BUREAU OF WATER

Watershed Water Quality Assessment

Edisto River Basin

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South Carolina Department of Health and Environmental Control

Technical Report No. 006-98

December, 1998

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Prepared By

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PREFACE

In 1993, the South Carolina Department of Health and Environmental Control (SCDHEC) published the first in a series of five watershed management documents. Watershed Water Quality Management Strategy: Saluda-Edisto Basin communicated SCDHEC's innovative watershed approach, summarizing water programs and water quality in the basins. The approach continues to evolve and improve.

The watershed documents facilitate broader participation in the water quality management process. Through these publications, SCDHEC shares water quality information with internal and external partners, providing a common foundation for water quality improvement efforts at the local watershed or large-scale, often interstate, river basin level.

Water quality data from the Edisto River Basin was collected and assessed at the start of this second five-year watershed management cycle. The assessment incorporates data from many more sites than were included in the first round. This updated atlas provides summary information on a watershed basis, as well as geographical presentations of all permitted watershed activities. A waterbody index allows the reader to locate information on specific waters of interest.

A brief summary of the water quality assessments included in the body of this document is provided following the Table of Contents. This summary lists all waters within the Edisto River Basin that fully support recreational and aquatic life uses, followed by those waters not supporting uses. In addition, the summaries list waters that have improved or degraded over the last 5 years since the original strategy was written. More comprehensive information can be found in the individual watershed sections.

As SCDHEC continues basinwide and statewide water quality protection and improvement efforts, we are counting on the support and assistance of all stakeholders in the Edisto River Basin to participate in bringing about water quality improvements. We look forward to working with you.

Questions and comments regarding this document, or if seeking further information on the water quality in the Edisto River Basin, please contact :

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Edisto River Basin - Stations that Improved from 1993 to 1997

REC= Recreational; AL=Aquatic Life; F=Fully Supported; P=Partially Supported; N=Nonsupported

Watershed	Sta.#	Waterbody Name	Use	Status		Cause		Trends	
				1993	1998	1993	1998	1993	1998
03050203-070	E-105	Caw Caw Swamp	REC	N	F	Fecal Coliform			
03050204-010	E-002	S. Fk Edisto River	REC	P	F	Fecal Coliform		Decreasing pH; Increasing Turbidity	Decreasing pH
03050204-070	E-039	Roberts Swamp	REC	N	F	Fecal Coliform			
03050205-030	E-014	Edisto River	REC	P	F	Fecal Coliform		Decreasing pH; Increasing Turbidity and Fecal Coliform	Decreasing pH; Increasing Turbidity and Fecal Coliform
03050206-030	E-050	Cow Castle Swamp	REC	N	F	Fecal Coliform			
03050206-050	E-051	Providence Swamp	REC	P	F	Fecal Coliform			Decreasing Dissolved Oxygen
	E-052	Horse Range Swamp	REC	N	P	Fecal Coliform	Fecal Coliform		
03050206-060	E-030	Dean Swamp	REC	N	P	Fecal Coliform	Fecal Coliform		

Edisto River Basin - Stations that Degraded from 1993 to 1997

REC= Recreational; AL=Aquatic Life; F=Fully Supported; P=Partially Supported; N=Nonsupported

Watershed	Sta.#	Waterbody Name	Use	Status		Cause		Trends	
				1993	1998	1993	1998	1993	1998
03050203-040	E-092	N. Fk Edisto River	AL	F	N		Copper and Zinc	Increasing pH and Turbidity	Increasing pH, Turbidity, and Fecal Coliform
			REC	F	P		Fecal Coliform		
03050203-050	E-034	Bull Swamp Ck	AL	F	N		Dissolved Oxygen	Increasing pH and Turbidity	Increasing pH and Turbidity
	E-035	Bull Swamp Ck	REC	F	P		Fecal Coliform	Increasing pH and Turbidity	Increasing Turbidity
03050203-060	E-099	N. Fk Edisto River	AL	F	N		Copper	Increasing pH and Turbidity	Increasing pH, Turbidity, and Fecal Coliform
			REC	F	P		Fecal Coliform		
03050203-080	E-007A	N. Fk Edisto River	AL	F	P		pH	Increasing pH and Turbidity	Increasing pH, Turbidity, and Fecal Coliform
			REC	F	P		Fecal Coliform		
	E-007B	N. Fk Edisto River	AL	F	P		pH	Increasing Turbidity	Increasing Turbidity and Fecal Coliform
			REC	F	P		Fecal Coliform		
03050204-010	E-021	S. Fk Edisto River	REC	F	P		Fecal Coliform		
03050204-020	E-094	Shaw Ck	REC	F	P		Fecal Coliform		Decreasing pH; Increasing Turbidity
03050204-030	E-011	S. Fk Edisto River	REC	F	P		Fecal Coliform		
03050204-060	E-036	Goodland Ck	REC	F	N		Fecal Coliform	Increasing Turbidity	Decreasing Dissolved Oxygen and pH; Increasing Turbidity and Fecal Coliform
03050205-010	E-013	Edisto River	AL	F	P		pH and Copper	Increasing Turbidity and Fecal Coliform	Increasing Turbidity and Fecal Coliform
03050205-020	E-108	Cattle Ck	AL	F	P		Macroinvertebrates		

