Highlights – DUke energy Foundation	28
South Carolina Coastal Nonpoint Source Program	29
South Carolina Forestry Commission BMP Compliance Program	30
Champions of the Environmental Program Targets NPS Education	31
TMDL - A Tool for Water Quality Improvement	33
THE 303(d) LIST.....	33
South Carolina’s Priority Watersheds.....	34

NONPOINT SOURCE POLLUTION - NPS

Nonpoint source (NPS) pollution occurs when rainfall or irrigation runs over land or percolates through the ground, picking up pollutants and carrying them into rivers, lakes, coastal and ground waters. Unlike point source pollution, which can be traced to a defined source, nonpoint source pollution is diffuse, making it difficult to identify and control the source of the problem.

Nonpoint sources of pollution are important to control because they continue to be recognized as the nation's largest remaining cause of surface water quality impairments. NPS pollution may contain bacteria and nutrients from malfunctioning septic systems or animal waste, eroded soil from land disturbances, nutrients and pesticides from agricultural or urban areas, air pollutants from atmospheric deposition, and heavy metals and other toxins bound to soil particles. These pollutants, in turn, can impact human and aquatic health by causing beach closures and fish kills, impacting aquatic and marine habitat and making drinking water more difficult to treat. The pollutants also ruin the beauty of healthy, clean water habitats.



Some common sources of nonpoint source pollution nationwide

The most common measured NPS pollutant in South Carolina is *E. coli* bacteria. Other common examples include nutrients such as phosphorus and nitrogen, pesticides, oil and grease, toxic chemicals, and heavy metals. These wash into waterbodies, most often in sediments, from agricultural land, small and medium-sized animal feeding operations, construction sites, and other areas of disturbance. In urban areas, wash-off from parking lots, stormdrains, and roads are also major sources.

HISTORY OF SOUTH CAROLINA'S NONPOINT SOURCE MANAGEMENT PROGRAM

Recognizing the growing problem of NPS pollution, in the late 1980s, Congress added nonpoint source provisions to the Clean Water Act (CWA) under Section 319. Among other provisions, Section 319 requires each state to develop and maintain a Nonpoint Source Management Program to comprehensively address nonpoint sources of pollution. The South Carolina program, which is administered by the Department of Health and Environmental Control (DHEC), was originally approved by EPA in 1990. That year, Congress also enacted the Coastal Zone Act Reauthorization Amendments (CZARA) to more specifically address the impacts of NPS pollution on coastal water quality. As a result, South Carolina developed a Coastal Nonpoint Pollution Control Program, which was later merged with the statewide NPS Management Program. Since the original program was developed, the Nonpoint Source Management Plan has been updated twice, in 1999 and 2014. South Carolina received full approval in 2008 for the Coastal NPS Control Program.

In 2013, EPA issued updated guidance for states to use in reviewing, revising and updating their NPS management programs. The guidance reflected a nation-wide focus on addressing water quality issues on a watershed basis and emphasizes a streamlined approach to implementing NPS reduction and prevention strategies. South Carolina's Management Plan has been updated to reflect this guidance along with other state and federal priorities. In 2014, South Carolina's NPS Management Plan for 2015-2019 was approved by EPA.

SOUTH CAROLINA'S STRATEGY

South Carolina is taking full advantage of Clean Water Act Section 319 funding that is available from the Environmental Protection Agency (EPA) to prevent and reduce NPS water pollution in the state. The annual grant funds and resultant workplan is the principal financial mechanism for implementing the goals of the NPS Management Program. All projects described in the workplan are linked to one or more of the goals described in the 1999 NPS Management Program. In order to meet the goals of the 1999 NPS Management Program, emphasis has shifted over the last several years toward implementing projects that address specific NPS impairments in priority waterbodies/watersheds. Beginning in fiscal year 2003, in accordance with federal guidelines, South Carolina began focusing resources exclusively on implementation of watershed-based plans. While the majority of this funding has focused on watersheds with approved Total Maximum Daily Loads (TMDLs), impaired or threatened waterbodies have also been included. Beginning in 2013, federal guidelines placed an even greater emphasis on watershed-based plan implementation. In 2012 and 2013, South Carolina awarded six watershed-based plan development projects in order to increase the pool of watersheds eligible for implementation.

While Section 319 grant funds provide significant financial resources for implementing the NPS Management Program, the Program is actually much broader in scope. There are a variety of other programs including enforceable mechanisms that are applied to NPS pollution prevention. Within SCDHEC, several regulatory programs are administered including agricultural animal facility permitting and compliance, erosion and sediment control permitting and compliance, municipal and industrial facility NPDES stormwater permitting, coastal zone permitting, state water quality standards and Pollution Control Act compliance, Section 401 certification for wetlands disturbance and hydrologic modification, and onsite wastewater system standards and permitting. Further, the SC Forestry Commission implements a very successful forestry Best Management Practice (BMP) compliance program. Since its inception in the early 1990s, the rate of compliance has increased significantly (see "SC Forestry Commission BMP Compliance Program Annual Update" to learn more).

Another significant source of funding for nonpoint source abatement projects is a state and federally supported low interest loan program known as the State Revolving Fund (SRF). The SRF may be preferable to local governments for large budget projects since more funds are available than through the Section 319 grant program.



Several local governments have applied for SRF loans for NPS projects. 2009 also saw the passing and implementation of the American Recovery and Reinvestment Act, or ARRA. ARRA provided additional stimulus funds to the SRF program with a special set-aside for green infrastructure projects. This resulted in enormous interest in SRF projects and particularly raised interest in nonpoint source projects. In addition, this new funding encouraged an overhaul of the SRF ranking system for SC. The NPS Program was an integral part of this process. Now SRF projects that complement recent 319 efforts are awarded additional points in the Priority Ranking System.

The 1999 update to the NPS Management Program plan incorporated South Carolina's Coastal Nonpoint Pollution Control Program (CNPCP) under Section 6217 of the Coastal Zone Act Reauthorization Amendments. The purpose of the CNPCP is to address nonpoint source pollution issues within the coastal zone and ensure that all applicable management measures are implemented to protect and restore the State's coastal resources. SCDHEC's Office of Ocean and Coastal Resource Management (OCRM) prepared a 15-year strategy for the CNPCP, which describes general objectives for the comprehensive and effective management of polluted runoff within the coastal zone. South Carolina received final program approval by NOAA and EPA in 2008.

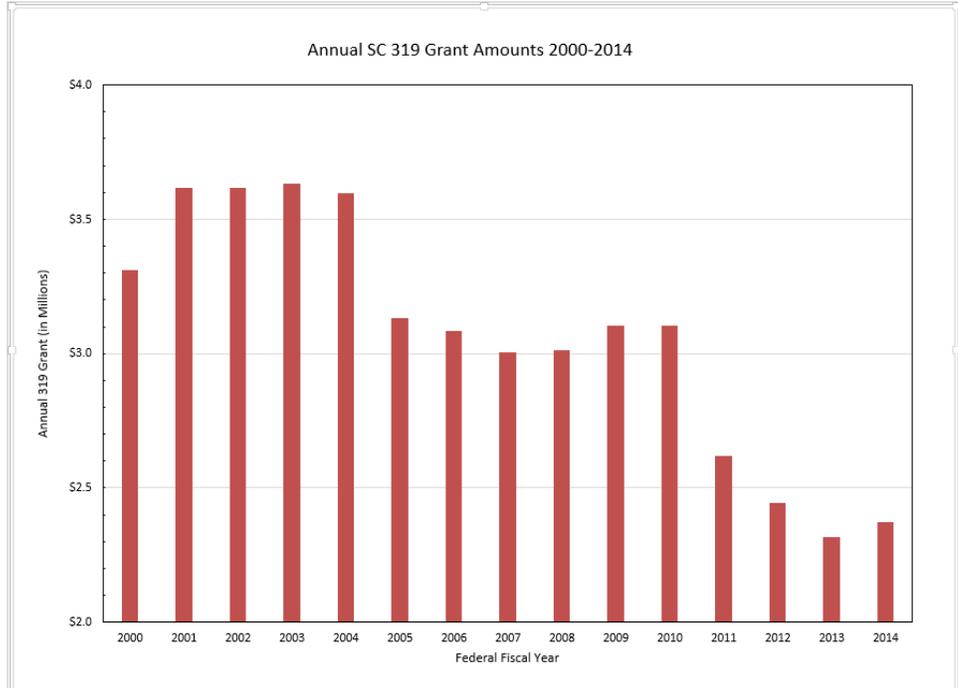
Stakeholders play an integral part in the State's NPS strategy. Federal agencies such as the USDA Natural Resources Conservation Service (NRCS), Farm Service Agency (FSA), US Forest Service (USFS), US Army Corps of Engineers (USACOE), and United States Geological Survey (USGS) have major roles. State agencies with complementary programs include the Department of Natural Resources, Clemson Extension Service, and the Forestry Commission. Non-profit groups such as the SC Wildlife Federation, Sierra Club, and SC Coastal Conservation League, and industry trade organizations including the Farm Bureau, SC Assoc. of Conservation Districts, Cattlemen's Association and the Forestry Association are also active participants. Private utilities and industries can be excellent partners as well. This was demonstrated clearly in 2009 with the introduction of a new partner to the 319 Program – the Duke Energy Foundation.

