Accountability Report 1995-96

P24

South Carolina Department of
Natural Resources

James A. Timmerman, Jr., Ph.D.
Director
John B. Reeves
Deputy Director for
Administrative Services

March 26, 1997

Ms. Donna Capps
Office of the State Budget
1122 Lady Street, 12th Floor
Columbia, SC 29201

Dear Ms. Capps:

Enclosed please find the South Carolina Department of Natural Resources' FY1995-96 Accountability Report. As requested, one printed copy and one diskette is enclosed. If you need more copies or more information please let me know.

Sincerely,

Gwen Keeney

Gwen Keeney, Administrative Assistant
Administrative Services

MISSION STATEMENT

The South Carolina Department of Natural Resources is the advocate for and steward of the state's natural resources. The Department of Natural Resources develops and implements policies and programs for the conservation, management, utilization and protection of the state's natural resources based upon scientifically sound resource assessment and monitoring, applied research, technology transfer, comprehensive planning, public education, technical assistance and constituent involvement. The Department of Natural Resources is pro-active in protecting the state's natural resources for use and enjoyment by future generations of South Carolinians.

FY95-96 Accountability Report

PROGRAM - CEC-Education

Program Goal:

Provide programs, training, and staff development to educators, schools, youth organizations, and other audiences interested in the conservation and wise use of natural resources.

Program Objective:

To provide 225-275 wildlife education programs in the state's school districts and promote Department of Natural Resources education programs such as Jr. Duck Stamp, Envirothon and SC Maps.

To instruct 2,000 - 3,000 educators in six hour Project WILD workshops. To continue joint sponsorship of Camp Wildwood and maintain 95% capacity. To support teachers in their conservation efforts through 20-30 Action Grants.

Performance Measures:

Workload Indicators:

~2,255 educators trained in 80 Project WILD workshops
~49,530 students were provided programs in 272 locations
~105 students attended Camp Wildwood

Efficiency Measures:

~$10.49 cost to train each per 6 hour workshop
~$ .92 cost to educate each student attending a wildlife education program in their school
~$161.60 for each camper to attend Camp Wildwood

Effectiveness Measures:

	1994-95	1995-96
- Number of workshops held to train educators	96	80
- Number of locations where students received program	266	272
- Capacity to which Camp Wildwood was filled	100%	91%

PROGRAM: Land Resources and Conservation Districts

Program Goal:

The goal of the Land Resources and Conservation Districts is to sustain and enhance South Carolina's land and related natural resources through grassroots involvement, land resource planning information and analysis, technical assistance, technology transfer, education, land resource policy development and professional registration.

Program Objectives:

- To sustain and enhance South Carolina's land and related natural resources.
- Increase the public's interest in and understanding of the need for land and related natural resource conservation and stewardship.
- Strengthen the role of conservation districts as the focal point for grassroots land and related natural resource conservation.
- Coordinate efforts to address and resolve land and related natural resource issues and policy within the state.
- Provide land users and land professionals with conservation technology and technical assistance to sustain and enhance South Carolina's land and related natural resources.
- Promote efforts to achieve effective watershed management.
- Protect the health, safety, and welfare of the public by providing registration of landscape architects and soil classifiers.

Performance Measures:

Workload Indicators:	1994-95	1995-96
- Number of conferences, workshops, clinics and field demonstrations	140	198
- Number of land resource planning and management projects assisted	145	198
- Number of units of conservation equipment provided to conservation districts and land users	79	79
- Number of landscape architects/firms and soil classifiers registered	513	501
Efficiency Measures:		
- Ratio of state funds to non-state funds and in-kind services	1:11.5	1:24.14
- Cost per acre under conservation plan	$0.16	$0.19
- Ratio of staff to clients assisted	1:1,458	1:2,040
Effectiveness Measures:		
- Percent of the total cropland and pasture with adequate soil and water conservation management	69.3	69.3
- Acres under conservation plans	6.65 million	6.67 million
- Percent of identified flood hazard communities with flood insurance ordinances	84	84
- Percent of flood insurance policy holders receiving policy premium discounts through Community Rating System	79	82
- Number of partnerships with agencies and organizations	475	561
- Percent of landscape architect and soil classifier registration complaints resolved	100	100

PROGRAM: Nongame and Heritage Trust

Program Goal:

Maintain all of South Carolina's native plants and animals in their natural habitats and preserve the archaeological record on the land.