Watershed	Sta.#	Waterbody Name	Use	Status		Cause		Trends	
				1993	1998	1993	1998	1993	1998
03050205-050	E-015	Edisto River	AL	F	N		Copper	Decreasing pH; Increasing Turbidity	Decreasing pH; Increasing Turbidity, TSS, and Fecal Coliform
03050205-060	E-015	Edisto River	AL	F	N		Copper	Decreasing pH; Increasing Turbidity	Decreasing pH; Increasing Turbidity, TSS, and Fecal Coliform
03050205-070	MD-120	DawhoRiver	AL	F	N		Dissolved Oxygen	Decreasing Dissolved Oxygen and pH; Increasing Turbidity	Decreasing pH; Increasing Turbidity
			REC	F	P		Fecal Coliform		
	MD-209	Bohicket Ck	AL	F	N		Dissolved Oxygen and Copper	Decreasing Dissolved Oxygen and pH; Increasing Turbidity	Decreasing Dissolved Oxygen and pH; IncreasingTurbidity and Fecal Coliform
03050206-010	E-022	Gramling Ck	REC	P	N	Fecal Coliform	Fecal Coliform	Decreasing pH; Increasing Turbidity	Decreasing pH
	E-076	Little Bull Ck	AL	F	P		Dissolved Oxygen , Macroinvertebrates	Decreasing pH; Increasing Turbidity	Decreasing pH; Increasing Turbidity
			REC	P	N	Fecal Coliform	Fecal Coliform		
	E-059	Four Hole Swamp	AL	F	N		Copper and Zinc	Decreasing pH; Increasing Turbidity	Decreasing pH; Increasing Turbidity
03050206-040	E-112	Four Hole Swamp	AL	F	P		Dissolved Oxygen		
03050206-070	E-100	Four Hole Swamp	REC	F	P		Fecal Coliform	Increasing Fecal Coliform	Decreasing pH; Increasing Turbidity, TSS, and Fecal Coliform

Fully Supported Stations in the Edisto River Basin

* = Station not evaluated for Recreational Support; **=Not a Predictor of Future Impairment

	Sta.#	Waterbody Name	Improving Trends	Other Trends**
03050203-030	E-599 *	Black Ck		
	E-103	Black Ck		
03050203-040	E-104	N. Fork Edisto River		
03050203-050	E-042	Bull Swamp Ck		
03050203-060	E-593 *	Great Branch		
03050203-070	E-105	Caw Caw Swamp		
03050203-080	E-007	N. Fork Edisto River	Decreasing Total Phosphorus	Increasing Turbidity, Increasing Fecal Coliform
	E-007C	N. Fork Edisto River	Increasing Dissolved Oxygen; Decreasing Total Phosphorus	Increasing Total Nitrogen, Increasing Turbidity,
	E-008	N. Fork Edisto River	Increasing Dissolved Oxygen; Decreasing BOD, Total Phosphorus, and TSS	Increasing Turbidity
	E-008A	N. Fork Edisto River		
03050204-010	E-002	S. Fork Edisto River	Increasing Dissolved Oxygen; Decreasing BOD, Total Phosphorus, and Fecal Coliform	Decreasing pH
	E-090	S. Fork Edisto River	Decreasing BOD, Total Phosphorus, and Total Nitrogen	Decreasing pH; Increasing Turbidity and Fecal Coliform
	E-578 *	McTier Ck		
03050204-020	E-579 *	Shaw Ck		
	E-106	Shaw Ck		
03050204-030	E-595 *	Yarrow Bramch		
03050204-040	E-107	Dean Swamp Ck		
03050204-050	E-012	S. Fork Edisto River		Decreasing Dissolved Oxygen; Increasing Turbidity and Fecal Coliform

	Sta.#	Waterbody Name	Improving Trends	Other Trends**
03050204-070	E-039	Roberts Swamp		
03050205-010	E-013A	Edisto River		
03050205-030	E-014	Edisto River	Decreasing BOD and Total Phosphorus	Decreasing pH; Increasing Turbidity and Fecal Coliform
	E-086	Edisto River		Increasing pH and Turbidity
03050205-040	E-597 *	Indian Field Swamp		
	E-032	Indian Field Swamp		
03050205-060	MD-119	Edisto River	Decreasing BOD, Total Phosphorus, and Total Nitrogen,	Decreasing pH; Increasing Turbidity and Fecal Coliform
	MD-244	South Edisto River		
03050205-070	MD-195	Church Ck	Decreasing BOD, Total Phosphorus, and Total Nitrogen	Decreasing Dissolved Oxygen and pH; Increasing Turbidity
	MD-210	Bohicket Ck	Decreasing Total Phosphorus	Decreasing pH
	MD-211	North Edisto River	Decreasing Total Phosphorus	Decreasing pH; Increasing Turbidity
03050206-020	E-111	Four Hole Swamp		
03050206-030	E-050	Cow Castle Ck		
03050206-050	E-051	Providence Swamp	Decreasing BOD	Decreasing Dissolved Oxygen
03050206-060	E-596 *	Cedar Swamp		
03050206-070	E-015A	Four Hole Swamp		

Impaired Stations in the Edisto River Basin

REC=Recreational; AL=Aquatic Life; P=Partial Support; N=Nonsupport; *=Not a Predictor of Future Impairment