SC's fiscal year 2014 Section 319 grant workplan for EPA contains projects funded under two different EPA defined categories; program and project. The program allocation is used to implement projects that address general NPS pollution activities that are statewide, while the project allocation is targeted for on-the-ground implementation of nonpoint source best management practices (BMPs) prescribed in approved watershed-based plans. SC's workplan specifically describes the programs and projects which receive some funding from the EPA 319 grant to the state. However, in addition to these activities, many additional NPS activities are planned and on-going in accordance with SC's 1999 NPS Management Plan for this year. In the future, the 2015-2019 Management Plan will also outline all the State's NPS Program efforts and the annual workplan for EPA will continue to only address activities funded by EPA.



Improved parking area graded so water flows into center bio-filter catchment basin

It should be noted that the FY13 budget was cut by over 5%, which meant that the program operated on 64% of the budget available in 2003. The FY14 budget is up slightly, but is still lower than in FY12 and is over \$700,000 less than it was only five years ago in FY10. This impacts the program's ability to address nonpoint source concerns, both through DHEC staff and through awarding grants for implementation projects.



Cooperating agencies and organizations throughout the state have become highly involved in the watershed-based plan implementation process. One or several can jointly implement a plan in a given watershed using the Section 319 funds. Projects to be implemented by outside agencies and organizations are selected using a competitive proposal process. A Request for Proposals (RFP) is promulgated at least once per year through various meetings, workshops, web site, mailings, and advertisements in the publication *South Carolina Business Opportunities*, a biweekly publication with wide circulation.

Applicants must follow specific guidelines, which are published on the SCDHEC web site (www.scdhec.gov/water) to develop a proposal. The proposed project must implement a watershed-based plan for an approved TMDL, impaired waterbody or threatened waterbody; the objective must be to reduce the pollutant load so as to allow streams in the watershed to meet water quality standards. The guidelines specify that the project must address the nine elements of a well-designed watershed implementation project as specified by EPA.

Proposals received as a result of an RFP are reviewed and selected by a review committee. A proposed project must meet all of the criteria described above to be selected for funding. The federal funds must be matched with at least 40 percent in non-federal funds. South Carolina encourages combining funds from other sources such as USDA EQIP funds.

NPS program fund allocation projects (1-5) are statewide or regional in scope and continue to institutionalize the state's nonpoint source program. Many of these projects address various nonpoint source categories including forestry, urban runoff, animal agriculture, wetlands, construction and groundwater impacts. Annual allocation category projects are implemented by SCDHEC staff (1, 2, 4, 5) and the SC Forestry Commission (3). A significant portion of the annual allocation is used for NPS education and outreach, NPS monitoring, watershed management, compliance, and TMDL development. It is also used to continue implementation of a statewide forestry BMP compliance program. Project one includes monitoring at all 319 project locations and project four includes funding for TMDL development work.

MEETING THE GOALS OF THE NPS PROGRAM

The SC NPS Management Program document describes 17 long-term goals and guiding principles that facilitate and promote the state's efforts to manage NPS water pollution. Those goals are:

1. *To continually identify and quantify water quality problems that are caused specifically by NPS pollution including those identified on the state's 303(d) list through NPS water quality monitoring activities conducted by SCDHEC NPS monitoring staff, specific Section 319 assessment projects and activities, SCDHEC ambient surface water monitoring data, the Total Maximum Daily Load development (TMDL) process, and other assessment tools.*
2. *To ensure that all applicable management measures to protect and restore coastal waters will be implemented in the coastal zone within 15 years of February 23, 1998, the date of conditional Coastal Nonpoint Pollution Control Program approval.*
3. *To integrate and implement all applicable management measures on a statewide basis by 2013, exclusive of their requirement for enforceable policies outside of the coastal zone except where statewide regulations already exist or will be promulgated..*
4. *Have controls in place by the year 2013 (in 15 years) that will provide the mechanism(s) to delist 100 percent of 303(d) listed NPS waterbodies and prevent new NPS impacted waterbodies from being listed.*
5. *To focus Section 319 program grant funds and non-federal matching resources on Category I Priority Watersheds as defined in the Watershed Restoration Action Strategy/Unified Watershed Assessment (WRAS/UWA) process and on 303(d) listed waterbodies within the priority watersheds.*
6. *To focus Section 319 annual grant funds and non-federal matching resources on an NPS management program that balances education, assessment, technical assistance, BMP implementation, and regulation.*
7. *To develop NPS Total Maximum Daily Loads (TMDLs) for all 303(d) listed waterbodies impacted by NPS within 13 years. All NPS TMDLs for waters where dissolved oxygen and bacteria pathogen impairments identified on the 1998 303(d) list will be developed by the end of FY-2007. By the end of FY-2010, TMDLs will be completed for waters identified on the 1998 303(d) list impacted by nutrients, pH, and toxics from NPS, and all remaining pollutants.*
8. *To maintain and expand partnerships and cooperative opportunities with NPS stakeholders, other agencies, organizations, and citizens.*
9. *To assure effective and efficient use of financial resources and to leverage funds with other programs to target NPS priority issues and areas.*
10. *To have in place animal waste management plans for all agricultural animal facilities in South Carolina that conform with national priorities within 15 years.*
11. *To continue to develop and implement a proactive program protective of the groundwaters of the state by preventing and mitigating impacts from nonpoint sources.*
12. *To continue proactive groundwater management of in-ground wastewater treatment and land application facilities by conducting comprehensive, site specific evaluations during facility development and long-term compliance monitoring.*
13. *To provide regulatory oversight and technical guidance to responsible parties at facilities where groundwater quality standards have been exceeded to accomplish source remediation, assessment, and groundwater corrective actions.*

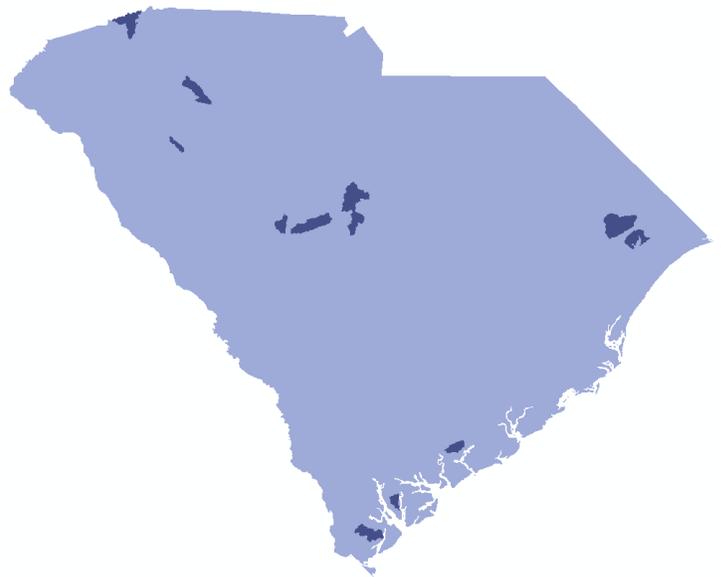
14. *To continue proactive coordination with other state programs to implement, maintain, and protect South Carolina's groundwater resources.*
15. *Work proactively with potential applicants in order to insure the Clean Water State Revolving Fund (SRF) is fully accessible for nonpoint source projects.*
16. *To continue to implement NPS programs and initiatives that will prevent NPS impact to water quality.*
17. *To periodically review and assess the goals and objectives of the NPS Management Program and revise the program as appropriate in light of the review.*

To assure attainment of these goals, a number of quantifiable five-year action strategies were developed and described. Each set of strategies includes a short-term goal, the implementing mechanism, the implementing agency(s), and a reference to the antecedent long-term goal. Many of the action strategies are in turn supported by milestones, which are associated with implementation of Section 319 projects. The State has utilized strategies that should ultimately lead to attainment of the program's long-term goals. The current status of several of these long-term goals is described below.

Goal one addresses assessing water quality and other methods to identify NPS impacted problem areas so that management solutions can be implemented. See "A 101 on the 303(d)" for more information. Goal two requires that all applicable management measures to protect and restore the state's coastal waters are in-place within 15 years. To accomplish this goal the state, through SCDHEC's Office of Ocean and Coastal Resources Management (OCRM), is implementing South Carolina's Coastal Nonpoint Pollution Control Program (CNPCP) as required by Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA). The Program received final approval from NOAA and EPA in 2008. See "South Carolina's Coastal Nonpoint Program" for an update on the Program.