Program Objectives:

- Service requests for data on endangered species and critical ecosystems, and make technical consultations as required
- Dedicate at least five new Heritage Preserves and additions
- Carry out research, survey, and management projects on at least 20 high-priority species and ecosystems
- Resolve wildlife assistance calls as required
- Maintain habitats and facilities as required on the system of Heritage Preserves, including 15 high-priority projects

Performance Measures:

Workload Indicators:

- Serviced approx. 550 requests for data on endangered species and reviewed over 500 environmental permits
- Made 77 technical consultations and presentations
- 41 individual research, survey, and management projects were in progress during the year
- 3,900 wildlife assistance calls were resolved
- 15 habitat management and facilities improvement projects carried out on Heritage Preserves
- Approximately 400 inquiries pertaining to and/or possession of nongame wildlife permits were handled; resulting in 80 permits of various types being issued.

Efficiency Measures:

- Land acquisition costs averaged $334 per acre
- Cost per wildlife assistance call: $17.00
- Average cost of research, survey, or management projects: $13,645 per project.

Effectiveness Measures:

	1994-95	1995-96
- Contributions to Check for Wildlife	16,000	17,157
Average per contribution	$6.66	$ 7.54
- Rare habitat elements protected	77	75
on new land acquisitions	13	13
- Major technical papers and reports delivered	12	6

- Two breeding songbird species new to South Carolina were documented
- Wildlife diversity field offices were established in Rock Hill and the Webb Wildlife Center

PROGRAM: Game

Program Goal:

Provide the best possible opportunities for the sportsmen of South Carolina while ensuring the well being of all wildlife species.

Program Objectives:

- To maintain 1 million+ acres in the Wildlife Management Area Program for public use
- To provide an annual deer harvest of 140,000 deer and 10,000 wild turkey annually
- To provide technical information to 2,000+ landowners annually
- To provide opportunities for public drawn hunts for 2,000 individuals annually
- To provide presentations to the public on 400 occasions annually
- To protect over 1 million acres of habitat through 6 Coastal Focus Area Projects.

Performance Measures:

Workload Indicators:

- 1,314,063 acres maintained in Wildlife Management Area Program
- Over 5,260,000 man-days hunting provided
- 7,467 hunters applied for slots on public drawn hunts
- 2,100 requests for technical information
- 72,144 antlerless deer tags issued to 2,413 cooperators
- 43,858 Piedmont deer tags issued to 23,017 hunters
- 395 presentations made to audiences of 17,010

Efficiency Measures:

- $2.27/acre payment for corporate WMA land
- $0.39/acre payment for Forest Service WMA
- $0.92/acre to lease public dove fields
- $21.45 per 1000 to produce lespedeza, revenue $25/1000

Effectiveness Measures:	1994-95	1995-96
- Acreage public hunting lands (WMA's) decreased 1%	1,314,949	1,314,063
- Deer harvest on WMA's increased 12%	54,944	61,832
- Deer harvest Statewide increased 7%	138,965	148,123
- Turkey harvest increased 8%	11,692	12,664
- Public Draw opportunities increased 8%	2,568	2,685
- The number of hunters applying for public hunts increased 1%	7,546	7,467
- Individuals reached through presentations increased 14%	17,010	19,470
- Acreage protected through Focus Area Projects		697,359

Program: Freshwater Fisheries

Program Goal:

To provide the sportsmen and citizens of South Carolina with those services required to protect, conserve and enhance the state's freshwater fishery resource.