Watershed	Sta.#	Waterbody Name	Use	Status	Cause	Undesirable Trends	Other Trends*
03050203-010	E-091	Chinquapin Ck	REC	N	Fecal Coliform		Decreasing pH; Increasing Total Nitrogen
	E-101	Lightwood Knot Ck	REC	P	Fecal Coliform		IncreasingBOD
03050203-040	E-092	North Fork Edisto River	AL	N	Copper, Zinc	Increasing Fecal Coliform	Increasing pH andTurbidity
			REC	P	Fecal Coliform		
03050203-050	E-591	Bull Swamp Ck	AL	P	Macroinvertebrates		
	E-034	Bull Swamp Ck	AL	N	Dissolved Oxygen		Increasing pH and Turbidity
			REC	P	Fecal Coliform		
	E-035	Bull Swamp Ck	REC	P	Fecal Coliform		Increasing Turbidity
03050203-060	E-099	North Fork Edisto River	AL	N	Copper	Increasing Fecal Coliform	Increasing pH and Turbidity
			REC	P	Fecal Coliform		
03050203-080	E-007A	North Fork Edisto River	AL	P	pH	Increasing Fecal Coliform	Increasing Turbidity
			REC	P	Fecal Coliform		
	E-007B	North Fork Edisto River	AL	P	pH		Decreasing Dissolved Oxygen; Increasing Turbidity
			REC	P	Fecal Coliform		
03050204-010	E-001	First Br	REC	P	Fecal Coliform		Decreasing pH
	E-021	South Fork Edisto River	REC	P	Fecal Coliform		
03050204-020	E-094	Shaw Ck	REC	P	Fecal Coliform		Decreasing pH; Increasing Turbidity
03050204-030	E-011	South Fork Edisto River	REC	P	Fecal Coliform		
03050204-050	E-029	Windy Hill Ck	AL	P	Macroinvertebrates		

Watershed	Sta.#	Waterbody Name	Use	Status	Cause	Undesirable Trends	Other Trends*
03050204-060	E-036	Goodland Ck	REC	N	Fecal Coliform	Increasing Fecal Coliform	Decreasing Dissolved Oxygen and pH; Increasing Turbidity
03050204-070	E-592	Roberts Swamp	AL	P	Macroinvertebrates		
03050205-010	E-013	Edisto River	AL	P	pH, Copper		Increasing Turbidity and Fecal Coliform
03050205-020	E-108	Cattle Ck	AL	P	Macroinvertebrates		
			REC	N	Fecal Coliform		
03050205-040	E-016	Polk Swamp	REC	N	Fecal Coliform		Decreasing Dissolved Oxygen
	E-109	Polk Swamp	REC	N	Fecal Coliform		
03050205-050	E-015	Edisto River	AL	N	Copper		Decreasing pH; Increasing Turbidity, TSS, and Fecal Coliform
03050205-060	E-015	Edisto River	AL	N	Copper		Decreasing pH; Increasing Turbidity, TSS, and Fecal Coliform
03050205-070	MD-120	Dawho River	AL	N	Dissolved Oxygen, Zinc		Decreasing pH; Increasing Turbidity
			REC	P	Fecal Coliform		
	MD-209	Bohicket Ck	AL	N	Dissolved Oxygen, Copper	Decreasing Dissolved Oxygen	Decreasing pH; Increasing Turbidity and Fecal Coliform
03050206-010	E-022	Gramling Ck	REC	N	Fecal Coliform		Decreasing pH
	E-076	Little Bull Ck	AL	P	Dissolved Oxygen, Macroinvertebrates		Decreasing pH; Increasing Turbidity
			REC	N	Fecal Coliform		
	E-590	Bull Swamp	AL	P	Macroinvertebrates		

Watershed	Sta.#	Waterbody Name	Use	Status	Cause	Undesirable Trends	Other Trends*
	E-589	Gramling Ck	AL	P	Macroinvertebrates		
	E-059	Four Hole Swamp	AL	N	Copper, Zinc		Decreasing pH; Increasing Turbidity
			REC	P	Fecal Coliform		
03050206-040	E-112	Four Hole Swamp	AL	P	Dissolved Oxygen		
03050206-050	E-052	Horse Range Swamp	REC	P	Fecal Coliform		
03050206-060	E-030	Dean Swamp	REC	P	Fecal Coliform		
03050206-070	E-100	Four Hole Swamp	REC	P	Fecal Coliform	Increasing Fecal Coliform	Decreasing pH; Increasing Turbidity and TSS

Introduction

The South Carolina Department of Health and Environmental Control (SCDHEC or the Department) initiated its first watershed planning activities as a result of a U.S. Environmental Protection Agency (USEPA) grant in June of 1972. These activities were soon extended by §303(e), "Federal Water Pollution Control Act Amendments of 1972", U.S. Public Law 92-500. In 1975, the SCDHEC published basin planning reports for the four major basins in South Carolina. The next major planning activity resulted from §208 of the Federal Water Pollution Control Act, which required states to prepare planning documents on an areawide basis. Areawide plans were completed in the late 1970's for the five designated areas of the State and for the nondesignated remainder of the State. To date, these plans or their updated versions have served as information sources and guides for water quality management.

During the past decade, special water quality initiatives and Congressional mandates have diverted attention and resources from comprehensive water quality assessment and protection. The Bureau of Water now emphasizes watershed planning to better coordinate river basin planning and water quality management. Watershed-based management allows the Department to address Congressional and Legislative mandates in a coordinated manner and to better utilize current resources. The watershed approach also improves communication between the Department, the regulated community, and the public on existing and future water quality issues.