Goals four, five, and seven of the Program are interrelated. Goal four focuses on addressing problem pollutants that are listed on the 303(d) list and goal five describes the use of 319 funds at the watershed level. Goal four says we will have the controls in place to delist the waterbodies. To accomplish this, we are developing and implementing Total Maximum Daily Loads (TMDLs) for impacted waterbodies listed on the 303(d) list. Goal seven discusses the pace for development of those TMDLs.

To accomplish these three goals, and to make an actual positive impact on water quality, the state has focused its Section 319 grant resources on TMDL development and implementation. To date, 534 TMDLs (mostly for pathogens) have been developed by SCDHEC staff and contractors, and the state is meeting the development pace required by EPA. Of these approved TMDLs, approximately 166 have been implemented with Section 319 funding.



SC's Watershed-Based Plan Implementation Projects in 2014

These projects were implementing control measures in order to reduce the pollutant load, e.g. pathogens, to a level where state water quality standards are met. Twenty- eight projects implementing 136 TMDLs have been completed. Twelve projects implementing BMPs for impaired waterbodies are currently underway. In addition, five new projects started in 2014 and four were completed. See “TMDL, a Tool for Water Quality Improvement,” and “South Carolina’s Current 319 Projects” for more information. The following 319 grant projects were ongoing in 2014:

- Boggy Creek in Spartanburg County
- Hollow Creek in Lexington County
- May River (Phase II) in Beaufort County
- Chinners, Palmetto and Brunson Swamps in Horry County
- Walnut Creek in Laurens County
- Twelve Mile Creek in Lexington County
- Middle Saluda River in Greenville County
- Crabtree Swamp in Horry County
- Toogoodoo Creek in Charleston County
- Crane Creek, and Owens Field-Gills Creek in Richland County
- Battery Creek/Burton Hill in Beaufort County

The four projects completed in 2014 were the Okatie, Little Saluda and Cloud Creek, Pacolet, and Little Eastatoe, The five additional watershed-based plan implementation projects that were awarded grant funding in 2014 included Murrell’s Inlet in Horry County, Lucas/Timrod Park in Florence, Huff Creek in Greenville County, Saluda River in Anderson, Greenville, and Pickens Counties, and Twenty-Five Mile Creek in Richland, Kershaw, and Fairfield Counties. There will be 17 ongoing projects from 2014 into 2015.

Recognizing the need for more detailed watershed-based plans, in 2012 and 2013 South Carolina solicited and awarded projects for development of such plans. Plans in five watersheds were completed from 2013-2014 and one additional plan for Broad Creek will be completed next year. Goal six describes using Section 319 program grant funds to reduce and prevent NPS pollution through activities that implement regulatory, outreach, assessment and technical assistance activities. These activities complement the Watershed Restoration Action

Strategy and help to ensure attainment of goal three.



A watershed-based plan for the Murrells Inlet watershed was completed in 2014 and a 319 grant was awarded in 2014 to implement it.

More and more, regulatory programs at the state and local level that serve to reduce nonpoint source pollution from many sources are being put in place. For example, South Carolina has an innovative program to assure that compliance with water quality BMPs is maintained on forestry harvesting sites. See “SC Forestry Commission BMP Compliance Program Annual Update.”

Goal six also discusses the importance of outreach programs and activities. The South Carolina NPS Management Plan recognizes that effective and comprehensive outreach is an important requirement for the success of the state's nonpoint source pollution management program. Unless governmental agencies, educational institutions, and stakeholder groups spread the word to local communities and individual citizens about water quality problems, and what works in preventing or solving those problems, people will not step forward to implement solutions to prevent or solve these problems. That is why education and outreach programs are critical to the success of any NPS management program. SC's Section 319 grant funds portions of several NPS positions within SCDHEC with some outreach responsibilities, as well as funding outreach activities that are a component of specific Section 319 projects. See "Champions of the Environment Program Targets Nonpoint Source Education" for more information on the NPS Outreach Programs.

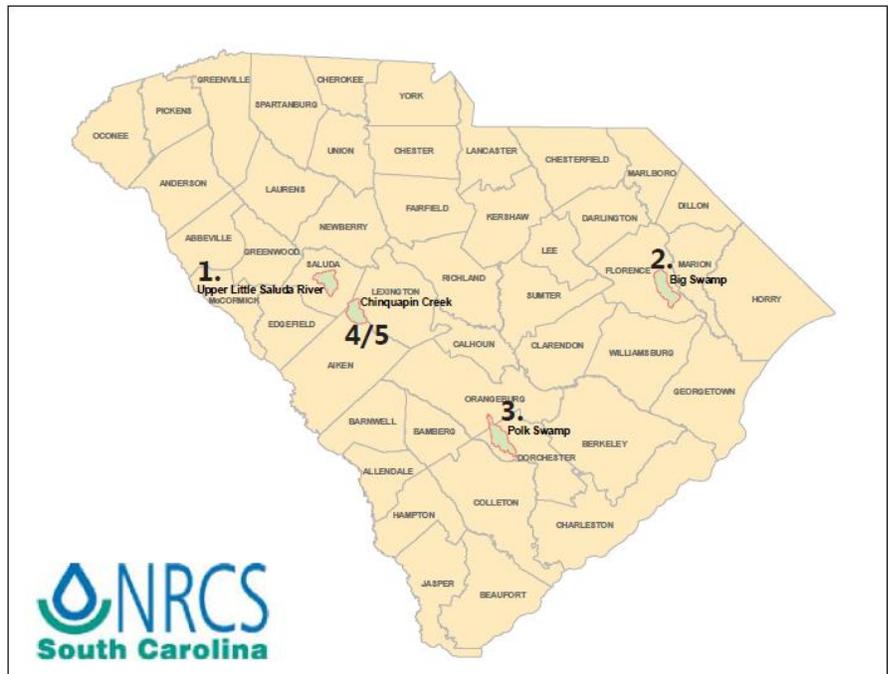
Maintenance and expansion of partnerships and cooperative opportunities with stakeholders, other agencies, and citizens is the focus of goal eight. Numerous activities are currently being conducted with students, homeowners, and local governments that support this goal. In particular, federal agency support of the State's NPS Program is critical. The USDA Natural Resource Conservation Service (NRCS) has long been a partner with the state in working to improve water quality. Membership by SCDHEC NPS staff on the NRCS State Technical Committee and NRCS staff membership on the State Nonpoint Source Task Force facilitates cooperation between the two agencies. Further, SCDHEC and NRCS have been jointly exploring the ways to focus Environmental Quality Incentive Program (EQIP) cost-share funds in watersheds where nonpoint source water quality problems occur, particularly in watersheds where TMDLs are being implemented.



Little Eastatoe Creek project monitoring station location – samples taken from a bridge

Through the work of SCDHEC staff, the State Technical Committee voted to include 319 projects in the last five statewide priority ranking tools for EQIP. Any proposed NRCS contract falling within a 319 TMDL implementation watershed would automatically receive a higher priority than another similar project outside the watershed. This will further direct EQIP funding towards areas in need of restoration. However, because of the increased cost-share percentage available in EQIP (currently at 75%), these funds are growing more scarce and are unable to reach as many landowners as in the past. This makes the ranking system even more critical to targeting resources.

The goal of collaborative funding has been realized in many projects across South Carolina by combining USDA funds such as EQIP and CSP with 319. In 2012, this was taken even further with USDA’s National Water Quality Initiative (NWQI), which set aside EQIP funds for BMPs to improve water quality in specific watersheds. The 2014 watersheds were selected by both NRCS and SCDHEC staff. Two of the four watersheds selected have 319 grant investments. SCDHEC is also providing the water quality monitoring associated with NRCS’s work in these watersheds and looks forward to reporting more on this effort in future reports.



2014 NRCS National Water Quality Initiative (NWQI) watersheds.

The focus of goal nine is to assure effective and efficient use of financial resources and to leverage funds with other programs. The State Revolving Fund (SRF) provides low interest loans for utility infrastructure projects, usually sewage treatment facility construction. The fund can also be used to fund nonpoint source projects and NPS staff have promoted this funding source to local governments to implement stormwater BMPs. Beyond this, however, SRF loans can assist NPS projects by addressing point source concerns within a watershed that 319 funds are unable to correct. This watershed approach was a key component of the SRF ranking system revision that occurred in 2010.

NPS MANAGEMENT PROGRAM PLAN UPDATE FOR 2015-2019

The most recent update to SC’s NPS Management Program Plan was completed in 2014 for the five year period of 2015-2019. DHEC began an update to the management plan 2014 in accordance with new guidance released in early 2013. The update has resulted in a new look for SC’s plan and more streamlined goals for increased accountability and tracking. The 2015 edition of the NPS Program Annual Report will reflect the revisions made in the 2015-2019 NPS Management Plan.