Program Objective:

- Produce 6 million striped bass and hybrid fingerlings for stocking public waters
- Maintain 15 state fishing lakes for use by the angling public
- Stock 500,000 trout into suitable public waters
- Provide management assistance to 1,000 private pond owners
- Investigate fish kills and review environmental permits as necessary
- Monitor the fishery resources in the states major reservoirs

Performance Measures:

Workload Indicators:

- 1,144 pond management consultation were performed relating to 3,754 acres of water
- 21 million fingerling fish produced for stocking in public waters
- Conducted 67 fish kill investigations
- Maintained 190 fish concentration areas in public waters
- Managed 15 public fishing areas with 1,390 acres of water

Effectiveness Measures:

- Pond management consultations were performed at a cost of $160 per inquiry
- Over 21 million fingerling game fish were stocked in South Carolina's public waters at a cost of approximately $0.07 each
- Fish kill investigations were conducted in public and private waters at an average cost of $651 per investigation
- Fish concentration areas in public waters were maintained at a cost of $403 per site

Efficiency Measures:

	1994-945	1995-96
- Cost of state lake maintenance per acre	$211	$203
- Costs associated with pond management assistance	$81	$160
- Cost of producing fingerling largemouth bass, bluegill and redear sunfish	$0.07	$0.07
- Environmental reviews performed	1,170	597
- Number of public fishing areas managed under state lakes program	15	15
(acres increased in state lakes program)	1,385	1,375

PROGRAM: Hunter Education

Program Goal:

To provide the administrative and logistical support necessary to conduct a statewide hunter education program that is accessible to all interested individuals. Successful completion of the 10 hour course and optional live fire program should impact participants (hunters/non-hunters) in a manner that will: 1) reduce hunting and other firearms related accidents; 2) effect the performance of hunters in a manner that will reduce game violations, and enhance their ethical standards; 3) increase public awareness of the need for responsible management and utilization of our natural resources; 4) foster better relations between hunters, non-hunters and landowners to ensure continued public access to private and public lands for recreational purposes.

Program Objectives:

- To increase the number of 10 hour hunter education in response to passage of legislation requiring persons born after June 30, 1979 to complete a hunter education course before obtaining a hunting license. This legislation will take affect July 1, 1995.
- To increase the number of bowhunter education classes
- To reduce the number of firearms related hunting accidents
- To reduce the number of tree stand related hunting accidents
- To certify new volunteer instructors to replace inactive ones
- To operate shooting ranges that are safe and accessible to the public

Performance Measures:

Workload Indicators:

- 280 (10 hour) hunter education courses conducted by full-time and volunteer hunter education instructors
- 4 (10 hour) bowhunter education courses conducted
- Operate two public shooting ranges (Pickens and Spartanburg County) that support hunter education activities as needed, and provide a safe environment for recreational shooters. No accidents were reported during this time period.
- 186 safety/ethics talks made by hunter education and law enforcement personnel
- Conducted training that certified 57 new volunteer instructors
- 32 firearms and 12 tree stand related hunting accident investigations conducted

Efficiency Measures:

- Cost per student participating in the 10 hour hunter education course - $5.40
- Cost per student participating in the 10 hour bowhunter education course - $6.50
- Cost per individual participating in safety/ethics talks - $1.00
- Cost per individual for volunteer instructor certification - $250.00

Effectiveness Measures:

		1994-95	1995-96
Number of Students Certified in Hunter Education		9,893	10,287
Number of Students Certified in Bowhunter Education		81	100
Number of Hunter Education Courses Conducted		276	280
Number of Volunteer Instructors	- Active	123	143
	- Inactive	410	461
	- New	105	57

PROGRAM: Marine Fisheries

Program Goal:

Provide the necessary research, monitoring and management of the state's marine fisheries resources to ensure sustainable use.