Purpose of the Watershed Water Quality Assessment

By definition, a watershed is a geographic area into which the surrounding waters, sediments, and dissolved materials drain, and whose boundaries extend along surrounding topographic ridges. Watershed-based water quality management recognizes the interdependence of water quality related activities associated with a drainage basin including: monitoring, problem identification and prioritization, water quality modeling, planning, permitting, and other activities. The Bureau of Water's Watershed Water Quality Management Program integrates these activities by watershed, resulting in watershed management plans that appropriately focus water quality protection efforts. While an important aspect of the program is water quality problem identification and solution, the emphasis is on problem prevention.

The Department has divided the State into five regions, along hydrologic lines, which contain approximately the same number of NPDES permitted dischargers. A Watershed Water Quality Assessment (WWQA) will be created for each river basin within each of the five regions and will be updated on a five-year rotational basis. This will allow for effective allocation and coordination of water quality activities and efficient use of available resources. The Edisto River Basin is subdivided into 30 watersheds or hydrologic units. The hydrologic units used are the USDA Natural Resource Conservation Service 11-digit codes for South Carolina. All water quality related evaluations will be made at the watershed level. The stream names used are derived from USGS topographic maps. USEPA Reach data (RF3) was used for the digital hydrography and stream length estimates. Based

on the blue line streams of the USGS topo maps, it is likely that a portion of the stream network in terms of perennial, intermittent, and ephemeral streams are not represented.

The watershed-based assessment fulfills a number of USEPA reporting requirements including various activities under §303(d), §305(b), §314, and §319 of the Clean Water Act (CWA). Section 303(d) identifies waters located within a watershed which do not meet applicable water quality standards. Section 305(b) requires that the State biennially submit a report that includes a water quality description and analysis of all navigable waters to estimate environmental impacts. Section (§314) requires that the State submit a biennial report that identifies, classifies, describes, and assesses the status and trends in water quality of publicly owned lakes. The watershed plan is also a logical evaluation, prioritization, and implementation tool for nonpoint source (§319) requirements. Nonpoint source best management practices (BMPs) can be selected by identifying water quality impairments and necessary controls, while considering all the activities occurring in the drainage basin.

The assessment also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed will be consolidated and presented to the public in groups, rather than one at a time, allowing the Department to realize a resource savings, and the public to realize an information advantage.

The Watershed Water Quality Assessment is a geographically-based document that describes, at the watershed level, all water quality related activities that may potentially have a negative impact on water quality.

The Watershed Implementation Staff investigates the impaired streams mentioned in the WWQA to determine, where possible, the source of the impairment and recommends solutions to correct the problems. As part of this effort, the watershed staff is forging partnerships with various federal and state agencies, local governments, and community groups. In particular, the Department's Watershed Program and the Natural Resource Conservation Service (NRCS) district offices are working together to address some of the nonpoint source (NPS) concerns in the basin. By combining NRCS's local knowledge of land use and the Department's knowledge of water quality, we are able to build upon NRCS's close relationships with landowners and determine where NPS projects are needed. These projects may include educational campaigns or special water quality studies.

Factors Assessed in Watershed Evaluations

Water Quality

The Water Program comprises activities within SCDHEC's Bureau of Water and Bureau of Environmental Services. The Program's objectives are to ensure that the water in South Carolina is safe for drinking and recreation, and that it is suitable to support and maintain aquatic flora and fauna. Functions include planning, permitting, compliance assurance, enforcement, and monitoring. This section provides an overview of water quality evaluation and protection activities.

Monitoring

In an effort to evaluate the State's water quality, the Department operates a permanent Statewide network of primary ambient monitoring stations and flexible, rotating secondary and watershed monitoring stations. The ambient monitoring network is directed toward determining long-term water quality trends, assessing attainment of water quality standards, identifying locations in need of additional attention, and providing background data for planning and evaluating stream classifications and standards.

The monitoring data are also used in the process of formulating permit limits for wastewater discharges with the goal of maintaining State and Federal water quality standards and criteria in the receiving streams in accordance with the goals of the Clean Water Act. These standards and criteria define the instream chemical concentrations that provide for protection and reproduction of aquatic flora and fauna, determine support of the classified uses of each waterbody, and serve as instream limits for the regulation of wastewater discharges or other activities. In addition, these data are used in the preparation of the biennial §305(b) report to Congress, which summarizes the State's water quality with respect to attainment of classified uses by comparing the ambient monitoring network data to the State Water Quality Standards.

SCDHEC's water quality monitoring network comprises three station types: primary (P), secondary (S), and watershed (W) stations. Primary stations are sampled on a monthly basis year round, and are located in high water-use areas or as background stations upstream of high water-use areas. The static primary station network is operated statewide, and receives the most extensive parameter coverage, thus making it best suited for detecting long term trends.

Secondary stations are sampled monthly from May through October, a period critical to aquatic life, characterized by higher water temperatures and lower flows. Secondary stations are located in areas where specific monitoring is warranted due to point source discharges, or areas with a history of water quality problems. Secondary station parameter coverage is less extensive and more flexible than primary or watershed station coverages. The number and locations of secondary stations have greater annual variability than do those in the primary station network, and during a basin's target year may have parameter coverage and sampling frequency duplicating that of primary or watershed stations.