RELATING PROGRESS TO EPA'S STRATEGIC PLAN

EPA's Strategic Plan includes results-based performance goals to protect the environment. South Carolina has incorporated applicable goals and objectives into the state's NPS Management Program. One of the goals has several objectives related to NPS. In that regard, EPA has asked states to report on four of these NPS objectives:

1. The number of watershed-based plans (and acres covered) supported under state nonpoint program grants developed since 2002:

South Carolina has **developed watershed-based plans for 201 watersheds covering 3,182,301 acres** within the state.

2. The number of watershed-based plans (and acres covered) supported under state nonpoint program grants developed since 2002 that are being substantially implemented:

South Carolina has **substantially implemented 172 watershed-based plans, covering 2,920,771 acres** within the state.

3. The number of waterbodies identified by states in the year 2000 as being impaired by nonpoint sources that are fully restored:

From 2000 to 2002, a net total of 126 impaired waterbodies were removed the state's 303(d) list because the water quality standard was attained. From 2002 to 2004, a net total of 88 impaired waterbodies were removed from the state's 303(d) list because the water quality standard was attained. Between 2004 and 2006, 87 impaired waterbodies were removed and between 2006 and 2008, 170 impaired waterbodies were removed because water quality standards were attained. Between 2008 and 2010, 235 waterbodies were removed because water quality standards were attained. Between 2010 and 2012, 140 waterbodies were removed because water quality standards were attained. Between 2012 and 2014 89 waterbodies will be removed because water quality standards were attained. **Since 2000, a total of 937 waterbodies have been restored.**

4. The annual reduction in lbs./tons of nitrogen, phosphorus, and sediment from nonpoint sources to waterbodies:

In cooperation with its 319 partners, SCDHEC has developed methodologies for estimating pollutant load reductions from past and ongoing projects. In accordance with EPA instructions, these initial estimations have focused on sediment and nutrient pollution. The projects with current annual load reduction estimates are found in the chart on the following page including both closed and ongoing projects, (GRTS as of December 22, 2014).

As always the bottom line for effectiveness, particularly in 319-funded TMDL projects, is measurable improvement in water quality. **When totaled, these figures translate to an annual reduction of 79,624 tons of sediment, 273.5 tons nitrogen, 58.9 tons phosphorus and 2.89×10^{15} CFU bacterial Pathogens.** This represents estimates from thirty-two projects across South Carolina.. All grantees are required to supply detailed information in their interim and final reports so that the variables required to make these estimations are more accurate and readily available. Load reduction information is reported to EPA using the Grants Reporting System (GRTS). SCDHEC will continue to assess water quality through its extensive ambient water quality monitoring strategy.

(Data taken from EPA Grants Reporting and Tracking System, GRTS-12-22-2014)
Annual Load Reductions Estimates for all 319 Implementation Projects

IMPLEMENTATION PROJECTS		Nitrogen (Pounds)	Phosphorus (Pounds)	Sediment (Tons)	Fecal Coliform (CFU)
Completed Projects	Big Generostee Creek TMDL Implementation Through Reduction of Fecal Coliform Pollution	1,026.30	402.60	0.00	7.9781E+11
	Bush River TMDL Implementation	24,202.06	4,742.86	6,213.40	9.2000E+13
	Coneross Creek and Beaverdam Creek TMDL Implementation	28,622.00	5,620.00	15,638.00	8.6002E+11
	Enoree River Total Maximum Daily Load Implementation Project	13,088.69	2,490.72	1,485.20	3.8400E+11
	FC BACTERIA TMDL DEV AND IMLEM FOR THE SCAPE ORE SWAMP WATERSHED	249,691.80	44,412.01	65.10	1.1700E+14
	FC Bacteria TMDL Dev and Implem for Big Swamp and Dissolved Oxygen Characterization for Big Swamp and Singleton Swamp Watersheds	2,786.20	1,037.00	161.20	1.8850E+12
	FC Bacteria TMDL Impl for Cane Creek and Little Cane Creek	617.63	224.93	11.46	6.2155E+11
	FC Bacteria TMDL Implementation for the Litchfield-Pawley's Island Estuary	2,031.69	3,691.94	7.60	7.0615E+14
	Fecal Coliform Bacteria TMDL Implementation for Spears and Kelly Creeks	15,358.99	1,718.39	568.60	9.2100E+12
	Fecal Coliform Bacteria TMDL Implementation for the Thompson Creek Watershed Located in Chesterfield County	10,919.70	2,883.30	778.50	2.3640E+12
	Fecal Coliform Bacteria TMDL Study and Implementation for the Fork Creek Watershed in Chesterfield County	4,910.32	1,114.36	659.20	5.1800E+12
	Hard Labor Creek Watershed Water Quality Improvement Project	2,977.70	1,152.40	251.00	5.0706E+13
	Implementation of an Okatie River Watershed Plan	2,363.00		19.00	7.1497E+14
	Implementation of a Sewee to Santee Watershed Based Plan	529.00	207.00	0.00	4.1100E+11
	Little Eastatoe Creek Restoration	103.00	43.00	33.00	5.7800E+12
	INTERSTATE FECAL COLIFORM BACTERIA TMDL DEVELOPMENT AND IMPLEMENTATION FOR THE UPPER LITTLE PEE DEE RIVER	24,525.70	11,682.10	12,655.70	3.5000E+12
	Little Pee Dee River Watershed Water Quality Improvement Project	24,850.00	6,443.00	2,978.00	1.4972E+14
	Long Cane Creek Total Maximum Daily Load (TMDL) Implementation Project	12,967.60	2,593.80	2,101.50	2.8662E+12
	Middle Savannah Watershed Total Maximum Daily Load (TMDL) Implementation Project	2,204.50	805.20	0.00	1.9850E+12
	Rabon Creek Total Maximum Daily Load (TMDL) Implementation Project	4,611.00	1,343.00	645.00	3.8700E+13
	Stormwater Treatment Through Created Wetlands at North Elementary in the Catawba Basin	44.00	16.00	5.00	0.0000E+00
	Stream Restoration and Demonstration	29.00	29.00	22.00	9.9000E+04
	TMDL Implem for FC Bacteria and Turbidity in the Big Wateree Creek Watershed	21,455.03	3,443.24	1,705.00	8.2800E+09
	TMDL Implem for FC in Allison Creek, Calabash Branch, Beaverdam Creek and Brown Creek	9,329.90	1,779.00	3,805.82	7.9730E+12
	TMDL Implementation for FC Bacteria in Turkey Creek and Bullock Creek Watersheds	10,004.52	2,943.33	3,256.80	4.6930E+13
	TMDL Implementation for FC in the Fishing Creek Watershed	30,394.90	5,467.90	5,884.60	1.0403E+13
	Twelve Mile Creek Watershed Fecal Coliform TMDL Reductions	7,387.10	1,953.40	12,367.70	1.3380E+14
	Fecal Load Reduction in the May River Watershed, Phase I	731.00	286.00	1.00	1.8740E+12
	Hills Creek WS WQ Improvement Project	3,285.56	438.08	113.31	3.4130E+11
	Tyger River TMDL Implementation	11,231.00	3,009.00	6,751.00	3.1400E+12
	Total for Fully Completed Projects with Final Reports	522,278.89	111,972.56	78,183.69	2.8246E+15
OPEN PROJECTS	Crabtree Water Quality Improvement Project	435.00	171.00		3.3800E+11
	Horry Aynor Dogbluff (HAD) Water Quality Project	5,978.00	1,101.00	96.00	6.3015E+10
	Implementation of an Okatie River Watershed Plan	1,946.00	616.00	0.00	9.6700E+11
	Little Saluda & Clouds Creek TMDL Implementation Project	5,358.00	956.00	89.00	9.6780E+11
	Middle Saluda Fecal Coliform Pollution Reduction	124.00	48.00	0.00	9.6800E+10
	Pacolet River Fecal Coliform Reduction Project	10,154.00	2,555.00	988.00	6.0823E+13
	Toogoodoo Creek Project to Address Fecal Coliform TMDL	373.20	146.40	244.00	2.90+11
	Twelve Mile Creek Watershed Quality Improvement Project	0.00	0.00	0.00	0.0000E+00
	Walnut Creek Nutrient Reduction Project	423.00	137.00	23.00	5.0267E+12
	Total for Open Implementation Projects	24,791.20	5,730.40	1,440.00	6.8572E+13
Grand Total for ALL Implementation Projects	547,070.09	117,702.96	79,623.69	2.8931E+15	

INSTALLING BEST MANAGEMENT PRACTICES AND EDUCATING STAKEHOLDERS IMPROVES WATER QUALITY IN THE ENOREE RIVER WATERSHED

WATER QUALITY ISSUES

The 731.3-square-mile Enoree River watershed drains portion of Greenville, Spartanburg, Union, Laurens and Newberry counties in northwest South Carolina. Monitoring data collected in the 1990s indicated that numerous sites in the Enoree River watershed (at monitoring stations BE-024, B-231, B-053, B-246 and B-072) did not meet water quality standards for FC bacteria; as a result, these were listed on the state’s CWA section 303(d) list of impaired waters for not supporting their primary contact recreation designated used (Figure 1). Station B-041 was added to the impaired waters list in 2002. SCDHEC suspected that the primary bacteria sources affecting these stations included runoff from grazing pastures, improper land application of animal wastes, livestock operations, livestock with access to waterbodies, failing septic systems and urban runoff.