Program Objectives:

- To ensure compliance and consistency with Atlantic States Marine Fisheries Commission, South Atlantic Fishery Management Council, and National Marine Fisheries Service
- To assess the stock condition of three priority marine species
- To develop new artificial fishing reefs and expand existing reef sites along the South Carolina coast
- To continue to direct the public fish tag and release program to target high priority species
- To conduct the Marine Recreational Fisheries Stamp Program
- To assess the condition of estaurine Fisheries on a continuing basis

Performance Measures:

Workload Indicators:

- 145 marine finfish species are now regulated by state and/or federal law
- 16 projects were conducted on priority species to assess their stock condition
- 1,000 samples for assessing the status of estaurine fisheries were collected
- 16 marine artificial reef projects carried out on 8 reef sites
- 15,145 tags distributed to the public
- 90,388 marine recreational fisheries stamps and 254 fishing pier and charter vessel permits issued

Efficiency Measures:

- $15,916 average federal funds received per fishery management plan to provide information and assistance in the development and implementation of fishery management plans
- $130,000 average award per federal grant to implement stock condition assessment
- $250,000 annual average cost for assessing status of estaurine fisheries stock
- $12,200 average investment for reef construction project
- $2.05 average cost per fish tagged by the public
- $20,166 annual cost to administer marine recreational fisheries stamp program representing approximately 3.3% of stamp revenue

Effectiveness Measures:

	1994-95	1995-96
- Regulated marine species of concern under state management regulations	85%	73%
- Percent funding received through federal grants to carry out needed research on species of concern	55%	73%
- Number of fishery management units defined for priority species using DNA fingerprinting	4	4
- Estimated participation (angler days) and economic benefit(assuming 5.8% inflation rate) associated with S.C. artificial reef usage	74,655 $665,746	78,985 $704,360
- Participation (number of anglers) and effectiveness of the tagging program (number of fish tagged and percent of tags used)	2,100 8,900 68%	1,900 11,000 73%

PROGRAM - Hydrologic Investigations and Technical Assistance

Program Goals:

To assess the State's water resources by determining their spatial and temporal availability, quality, and demand. To provide leadership and technical assistance for the development and implementation of new and innovative water resources strategies. To develop general policies and procedures to sustain the availability of water in an environmentally consistent manner.

Program Objectives:

To improve the quality and increase the quantity of hydrologic data. To systematically monitor local and regional changes of the surface-water and ground-water systems. To model these systems to formulate management alternatives that minimize competing and conflicting demands and promote the conjunctive use of surface and ground water.

Hydrologic Investigations and Technical Assistance
Performance Measures:

Workload Indicators:

- Availability Requests. Provide information and technical assistance to present and potential water users, conduct WADI surveys for location of bedrock wells, and review environmental-permit applications.
- Water-Well Network. Select and locate observation wells and measure water levels to characterize hydrologic changes in the Black Creek and Middendorf aquifers.
Flood/Drought Study. Develop hydrologic models for predicting high stream flows during floods and low flows during droughts.
- Piedmont Study. Evaluate the ground-water supply potential of Piedmont aquifers. Develop models to study the recharge of ground water and surface water and the lag-time response to rainfall and drought.
- Spring Inventory. Inventory springs, especially in the Piedmont Region.
- Geophysical Well Logging. Obtain geophysical data to assist in defining water bearing units.
- Aquifer Storage and Recovery. Study the potential of aquifers to store treated drinking water to supplement flows during summer months.
- DOE Well Network. Drill deep coreholes to be completed as monitoring wells. Prepare field activity report in western South Carolina for the Department of Energy (Savannah River).

Efficiency Measures:

- Availability Requests. More than 380 requests for information were processed, including technical assistance and environmental permit reviews. The average cost was $60 per request.
- USGS-DNR Cooperative Program. Cost per site to maintain monitoring stations:

STATION	FY 94-95	FY 95-96
Stream	$8,000	$9,000
Lake	3,000	
Aquifer	2,600	2,170

- Water-Well Network. 83 water-level measurements were made to prepare the 1995 Black Creek potentiometric surface map, and 40 Middendorf wells were surveyed for the network. The cost of surveying and inventorying was $70 per network well. A draft Black Creek water level report was prepared. The cost of the report was $19,000. Three observation wells were constructed and added to the Well Network. The cost was $475 per well (labor only).
- Flood/Drought Study. Six maps summarizing 10-year and 2-year average precipitation, temperature, and runoff were prepared. The cost per map was $1,290. Eleven large-rainfall runoff events and six recession curves were analyzed. The cost per basin was $469 per relationship and $1,290 per recession curve plus $395 for a computer program.
- Piedmont Study. 12 relationships between streamflows and ground-water levels were determined. The cost per site was $1,076.
- Spring Inventory. 38 springs in the Piedmont and six in the Pee Dee were inventoried. The cost was $150 per spring.
- Geophysical Well Logging. 53,000 feet of geophysical logs were obtained at a cost of $0.41 per foot.
- Aquifer Storage and Recovery. Two sites in the Grand Strand area were tested to determine the suitability of Coastal Plain aquifers to store treated drinking water to augment the capacity of public supply systems during summer months. The cost per site was $85,000.
DOE Well Network. One deep well (1,060 ft) was completed at Miller in Allendale County. The cost was $80 per foot. Nine water level recorders were installed at a cost of $1,400 per recorder. One Open-File report was prepared at a cost of $200.

Effectiveness Measures:

- Availability Requests. Information requests were answered in two days or less, and field visits were made within one week.
- Water-Well Network. 100 percent of the Black Creek and 30 percent of the Middendorf well networks are complete. A potentiometric surface map of the Black Creek aquifers and a report discussing past and present conditions of the aquifer system were prepared.
- Flood/Drought Pre-Study. 100 percent of this work was completed. This study is a preliminary analysis of streams in the state during extreme flow conditions.

- Spring Inventory. 30 percent of the project is complete. A total of 44 new springs were added to the inventory, which includes history, location, flow rate, and water quality.
- Aquifer Storage and Recovery. The project was successfully completed. Assistance was provided to cooperators to secure permits and to initiate field operations at two production sites.
- DOE Well Network. 95 percent of the drilling operations and 80 percent of the analytical work were completed. Overall, nearly 90 percent of the project is complete.

Study and Simulation of Water Resources Systems
Performance Measures:
Workload Indicators:

- Parameter Estimation. Develop statistical model to extend flow records for stations with less than 22-years of data.
- Wadmalaw Study. Assess impact of crop irrigation from ponds on the shallow aquifer system.
- Effects of Reservoir Construction. Determine effects of construction of large reservoirs on losses due to evaporation by using a computer model and a double mass curve technique.
- Hilton Head Project. Delineate natural and man-made drainage basins and characterize them to estimate impact of future water demand and usage on water levels, water quality, and wetlands.

Efficiency Measures:

- Parameter Estimation. A technical paper was coauthored with East Carolina University (North Carolina). The cost was $1,550.
- Wadmalaw Study. A 3D ground-water model was developed and a report summarizing findings was completed. The cost of the study was $9,200 (report not included).
- Effects of Reservoir Construction. A model and a double-mass curve analysis were made. The cost was $5,164.
- Hilton Head Project. Drainage basins were delineated and hourly water levels were taken at seven wells and two lagoon systems. 23 observation wells were installed and 20 aquifer tests made. The cost was $36,000.

Effectiveness Measures:

- Parameter Estimation. Project was successfully completed.
- Wadmalaw Study. 90 percent of the project, which includes field work, modeling, and analysis, was completed. Report (10 percent) is being reviewed and revised for publication.
- Effects of Reservoir Construction. The technique was applied to Lakes Murray and Bowen and to the Savannah River and showed that in southeastern United States the losses are minimal.
- Hilton Head Project. 70 percent of the project was completed, including the development of a numerical model.

State Water Plan
Performance Measures:
Workload Indicators:

- Meetings. Working sessions were set up with various organizations and groups to solicit input and comments on water plan.
- Modifications. A fourth draft of the plan was prepared and submitted for review.
- Economic Model. Clemson University developed a water-use prioritization model.

Efficiency Measures:

- Meetings. The cost per meeting was about $100 per hour.
- Modifications. Cost to modify plan was $11,000.

Effectiveness Measures:

- Modifications. The work on the water plan was about 50 percent complete. PROGRAM - Hydrologic Investigations and Technical Assistance