Watershed stations are sampled on a monthly basis, year round, during a basin's target year; additional watershed stations may be sampled monthly from May through October to augment the secondary station network. Watershed stations are located to provide more complete and representative coverage within the larger drainage basin, and to identify additional monitoring needs. Watershed stations have the same parameter coverage as primary stations.

Many pollutants may be components of point source discharges, but may be discharged in a discontinuous manner, or at such low concentrations that water column sampling for them is impractical. Some pollutants are also common in nonpoint source runoff, reaching waterways only after a heavy rainfall; therefore, in these situations, the best media for the detection of these chemicals are sediment and fish tissue where they may accumulate over time. Their impact may also affect the macroinvertebrate community.

Regional ambient trend monitoring is conducted to collect data to indicate general biological conditions of state waters which may be subject to a variety of point and nonpoint source impacts. In 1991, the Department began using ambient macroinvertebrate data to support the development of Watershed Water Quality Assessments. Ambient sampling is also used to establish regional reference or "least impacted" sites from which to make comparisons in future monitoring. Additionally, special macroinvertebrate studies, in which stream specific comparisons among stations located upstream and downstream from a known discharge or nonpoint source area, are used to assess impact.

Qualitative sampling of macroinvertebrate communities are the primary bioassessment techniques used in ambient trend monitoring. A habitat assessment of general stream habitat availability and a substrate characterization is conducted at each site. Annual trend monitoring is conducted during low flow "worst case" conditions in July - September. This technique may also be used in special studies for the purpose of determining if, and to what extent, a wastewater discharge or nonpoint source runoff is impacting the receiving stream. A minimum of two sample locations, one upstream and one downstream from a discharge or runoff area, is collected. At least one downstream recovery station is also established when appropriate. Sampling methodology essentially follows procedures described in Standard Operating Procedures, Biological Monitoring.

Aquatic sediments represent a historical record of chronic conditions existing in the water column. Pollutants bind to particulate organic matter in the water column and settle to the bottom where they become part of the sediment "record". This process of sedimentation not only reflects the impact of point source discharges, but also incorporates nonpoint source pollution washed into the stream during rain events. As a result, contaminant concentrations originating from irregular and highly variable sources are recorded in the sediment. The sediment concentrations at a particular location do not vary as rapidly with time as do the water column concentrations. Thus, the sediment record may be read at a later time, unrelated to the actual release time. Lakes act as settling basins for materials entering the lake system directly from a discharge or indirectly from the land surface washed into streams. Therefore, it is not unusual for lake sediment concentrations to be higher than sediment concentrations found in streams. This is especially true for chromium, copper, and zinc.

The ambient monitoring network, as a program, has the capability of sampling a wide range of media and analyzing them for the presence or effects of contaminants. Ambient monitoring data

from 20 primary (P) stations, 14 secondary (S) stations (3 with increased coverage during the basin monitoring year), and 23 watershed (W) stations were reviewed for the Edisto River Basin, along with 22 biological (BIO) stations to assess macroinvertebrate communities.

Classified Waters, Standards, and Natural Conditions

The waters of the State have been classified in regulation based on the desired uses of each waterbody. State standards for various parameters have been established to protect all uses within each classification. The water-use classifications that apply to this basin are as follows.

Class ORW, or "outstanding resource waters", are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource, or those freshwaters suitable as a source for drinking water supply purposes, with treatment levels specified by the Department.

Class A were freshwaters which were suitable for primary contact recreation. This class was also suitable for uses listed as Class B. As of April, 1992, Class A and Class B waters were reclassified as Class FW which protects for primary contact recreation.

Class B were freshwaters which were suitable for secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters were suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class was also suitable for industrial and agricultural uses. The main difference between the Class A and B freshwater was the fecal coliform standard. Class A waters were not to exceed a geometric mean of 200/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 10% of the total samples during any 30 day period to exceed 400/100ml. Class B waters were not to exceed a geometric mean of 1000/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 20% of the total samples during any 30 day period to exceed 2000/100ml. As of April, 1992, Class A and Class B waters were reclassified as Class FW, which protects for primary contact recreation.

Class FW, or "freshwaters", are freshwaters which are suitable for primary and secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters are suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class is also suitable for industrial and agricultural uses.

Class SFH, or "shellfish harvesting" waters, are tidal saltwaters protected for shellfish harvesting, and are suitable also for uses listed in Classes SA and SB.

Class SA comprises "tidal saltwaters" suitable for primary and secondary contact recreation, crabbing and fishing. These waters are not protected for harvesting of clams, mussels, or oysters for market purposes or human consumption. The waters are suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Class SB are "tidal saltwaters" suitable for the same uses listed in SA. The difference between the Class SA and SB saltwater concerns the DO limitations. Class SA waters must maintain daily DO averages not less than 5.0 mg/l, with a minimum of 4.0 mg/l, and Class SB waters maintain DO levels not less than 4.0 mg/l.

Site specific numeric standards (*) for surface waters may be established by the Department to replace the numeric standards found in Regulation 61-68 or to add new standards not contained in R.61-68. Establishment of such standards shall be subject to public participation and administrative procedures for adopting regulations.

In addition, such site specific numeric standards shall not apply to tributary or downstream waters unless specifically described in the water classification listing in R.61-69.