PROJECT HIGHLIGHTS

Partners implemented a CWA section 319-funded Enoree River TMDL implementation project in 2006 in the lower Enoree River watershed. The implementation project area includes portions of Laurens, Spartanburg and Union counties and encompasses approximately 195,417 acres. Project partners focused on recruiting livestock farmers to develop farm plans and implement BMPs to reduce FC bacteria loading from animal waste. During the 3-year project period, local landowners installed the numerous BMPs with the assistance and technical expertise of U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) personnel using CWA section 319 grant funds. BMPs included installing 29,577 feet of fence that excluded livestock from streams; adding 40,554 square feet of heavy-use area around water tanks, or for stream crossings using geo-textile fabric, geo-web and crusher run gravel; and developing alternative water sources, which required installation of 8,850 feet of waterline with 11 concrete water tanks, one water well, four water taps, one pond ramp, two stream ramps and two stream crossings. In addition, nine failing septic systems were repaired.



This stream crossing protects the stream bed while offering cattle access for drinking.

Through local community organizations (nonprofit organizations, churches, etc.), the Clemson University Cooperative Extension shared information with homeowners about septic system maintenance needs and cost-share opportunities for septic system repairs. Extension agents worked with the Enoree River Educational Board to implement education and outreach programs, including the 4-H₂O Pontoon Classroom/River Adventure, storm drain stenciling and Adopt-A-River.

RESULTS

SCDHEC collected data and re-assessed the Enoree River watershed stations for the state’s 2014 CWA section 303(d) water quality assessment and all stations show water quality improvement. **Two of the stations, BE-024 and B-231 qualify as EPA Success Stories** as they now meet South Carolina’s water quality standards and are fully supported for recreational use, based on assessments for the 2012 303(d) list. **Though not meeting the requirements for an EPA success story, all four of the other Enoree River watershed stations have shown improved water quality and are listed as partially supporting their primary contact recreation designated use.** These waters will remain on the state’s list of impaired waters until the rates fall below 10 percent.

Station ID	Enoree River Watershed Monitoring Station Location	Year First Listed as Impaired for FC	Percent of Samples Exceeding Water Quality Standards (<i><10% = not impaired, >10%<25% = partial support, >25% = impaired</i>)	
			2002 303(d) Assessment ¹	2014 303(d) Assessment
BE-024	Enoree River at US 221	1998	17% (2008)	3%
B-231	Beards Fork Creek at US 276	1998	21%	0%
B-041	Enoree River at SC 49	2002	20%	14%
B-053	Enoree River at SC 72, 121, and US 176	1998	33%	11%
B-246	Beaver dam Creek at S-30-97	1998	58%	22%
B-072	Duncan Creek at US 176	1998	56%	24%

¹ Statistical assessment of observed FC bacteria collected 1996–2000, except station BE-024 did not meet WQ standards based on 2008 data for the 2010 303(d) list assessment

BURTON HILL - BATTERY CREEK

Located in the South Carolina Lowcountry, Battery Creek is a coastal salt water river with no freshwater inflows except for stormwater runoff. The river is tidally influenced and connects to the Beaufort River, which in turn connects to Port Royal Sound. The City of Beaufort is committed to eliminating the only water quality impairment located within the City boundaries, which has resulted in elevated bacterial pathogens levels and shellfish bed closure.

The City is partnering with Beaufort County to implement the Battery Creek Watershed Management Plan. The project calls for many different structural and non-structural BMPs, as well as outreach and education programs. The initial water quality improvement effort lead by the City will be the implementation of a regional water quality retrofit located within the City boundaries. The regional retrofit project was originally proposed in Beaufort County’s Stormwater Master Plan developed in 2006 and was further refined in the Regional Retrofit Study 2009.



Proposed Site Plan for Burton Hill Retrofit Project

The 319 project started in 2014 and should help reduce the bacteria load and the stormwater runoff volume reaching the river. This project site has been surveyed and the engineering phase completed. Final project design was finished in late 2014, and implementation is planned to start in 2015.

The Beaufort County Stormwater Utility currently has an outreach and education program that will serve as the primary outreach program for this project. The program involves access to webcasts from stormwater expert organizations such as the Center for Watershed Protection. Webcasts are presented on such topics as design of BMPs for volume control, design of BMPs for effective pollutant removal, rainwater harvesting, and long-term BMP maintenance.

BOGGY CREEK

With the success of the Pacolet River 319 Project, the Spartanburg Stormwater Department decided to implement a similar project for Boggy Creek starting in 2014. Located in the southern part of the county, the goal is to reduce bacterial pollution into the Enoree River. Farm plans will be designed using the NRCS guidelines, and BMPs will be installed to keep the livestock from entering into the waterbodies. The project will also focus on repairing failing septic systems. Signs will be also posted throughout the watershed to promote awareness of grant assistance, and television and newspaper advertising are also planned. One farmer has already started installing fencing along the creek and several other farmers are having their farm plans developed.

“I would not be able to make these improvements on my farm to protect water quality without help from the 319 grant program.”

Ken Alvarez - Farmer



Fencing out to keep cattle out of stream

CRANE CREEK

Richland County’s Stormwater Management Division completed the Crane Creek Watershed Management Plan in 2010 and started a 319 grant project in 2014. Crane Creek is impaired for aquatic life uses due to low levels of dissolved oxygen. The entire Crane Creek Watershed is also included in the TMDL for bacterial pathogens that was developed for Lower Broad River.

The project will focus on retrofitting existing county and school facilities due to the lack of stormwater management at older sites as well as erosion and sedimentation. The county has selected the first four sites and awarded the BMP design contract. Construction is anticipated to start in early 2015.

CRABTREE SWAMP

The Crabtree Swamp Water Quality Project began in December of 2012 and is being led by the Horry County Soil and Water Conservation District. Utilizing 319 grant funding, this central Horry County project has helped improve many water quality problems throughout the project area. A broad spectrum of customers has been serviced through the project. Most farms in the watershed are small hobby farms, and participation by the farmers has been a challenge. This project has had much greater success with septic repairs. Approximately 80 homes either had septic tank repairs or were hooked to sewer systems, and 2 farms had BMPs implanted.

“This 319 project has allowed us to help a lot of people that had dire septic issues that were serious threats to their families health.”

Sam Ward – Horry County SWCD



These septic systems had effluent bubbling to the surface. Both were replaced with new tanks, similar to above, and drain fields as part of the Crabtree 319 project.



HOLLOW CREEK

The intent of the Hollow Creek Watershed Project, managed by Lexington County, is to work with local land owners on voluntary projects, to reduce bacteria levels in Hollow Creek. The grant provides 60% cost share assistance to livestock farmers who install conservation practices and to homeowners who repair/replace failing septic systems.

In 2013, Lexington County saw a continued decrease in the number of septic tank applications. Lexington County has continued the weekly ad in the Twin City News and the Batesburg-Leesville Sentinel and continues to post the local video on conservation planning and septic repair on their website, as well at stakeholder meetings with residents in the watershed. The increased outreach resulted in three septic tank applications/repairs this year.



An improved gated access area where cattle frequently cross into another field.

A total of 15 septic repairs have been completed during the entire grant period. Agriculture BMPs have been installed on 16 farms during the entire grant period. Because of the additional projects and interest in expanding current conservation projects, the 319 grant was extended through 2014. “No dumping” signs were posted in 2012 year at seven bridges within the watershed and have resulted in numerous complaint calls about people throwing dead animals and trash in creeks.

HORRY, AYNOR & DOG BLUFF (HAD)

The Horry, Aynor, and Dog Bluff (HAD) Water Quality Project began in June of 2011 under the leadership of the Horry County Soil and Water Conservation District. This western Horry County project has helped address many water quality problems throughout the project area. Project participation has been scattered throughout the project area.

A part of the cost share process, an entire neighborhood adjacent to the town of Aynor received assistance with sewer tie on. The septic tanks in this area were failing, and Grand Strand Water and Sewer Authority extended sewer into this neighborhood largely because of the cost share opportunity provided by the HAD Water Quality Project. As the word has been spreading by word of mouth, interest in the HAD project continued to grow and over 83 homes were either hooked up to existing sewer lines or had their septic systems repaired. Homeowner Sheldon Dawsey, a participant in the sewer tie on, said, “the HAD Water Quality Project was a wonderful program that really helped my neighborhood.”

With the cooperation of NRCS the HAD project has been successful implementing agricultural BMPs. This cooperation could potentially result in a greater potential impact to water quality because more BMPs were implemented with funding from both EQIP and 319 grant funds. A total of 18 farms had BMPs installed through these programs.



Well pump and watering trough for alternative watering system to provide clean water for healthier livestock



MAY RIVER - PHASE II



Water flow monitor

The Town of Bluffton is the grantee and seeks to implementation measures to improve water quality in the May River. The Pine Ridge Stormwater Lagoon Best Management Practice (BMP) retrofit will be the first large scale demonstration project in Bluffton showing the benefits of modifying an existing BMP to improve both water quantity and quality outputs from an established development. The Pine Ridge BMP retrofit will demonstrate to developers, property owner associations, as well as Town, County and State staff that retrofitting lagoons for water reuse and improved water quality is an effective way to reduce stormwater runoff volume and pollutants to the May River. This type of project will be critical in developed watersheds that were built out under older, less stringent water quantity and quality standards.

This year the Phase II 319 Grant has seen the development of a conceptual design and approval by the Property Owners Association. Initially the community outfalls, open space, and surrounding areas were field-evaluated. Following the field evaluation, a preliminary design concept and layout was completed. Once this was completed, the Town focused on

education and outreach with the Pine Ridge community. The Town has met with the Board of the Property Owners' Association, and has also taken the opportunity to present at their annual Property Owners' meeting. These engagements have been critical to providing the community with a better understanding of what to expect with the project, and to also reinforce the project's significance and importance. During these meetings the Town has also received feedback from the property owners on various aspects of the design concept.

Flow measurement gauges were installed in 2014 in key areas to determine water flow between the various retention ponds which will enable a more precise determination of how much water can be withdrawn and irrigated into the receiving area. This information will be incorporated into the final design. A design-build RFP will be advertised in early 2015, and construction is anticipated to begin soon after.

MIDDLE SALUDA RIVER

The project in northwest Greenville County is managed by the Greenville County Soil and Water Conservation District. This watershed is mountainous and beautiful, and contains two popular state parks.

Nine septic systems have been repaired through the grant including two large projects at a camp and a fire station. The camp would not have been able to stay open without the repairs, and the fire station was able to continue to be used for public meetings in the area. The septic system at the fire station was repaired and enlarged so the facility could continue to be utilized as a public meeting place as well as serving the station's needs. Several grants from Duke Energy Foundation enabled 4 landowners to have their septic systems repaired that were causing health risks due to sewage backup in the houses.



Fire house where septic systems was replaced



Greenville County SWCD vehicle gets out the NPS message

A unique approach by the Soil and Water Conservation District to public outreach is one of their vehicles which they had "Car wrapped" so that it is a driving billboard. Although not funded as part of the 319 project, the vehicles still emphasizes essential messages similar to those in 319 projects.

Everywhere I go I am stopped by people asking me about the vehicle. It gives me great opportunities to spread the NPS message."

Kirsten Robertson – Greenville County SWCD

OWENS FIELD

This project is one component of an ongoing effort to implement the Gills Creek Watershed Management Plan and improve water quality within the Gills Creek Watershed. The project is led by the Gills Creek Watershed Association in partnership with Richland County, Richland School District 1, and the City of Columbia. Located in Columbia, SC and within the Lower Gills Creek Watershed, Owens Field Park is a large urban park used for passive recreation by tens of thousands of people annually. The project also encompasses the adjacent Memorial Stadium facility. The project is currently in the final design phase and construction is scheduled for spring 2015.

Lower Gills Creek is impaired for dissolved oxygen and bacterial pathogens and has an approved TMDL for each. To address both damage to the trail and TMDL for Lower Gills Creek, the project will design and implement BMPs to reduce the delivery of pathogens and oxygen-demanding pollutants to Lower Gills Creek. The project also includes a public educational component concerning NPS pollution and BMP implementation and maintenance within the Gills Creek Watershed.

Richland County is currently rehabilitating and enhancing an existing nature trail at Owens Field Park. The current trail receives significant runoff from urbanized, adjacent properties resulting in damage to the trail. The runoff also causes significant erosion and transport of sediment, organic material, nutrients, and pathogens to Devil's Ditch and ultimately Gills Creek.

"This is a great water quality project because it improves the facilities at a popular park and the cooperation among the project partners is great."

Erich Miarka – Gills Creek Watershed Association

TOOGOODOO CREEK

The Charleston Soil & Water Conservation District is the grantee for this project. The 23 square mile watershed includes parts of the towns of Hollywood and Meggett, as well as unincorporated Charleston County. Large wall maps were printed and posted in both town halls and smaller hand maps were given to grant partners. These maps have helped us to communicate where we are operating, what resources we are working to protect, and where best to focus our efforts in order to achieve the greatest benefits to water quality. With the information gathered the SWCD was able to identify the most appropriate areas for the project. The response to the project has been very good and the first two phases have been completed.

Approximately 42 septic systems were repaired in those phases and several more have been done already in Phase III. Word of mouth advertisement has been very good and many more people are interested in signing up for the project.



Septic system renovation – gravel drainfield

TWELVE MILE CREEK

The goal of the Twelve Mile Creek Watershed Project, managed by Lexington County, is to work with local land owners on voluntary projects, which reduce bacteria levels in Twelve Mile Creek. The grant provides 60% cost share assistance to livestock and crop farmers who install conservation practices as part of a conservation plan, and between 60% to 100% cost assistance to homeowners who repair/replace failing septic systems.

Approximately 5 farmers have projects either underway or about to begin with BMPs such as fencing and alternate water sources. Implementing agriculture projects has been challenging despite numerous outreach efforts.

As a result the County has changed the focus of the project to implement a series of catchment basin projects to handle runoff pollution issues near waterbodies from local churches, schools and county facilities. They have submitted the projects to DHEC for approval and asked for an extension to December 2015. It is anticipated that the project revisions will be approved and construction start in early 2015.



Fencing stream bank

WALNUT CREEK

The Walnut Creek watershed in Laurens County, SC, is a 7,511-acre sub-watershed to the greater Saluda watershed (HUC 03050109-0604) and a tributary to the Reedy River above S-861. This 319 project, managed by Upstate Forever, was initiated in December 2011 to reduce nutrient inputs to Walnut Creek with the goal of implementing agricultural BMP's and septic repairs in the watershed. Over half of that acreage (approximately 4,642 acres) is forested with at least some portion of it being managed for turkey and deer for hunting.

About a third of the watershed is agricultural pasture for either cattle or horses. Nearly all of the lands used for agriculture have a stream on the property. A small part of the watershed is a mix of low density residential and other land uses that depend on on-site septic systems for wastewater treatment with at least 25 septic structures within 250 feet of a waterbody.

Five septic repairs and two agricultural projects implementing cattle fencing and alternative watering sources have been completed. An additional four projects are slated to begin in early 2015. "We have established a unique partnership with a local water utility that is funding septic system inspections as a proactive step to find and repair septic systems before they fail," says Chris Starker with Upstate Forever.



Alternative watering sources provides cleaner and healthier water

WATERSHED-BASED PLAN IMPLEMENTATION – CLOSED PROJECTS

LITTLE EASTATOE RIVER

The Little Eastatoe Creek 319 Restoration Project in Pickens County was completed in 2014. It focused on improving water quality in this rural watershed by restoring compliance with the SC DHEC recreational use water quality standards. Little Eastatoe Creek, or Eastatoee as local residents call the creek, is located in the foothills of the Upstate,



Rock embankment protects against erosion and allows access to creek.

The creek is in the headwaters of the Savannah River Basin and flows through the scenic Long Shoals Wayside Park, continuing down a

gorge to join the larger branch of Eastatoe Creek above where the main creek discharges into Lake Keowee. It is classified as a trout “put, grow and take” stream and is very popular with fisherman especially at Long Shoals Park. The park was one of the sites where the project implemented BMPs to reduce erosion into the creek.



Sign installed to denote Creek

The Friends of Lake Keowee Society (FOLKS) led the effort with project partners; Pickens County Departments of Public Works and Stormwater, USDA-NRCS, Clemson Cooperative Extension Service, SC Forestry Commission, SC Department of Natural Resources, and Naturaland Trust.

Local farmers implemented BMPs including fencing, stream crossing improvements, alternate water sources, feral hog trapping and beaver dam removal. A rural water pollution educational kiosk display has been placed at Long Shoals Park along with pet waste stations. Pickens County started routine trash pick-up at the park and installed watershed name signs at all county road bridge crossings and at the park.

LITTLE SALUDA RIVER, CLOUDS CREEK, BIG CREEK

Saluda County began work in 2009 to reduce the bacteria levels in the Little Saluda River, Clouds Creek and Big Creek watersheds which drain into nearby Lake Murray. Saluda County has been working diligently with local septic contractors and the local NRCS agents to implement the projects. Best management practices for agricultural activities and rural residential septic systems were implemented to reduce the bacteria load.

This project also includes one of NRCS's National Water Quality Initiative watersheds and the County has worked closely with NRCS to implement BMPs. This successful collaboration resulted in additional BMPs being implemented in the project area through EQIP funds with the potential to have a greater effect on improving water quality than implementation of only 319 BMPs.