The standards are used as instream water quality goals to maintain and improve water quality and also serve as the foundation of the Bureau of Water's program. They are used to determine permit limits for treated wastewater dischargers and any other activities that may impact water quality. Using mathematical Wasteload Allocation Models, the impact of a wastewater discharge on a receiving stream, where flow is unregulated by dams, is predicted using 7Q10 streamflows. These predictions are then used to set limits for different pollutants on the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The NPDES permit limits are set so that, as long as a permittee (wastewater discharger) meets the established permit limits, the discharge should not cause a standards violation in the receiving stream. All discharges to the waters of the State are required to have an NPDES permit and must abide by those limits, under penalty of law.

Classifications are based on desired uses, not on natural or existing water quality, and are a legal means to obtain the necessary treatment of discharged wastewater to protect designated uses. Actual water quality may not have a bearing on a waterbody's classification. A waterbody may be reclassified if desired or existing public uses justify the reclassification and the water quality necessary to protect these uses is attainable. A classification change is an amendment to a State regulation and requires public participation, SCDHEC Board approval, and General Assembly approval.

Natural conditions may prevent a waterbody from meeting the water quality goals as set forth in the standards. The fact a waterbody does not meet the standards for a particular classification does not mean the waterbody is polluted or of poor quality. Certain types of waterbodies (ie. swamps, lakes, tidal creeks) may naturally have water quality lower than the numeric standards. A waterbody can have water quality conditions below standards due to natural causes and still meet its use classification. A site specific numeric standard may be established by the Department after being subjected to public participation and administrative procedures for adopting regulations. Site specific numeric standards apply only to the stream segment described in the water classification listing, not to tributaries or downstream unspecified waters.

Wetlands

In the §401 water quality certification process, applications for wetland alterations may be denied or modified due to the special nature of a wetland or the functions that a wetland provides. Wetland impacts must be compensated through restoration, enhancement, preservation, or creation and protected in perpetuity. Future development would be prohibited in these mitigated and legally protected areas. Knowledge of areas that are restricted from development due to mitigation or special water classification is useful in planning future development in a watershed. The list of outstanding resource waters (ORW) has been refined to include wetlands that qualify for, and should be afforded, the highest level of protection. In cooperation with the S.C. Department of Natural Resources's (SCDNR) Division of Land, Water and Conservation, Landsat Thematic Mapper (TM) satellite image

data are providing an inventory of wetlands in the basin through the SCDNR's GIS data clearing house for subsequent monitoring and tracking efforts.

Lake Eutrophication Assessment

The trophic condition of South Carolina lakes is monitored through SCDHEC's network of routine sampling stations and through periodic sampling of additional lakes. All lakes of at least 40 acres in area that offer public access are monitored. Large (major) lakes are those greater than 850 acres in surface area. Minor lakes are those less than 850 acres in surface area.

Beginning with the 1989 statewide lake water quality assessment, a multi-parameter percentile index has been used to quantify overall lake trophic state. The index includes the following trophic condition indicators: water clarity, total phosphorus, total inorganic nitrogen, chlorophyll *a*, and dissolved oxygen. The baseline data for this relative index were collected during the 1980-81 statewide lake water quality assessment. Use of a baseline data set permits trend detection in subsequent assessments. Percentiles for major and minor lakes are derived separately. All data, as well as the programs for deriving index values, are maintained in USEPA's STORET database. A high index value indicates a desirable trophic condition, while low values indicate the need for further study or restoration.

Shellfish Harvesting Waters

South Carolina's coastal area consists of 579,691 acres of surface water with an assigned classification designated for the harvest of molluscan shellfish. This coastal area is divided into 23 shellfish management areas with a total of 468 monitoring stations. The purpose of this monitoring network is to provide data which accurately reflects the sanitary conditions of coastal shellfish and shellfish growing waters in South Carolina to ensure that the health of shellfish consumers is protected. All shellfish waters receive one of the following harvest classifications:

Approved harvesting status is assigned to waters that are not contaminated with fecal material, pathogenic microorganisms, nor poisonous and deleterious substances in concentrations dangerous to human health. The fecal coliform MPN median or geometric mean should not exceed 14 colonies/100 ml in the water, and 10% of the samples should not exceed 43 colonies/100 ml.

Conditionally Approved harvesting status is assigned to waters that are subject to temporary conditions of actual or potential pollution. Temporary decline in water quality may be caused by activities such as malfunctioning wastewater treatment plants or nonpoint source pollution after rainfall events. Fecal coliform standards in such waters are the same as for the approved classification.

Restricted harvesting status is assigned to waters where a limited degree of pollution renders the shellfish unsafe for direct marketing, but may be marketed after relaying or depuration. The median fecal coliform levels or geometric mean in restricted waters are between 14 and 88 colonies/100 ml, with not more than 10% of the samples exceeding 260 colonies/100 ml.

Prohibited harvesting status is assigned to waters with excessive concentrations of pollutants, or where the potential exists for excessive concentrations. This classification is ascribed to waters where the median fecal coliform MPN or geometric mean exceeds 88 colonies/100 ml, or more than 10% of the samples exceed 260

colonies/100 ml. Shellfish may not be harvested from prohibited areas for human consumption; however, prohibited status does not necessarily indicate lesser water quality, but may indicate a potential for variable water quality due to pollutant sources.