The 319 project has enabled Saluda County to assist many of its residents in upgrading undersized and inadequately equipped septic systems that were installed prior to the creation of septic regulations. The failure of these systems caused sewage to backup into homes and leak into the soil, often leaving wet mushy areas. Homeowners took advantage of the grant and 80 septic systems were repaired.

The County also worked with the farming community to implement projects that will help reduce the bacteria levels. Livestock are a primary source of bacteria in the watershed. Cross fencing, alternative water sources, prescribed grazing and heavy use protection area projects are examples of some of these projects. In conjunction with NRCS agriculture efforts, BMPs were implemented on 27 farms.



Septic tank installation

OKATIE RIVER

Implementation of the Okatie River watershed-based plan was led by the Lowcountry Council of Governments in cooperation with a host of local partners. The project was completed this year and was successful implementing BMPs. Approximately 40 septic tank repairs were completed due to the grant and an additional 43 homes were hooked up to sewer lines by the Beaufort-Jasper Water and Sewer Authority due to outreach events and survey efforts of this project.

An equine manure composting facility was constructed at the Oldfield community, which is a planned equestrian community. This facility was a cooperative effort between the grantee, NRCS, Oldfield staff, Beaufort Conservation District. In addition to the potential positive water quality benefits on the Okatie, another lowcountry river will benefit. As construction was finishing, a nearby residential community, on a different waterway, embarked on their own similar project as a result of the one at Oldfield.



Horse manure composting facility



Ribbon cutting celebrating project completion

A unique component of this project was the success of the outreach efforts on public policy that will protect water quality in the watershed. Before this project, Jasper County stormwater regulations dealt specifically with the design of stormwater runoff controls to prevent flooding and other measures to meet OCRM's standards. Those requirements did not address the complex issues arising from increased

development in and around Jasper County and its potential effects on the Okatie and New River watersheds in adjoining counties due to increased bacterial pollution. As a result of this project, Jasper County developed a Stormwater Management Program that consists of three major components:

- Best Management Practices Manual. This manual specifically addresses water quality and stormwater management in Jasper County.
- Public Information Program. This program gathered public input and provided educational and stormwater management information. This program also included a Stormwater Stakeholder Advisory Group to gain input during the Best Management Practices Manual development.
- Stormwater guidelines that will give the County direction to develop and implement a Stormwater Management Program.

PACOLET RIVER

Spartanburg County has been using the 319 grant program to reduce bacterial pathogens in the Pacolet River. To achieve this goal, the program has worked to repair or replace failing septic systems and used agricultural programs to keep livestock out of the waterways. This project was completed in 2014 and was very successful with respect to BMP implementation. Sixty-one septic systems repairs were completed using 319 grant program funds, 8 pet waste stations were installed in parks and 10 farm projects with numerous types of BMPs such as fencing, alternative water sources and hardened feeding areas. Numerous outreach programs to farmers were also completed to citizens and farmers during term of the grant.

Spartanburg County has placed informative signs about the 319 grant program to help spread the word to those in the area. These signs are placed directly below new Pacolet River Watershed signs that were the result of a partnership with Spartanburg Soil and Water Conservation District, SJWD, and the Watershed Ecology Center to increase the public's awareness of the watershed in which they live. Spartanburg Herald has printed two newspaper articles and the local news channel, WSPA, has also run an interview to highlight Spartanburg County and the work of the 319 grant program.



Fencing BMP being installed

“The 319 project has been very beneficial to farmers as they have used grant funds to fence long stretches of stream bank to keep livestock out of the streams.”
Tim Sherbert – Grant Manager

NONPOINT SOURCE PARTNER HIGHLIGHTS – DUKE ENERGY FOUNDATION



Working in conjunction with the DHEC/EPA 319 grant program, the Duke Energy Foundation is making a real difference in the lives of people in need as well as in the environment. Since 2009 the Duke Energy Foundation has partnered with the Nonpoint Source Program to assist with watershed-based plan implementation efforts. Specifically,

the Foundation has contributed additional funds to implementation projects within their service area to assist low-income homeowners with the required non-federal match needed for septic system replacement. In 2014 Duke Energy provided assistance with several projects in the Middle Saluda watershed in northern Greenville County.

The Dyer family found themselves in a desperate situation as they had sewage backup in the basement, and were unable to shower or pour water from the sink down the drain. They had to carry it outside. They were an older, disabled couple, with only social security as income and the total cost of the project was over two months of their household income. The Middle Saluda River runs through the property, immediately downhill of the septic system. Any rainfall carried the raw sewage from the failed septic straight into the river.

With the assistance of Duke Energy and the Greenville County Soil and Water Conservation District Board, the Dyers now have a new septic system. The fix included installing a new drainfield, pumping the tank and jetting grease from the inlet line. The inlet line eventually needed to be replaced during this project as well.

"This project was a blessing as there was no way we could afford to have our septic systems fixed."

Patsy Dyer - homeowner



The Duke Energy Foundation grant awarded to the Greenville County Soil and Water Conservation District to help in cases such as this was able to cover the cost and allow this family to return to living in sanitary conditions. In addition, the sewage from their septic system is now being safely treated and no longer entering our rivers and streams via stormwater.

"Duke Energy has been a great partner" according to Kirsten Robertson with the Greenville County Soil and Water Conservation District. "They have provided funding for families in situations where the family could not afford their part of the homeowner match for 319 grant projects. They also provided assistance with situations that did not quite meet the 319 grant conditions for various reasons, but the families still needed help with septic systems."

SOUTH CAROLINA COASTAL NONPOINT SOURCE PROGRAM

The Coastal Nonpoint Program (CNP) is an extension of the statewide Nonpoint Source Management Program (319 Program) and is intended to focus on nonpoint source issues affecting the eight coastal zone counties. The CNP program is directed toward the implementation of management measures, including best management practices, in seven specific areas: public education and outreach, watershed protection, urban activities, monitoring and tracking, marinas, hydromodification, and wetlands. By fostering coordinated research, outreach and management activities, the CNP enhances state and local efforts to manage nonpoint pollution in coastal South Carolina. Given recent budget cuts for the CNP, emphasis will continue to be placed on projects and initiatives that provide opportunities to partner with other state and local entities. The South Carolina CNP received final approval status from NOAA and EPA in February 2008.

Since its inception in 1992, volunteers have adopted mile-long stretches of the beach as part of SCDHEC-OCRM's Adopt-a-Beach program. This has been a popular program and currently there are over 60 partner organizations that collect debris from beaches throughout the state. During 2014, Adopt-a-Beach groups contributed over 43 volunteer collection day events, logging hundreds of hours, removing garbage and debris. In 2014 remove almost 1,800 pounds of debris from publicly accessible beaches.





Adopt a beach volunteers picking up debris during a workday

SCDHEC-OCRM continues to participate as a member of the SC Clean Marina Program. The team consists staff members from SCDHEC-OCRM, SC Department of Natural Resources, and SC Marine Association, as well as interacts with representatives from Clemson Extension and Palmetto Pride. The team is responsible for reviewing Clean Marina applications, conducting site inspections, meeting marina/boatyard representatives, and providing awards and recognition to owners of facilities that meet the Clean Marina criteria.

By meeting the environmental performance criteria a certified marina can qualify to fly the Clean Marina Flag to attract boater to their facilities. Through 2014 there are 15 marinas that have met the stringent qualifications of the program, 13 coastal and 2 inland. Several additional marinas are in the certification process.



SOUTH CAROLINA FORESTRY COMMISSION BMP COMPLIANCE PROGRAM

The SC Forestry Commission implemented a statewide, coordinated Best Management Program (BMP) for forestry related activities. The BMP program focused on a proactive approach to preventing NPS control through the offer of voluntary courtesy BMP exams to forest landowners, foresters, and forestry operators. Forestry operations were located through aerial detection, voluntary notification, and complaint calls. Sedimentation of streams is one of the primary forms of NPS pollution nationwide. The forestry BMPs require trees and vegetation to be left along a stream, wetland or lake adjacent to a forestry harvesting or planting site preparation where soil disturbance may be a result from the activity.

Courtesy BMP exams include site-specific recommendations regarding BMP implementation. After the forestry operation is completed, a final on-site inspection will be conducted to determine if the appropriate BMPs were implemented on the site. On sites where damage has already occurred, recommendations for mitigating the damage are made. Close cooperation with DHEC was essential on sites referred for enforcement action, and in correcting problems to ensure compliance with water quality requirements.



Aerial analysis of streamside zone after a forestry operation

“A common area of concern are leaving too narrow of a Streamside Management Zone along perennial streams,” according to Herb Nicholson, BMP Program Manager for the SC Forestry Commission. This is usually due to a misclassification of stream type as buffer widths increase for wider streams. During the past year, SC BMP foresters have shot a video segment for the TOP Logger update addressing SMZs and stream classification.