Water Quality Indicators

Water quality data are used to describe the condition of a waterbody, to help understand why that condition exists, and to provide some clues as to how it may be improved. Water quality indicators include physical, chemical, and biological measurements. Copies of the Standard Operating Procedures used for these measurements are available from the Aquatic Biology Section of the Department's Bureau of Water.

MACROINVERTEBRATE COMMUNITY

Macroinvertebrates are aquatic insects and other aquatic invertebrates associated with the substrates of waterbodies (including, but not limited to streams, rivers, lakes, tidal creeks, and estuaries). Macroinvertebrates can be useful indicators of water quality because these communities respond to integrated stresses over time which reflect fluctuating environmental conditions. Community responses to various pollutants (e.g. organic, toxic, and sediment) may be assessed through interpretation of diversity, known organism tolerances, and in some cases, relative abundances and feeding types.

FISH TISSUE

Many pollutants occur in such low concentrations in the water column that they are usually below analytical detection limits. Over time many of these chemicals may accumulate in fish tissue to levels that are easily measured. By analyzing fish tissue it is possible to see what pollutants may be present in waterbodies at very low levels. This information can also be used to determine if consumption of the fish pose any undue human health concerns and to calculate consumption rates that are safe.

DISSOLVED OXYGEN

Oxygen is essential for the survival and propagation of aquatic organisms. If the amount of oxygen dissolved in water falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A severe example is a fish kill. Dissolved oxygen (DO) varies greatly due to natural phenomena, resulting in daily and seasonal cycles. Different forms of pollution also can cause declines in DO.

Changes in DO levels can result from temperature changes or the activity of plants and other organisms present in a waterbody. The natural diurnal (daily) cycle of DO concentration is well documented. Dissolved oxygen concentrations are generally lowest in the morning, climbing throughout the day due to photosynthesis and peaking near dusk, then steadily declining during the hours of darkness.

There is also a seasonal DO cycle in which concentrations are greater in the colder, winter months and lower in the warmer, summer months. Streamflow (in freshwater) is generally lower

during the summer and fall, and greatly affects flushing, reaeration, and the extent of saltwater intrusion, all of which affect dissolved oxygen values.

Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD_5) is a measure of the amount of dissolved oxygen consumed by the decomposition of carbonaceous and nitrogenous matter in water over a five-day period. The BOD_5 test indicates the amount of biologically oxidizable carbon and nitrogen that is present in wastewater or in natural water. Matter containing carbon or nitrogen uses dissolved oxygen from the water as it decomposes, which can result in a dissolved oxygen decline. The quantity of BOD_5 discharged by point sources is limited through the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The discharge of BOD_5 from a point source is restricted by the permits so as to maintain the applicable dissolved oxygen standard.

pH

pH is a measure of the hydrogen ion concentration of water, and is used to indicate degree of acidity. The pH scale ranges from 0 to 14 standard units (SU). A pH of 7 is considered neutral, with values less than 7 being acidic, and values greater than 7 being basic.

Low pH values are found in natural waters rich in dissolved organic matter, especially in Coastal Plain swamps and black water rivers. The tannic acid released from the decomposition of vegetation causes the tea coloration of the water and low pH.

High pH values in lakes during warmer months are associated with high phytoplankton (algae) densities. The relationship between phytoplankton and daily pH cycles is well established. Photosynthesis by phytoplankton consumes carbon dioxide during the day, which results in a rise in pH. In the dark, phytoplankton respiration releases carbon dioxide. In productive lakes, carbon dioxide decreases to very low levels, causing the pH to rise to 9-10 SU; hence, excursions of pH beyond Standards may be the result of natural processes. Continuous flushing in streams prevents the development of significant phytoplankton populations and the resultant chemical changes in water quality.

Fecal Coliform Bacteria

Coliform bacteria are present in the digestive tract and feces of all warm-blooded animals, including humans, poultry, livestock, and wild animal species. Fecal coliform bacteria are themselves generally not harmful, but their presence indicates that surface waters may contain pathogenic microbes. Diseases that can be transmitted to humans through water contaminated by improperly treated human or animal waste are the primary concern. At present, it is difficult to distinguish between waters contaminated by animal waste and those contaminated by human waste.

Public health studies have established correlations between fecal coliform numbers in recreational and drinking waters and the risk of adverse health effects. Based on these relationships, the USEPA and SCDHEC have developed enforceable standards for surface waters to protect against

ambient monitoring network may be insufficient for strict interpretation of standards. The USEPA does not define the sampling method or frequency other than indicating that it should be "representative". A grab sample is considered to be representative for indicating excursions relative to standards: a single grab sample is more representative of a one-hour average than a four-day average, more representative of a one-day average than a one-month average, and so on (see also Screening & Additional Considerations for Water Column Metals below). When the sampling method or frequency does not agree with the intent of the particular standard, conclusions about water quality should be considered as only an indication of conditions.

The time period used to assess standards compliance is the most recent complete five years of data, which for the Edisto River Basin is 1993 through 1997.

AQUATIC LIFE USE SUPPORT

One important goal of the Clean Water Act and state standards is to maintain the quality of surface waters in order to provide for the survival and propagation of a balanced indigenous aquatic community of fauna and flora. The degree to which aquatic life is protected (aquatic life use support) is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with standards. Support of aquatic life uses is based on the percentage of standards excursions and, where data are available, the composition and functional integrity of the biological community. For lakes, support of aquatic life uses is also evaluated using a measure of trophic state. A number of waterbodies have been given specific standards for pH and dissolved oxygen, which reflect natural conditions.