During 2013-2014, the SC Forestry Commission conducted 1,441 BMP site visits to 646 forest operations. They completed 287 Courtesy Exams, and responded to 42 silvicultural water quality complaints. BMP Foresters also located 48 forest operations during 36 hours of aerial observation, and delivered 41 educational programs that reached 932 loggers, landowners, and forestry professionals. 100% of those trained indicated that they would be more likely to use Best Management Practices for Forestry.

CHAMPIONS OF THE ENVIRONMENTAL PROGRAM TARGETS NPS EDUCATION



In the 2013-2014 school year, two Champions of the Environment Grant Award winners learned about nonpoint source pollution reduction through projects focused on water quality monitoring and sustainable gardening. Greenville Senior High Academy and West Ashley High School implemented projects that educated students about the impacts of nonpoint source runoff on water quality and how to improve water quality through sustainable gardening practices.

Adam Enggasser, with Greenville Senior High Academy, received a Champions of the Environment Grant Award to implement a water quality monitoring program following procedures from Georgia’s Adopt-a-Stream program (GA AAS). Participants were trained to become certified with GA AAS in test methods and the monitoring sites have been registered in the GA AAS database tool. Monitoring data will be shared through the GA AAS database to promote awareness, provide an assessment of current conditions, and help detect changes that may result from nonpoint source pollution. The topic of water quality monitoring was also incorporated into other school subjects to promote environmental awareness.



Students collection water quality samples and then analyzing them using standard protocols in the lab

West Ashley High School used their grant award to install an aquaponics food production system. Students learned how this alternative system relies on a symbiotic relationship between plants and animals and can be used to sustainably produce food while also improving water quality. Engineering students planned, designed, and built the system, Marine Biology students cared for the fish, and Culinary Arts students harvested the vegetables and herbs grown in the system for the school's food pantry for homeless and dire needs students. A master gardener and an aquaponics gardener were invited to be guest speakers in the Marine Biology and Engineering classes.



Culinary Arts students growing hydroponic vegetables

For 21 years, Champions of the Environment has rewarded environmental awareness and action in South Carolina's Kindergarten through 12th grade students. Champions' is sponsored by DHEC, International Paper, and SCE&G, with assistance from the Environmental Education Association of South Carolina. For more information, visit the Champions Web site at: <http://www.scdhec.gov/champions>.

THE 303(D) LIST

When talking about water quality, the term 303(d) list, or list of impaired waters, is often heard. Section 303(d) of the Clean Water Act mandates that every two years each state must compile a list of waters that do not meet water quality standards. In South Carolina, portions of streams, rivers, lakes and other waterbodies are placed on the 303(d) list when a five-year period of monitoring data indicate that the established state water quality standards are not met.

Waters can be impaired for a variety of causes including, but not limited to, bacteria, phosphorus, heavy metals, etc. Sources of these impairments vary with land uses such as urban, rural or agricultural. Once a waterbody is on the 303(d) list, it is targeted for water quality improvement. Often local stakeholders are eligible for grants for improvement projects through SCDHEC. The implementation projects listed in this report are funded in such a manner through Section 319 of the Clean Water Act. Impaired waters can be removed from the 303(d) list either through the development of a TMDL or DHEC monitoring showing that water quality has improved to the point it meets the standard for the designated use of a waterbody.

South Carolina's the 2012 303(d) list is the most current approved listing of impaired waters. Water quality assessments and data analysis for the 2014 303(d) list is has been completed and submitted to EPA for approval. It is anticipated to be approved in early 2015.

TMDL - A TOOL FOR WATER QUALITY IMPROVEMENT

The passage of the Federal Clean Water Act laid the groundwork for improving water quality in all of the nation's waterbodies. An important part of that groundwork is contained in Section 303(d) of the Act, which requires states to compile lists of waterbodies that are not meeting water quality standards. Once on the list, a Total Maximum Daily Load (TMDL) must be developed for each impaired water.

In EPA-speak, a TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. TMDLs for a waterbody are calculated based on point source wasteload allocations (industrial discharges, wastewater treatment discharges, municipal stormwater discharges, etc.), nonpoint sources (pollutants from runoff), natural background sources such as wildlife, and a margin of safety. TMDLs are developed for each pollutant causing impairment to a waterbody. Therefore, a waterbody may have multiple TMDLs if it is impaired by more than one pollutant.

In South Carolina, the overwhelming majority of impairments to the state's surface waters, as included on the 303(d) list, are due to bacterial pathogens. These are almost invariably due to nonpoint sources since all point source dischargers are required to disinfect their effluent. The development of a TMDL involves the assessment to determine the characteristics of the impairment under conditions when exceedances occur of the water quality standard during common weather conditions such as after rain events, under low flow conditions, drought or periods of extended hot weather. For pathogen caused impaired waters, the sources are typically failing septic systems, cattle with access to streams, runoff from improperly applied manure, leaking or over-flowing sanitary sewers, and runoff from urbanized land. A computer model or another method, such as load-duration curves, is used to determine the existing load of pollutant and the Load Allocation (LA) or quantity of pollutant allowed from nonpoint sources for the TMDL.

Before it is submitted to EPA for approval, the public is given an opportunity to comment on the TMDL. The TMDL document is posted on the SCDHEC web site (<http://www.scdhec.gov/environment/water/tmdl>) and the public is notified of its availability through e-mail and legal notice in a local newspaper. Subsequent to the public notice period, the TMDL is submitted to EPA for review and approval. Once approved, the TMDL becomes eligible for implementation. **South Carolina currently has 534 approved TMDLs (mostly for pathogens). There are currently TMDLs under development to address 68 impairments statewide.**

An approved TMDL also establishes the available wasteload allocations for point sources. Permits for NPDES facilities (point sources) and NPDES stormwater permits must be consistent with any TMDL that applies. Generally SCDHEC does not have regulatory authority over the control of nonpoint sources. Rather control of nonpoint sources is encouraged by using 319 grants, USDA cost share programs CDBG block grants or other state or federal programs to encourage landowners, farmers and interested citizens to voluntarily work to improve the water quality.

Once the TMDL has been developed the next step is implementation. At this point, the TMDL can be used to formulate a strategy to reduce the pollutant loading through best management practices and stream restoration projects in the watershed. It is important to note that watershed stakeholders play a major role in realizing source reductions as TMDLs are implemented.

In response to EPA's Section 319 national guidance, less federal nonpoint source funds are being allocated for the development and implementation of TMDLs. In South Carolina, Section 319 nonpoint source dollars are now available primarily for TMDL implementation. **South Carolina has funded 38 TMDL implementation projects in 166 watersheds around the state.**

SOUTH CAROLINA'S PRIORITY WATERSHEDS

As of 2014, SCDHEC and EPA Region 4 have established seven priority watersheds across the state. These include the following Hydrologic Unit Codes (HUCs):

- 03050109 (Saluda)
- 03060106 (Middle Savannah)
- 03050206 (Edisto)
- 030601100301 (May River)
- 030502080606 (Okatie River)
- 0304020106, 0304020107 (Black Creek)
- 030502090201, 030502090202 (Sewee-Santee)



SC's Priority Watersheds

SCDHEC has Watershed Managers who work in the eight major SC basins. Each of these Watershed Managers also has one or more Priority Watersheds and devote additional time to recruiting 319 projects or other water quality improvement projects in these areas.

During the 319 grant solicitation and review process, bonus points and priority are given to projects in these areas. Currently, five projects are underway in priority areas – Hollow Creek, Walnut Creek, Middle Saluda River, Twelve Mile Creek, Huff Creek, and Saluda Big Creek, in the Saluda Basin; May River in the May River Basin. The Okatie, and the Little Saluda and Cloud Creek 319 Projects were completed in 2014.

In 2014 SCDHEC staff started the process of identifying potential new areas that would be designated as Priority Watersheds. This on-going process primarily considers water quality parameters, but also takes into account data from other state and federal agencies including watersheds they have identified as having water quality issues. The potential for partner entities, both public and private, to lead restoration projects is also a consideration as public involvement is key to successful water quality improvement projects. The 2015-2019 NPS Management Plan for South Carolina was completed in 2014 and includes additional Priority Watersheds that will be the focus of future 319 project efforts.

SOUTH CAROLINA

NONPOINT SOURCE PROGRAM

CONTACTS

Delaney Faircloth

State NPS Coordinator
SCDHEC Bureau of Water
2600 Bull Street
Columbia, SC 29201
(803) 898-1904
fairclids@dhec.sc.gov

Wade Cantrell

303(d), TMDL and Nonpoint Source Section Manager
SCDHEC Bureau of Water
2600 Bull Street
Columbia, SC 29201
(803) 898-3548
cantrewm@dhec.sc.gov

Jana Baxley

Grant Coordinator
SCDHEC Bureau of Water
2600 Bull Street
Columbia, SC 29201
(803) 898-4213
baxleyjs@dhec.sc.gov

For more information, visit our website: www.scdhec.gov/water

Special thanks to Amanda Ley and Meredith Murphy for their contributions to this report