A dissolved oxygen (DO) criterion of not less than 4 mg/l is used for Class SB, a criterion of not less than 6 mg/l is used for TN and TPGT, and a daily average not less than 5 mg/l with a low of 4 mg/l is used for all other Classes. An excursion is an occurrence of a DO concentration less than the stated criterion. For pH, there are several acceptable ranges applied depending on the Class of water: 6-8 SU for TPGT; 6-8.5 SU for FW; 5-8.5 SU for FW*; and 6.5-8.5 for SFH, SA, and SB. For DO and pH, if 10 percent or less of the samples contravene the appropriate standard, then aquatic life uses are said to be fully supported. A percentage of standards excursions between 11-25 is considered partial support, and a percentage greater than 25 is considered to represent nonsupport, unless excursions are due to natural conditions. Dissolved oxygen and pH may vary from the ranges specified in the standards due to a variety of natural causes.

When comparing SCDHEC data to DO standards, it is necessary to consider sampling bias due to season or tide stage. Samples are collected as a single instantaneous grab sample, which is not truly representative of the daily average used as the criterion for most classifications. Secondary stations are sampled only during summer months and generally experience a higher rate of DO excursions as a result. It is essential to examine the data to ascertain such patterns of excursions before summarily concluding that the indicated violations constitute poor water quality.

For any individual toxicant (heavy metals, priority pollutants, chlorine, ammonia), if the acute aquatic life standard is exceeded in more than 10 percent of the samples, based on at least ten samples, aquatic life uses are not supported. If the acute aquatic life standard is exceeded more than once, but in less than or equal to 10 percent of the samples, uses are partially supported. If fewer than ten samples were collected, discretion must be used and other factors considered, such as the magnitude of the excursions or number of toxicants with excursions. In such a circumstance it is noted that aquatic life uses may not be fully supported and the site is prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Biological data are the ultimate deciding factor for aquatic life uses, regardless of chemical conditions. The goal of the standards is the protection of a balanced indigenous aquatic community.

MACROINVERTEBRATE DATA INTERPRETATION

Macroinvertebrate community assessments are used, where available, to supplement or verify Aquatic Life Use Support determinations and to evaluate potential impacts from the presence of sediment contaminants. Aquatic and semi-aquatic macroinvertebrates are identified to the lowest practical taxonomic level depending on the condition and maturity of specimens collected. The EPT Index and the North Carolina Biotic Index are the main indices used in analyzing macroinvertebrate data. To a lesser extent, taxa richness and total abundance may be used to help interpret data. The EPT Index or the Ephemeroptera (mayflies) - Plecoptera (stoneflies) - Trichoptera (caddisflies) Index is the total taxa richness of these three generally pollution-sensitive orders. EPT values are compared with least impacted regional sites. The biotic index for a sample is the average pollution tolerance of all organisms collected, based on assigned taxonomic tolerance values. A database is currently being developed to establish significant EPT index levels to be used in conjunction with the biotic index to address aquatic life use support.

Taxa richness is the number of distinct taxa collected and is the simplest measure of diversity. High taxa richness is generally associated with high water quality. Increasing levels of pollution progressively eliminate the more sensitive taxa, resulting in lower taxa richness. Total abundance is the enumeration of all macroinvertebrates collected at a sampling location. This is generally not regarded as a qualitative metric. However, when gross differences in abundance occur between stations this metric may be considered as a potential indicator.

RECREATIONAL USE SUPPORT

The degree to which the swimmable goal of the Clean Water Act is attained (recreational use support) is based on the frequency of fecal coliform bacteria excursions, defined as greater than 400/100 ml for all surface water classes. Comparisons to the bacteria geometric mean standard are not considered appropriate based on sampling frequency and the intent of the standard. If 10 percent or less of the samples are greater than 400/100 ml then recreational uses are said to be fully

supported. A percentage of standards excursions between 11-25% is considered partial support of recreational uses, and greater than 25% is considered to represent nonsupport of recreational uses.

FISH CONSUMPTION USE SUPPORT

The Department uses a risk-based approach to evaluate mercury concentrations in fish tissue and to issue consumption advisories in affected waterbodies. This approach contrasts the average daily exposure dose to the reference dose (RfD). Using these relationships, fish tissue data are interpreted by determining the consumption rates that would not be likely to pose a health threat to adult males and nonpregnant adult females. Because an acceptable RfD for developmental neurotoxicity has not been developed, pregnant women, infants, and children were advised to avoid consumption of fish from any waterbody where an advisory was issued.

Fish consumption use support is determined by the occurrence of advisories or bans on consumption for a waterbody. For the support of fish consumption uses, a fish consumption advisory indicates partial use support, a consumption ban indicates nonsupport of uses.

HUMAN HEALTH STANDARDS

State standards for human health are also evaluated in the preparation of the Watershed Water Quality Assessments. For contaminants with human health standards (ie. heavy metals, pesticides), a potential human health threat is indicated if the median concentration exceeds the standard.

Additional Screening and Prioritization Tools

Evaluation of water quality data and other supplemental information facilitates watershed planning. Information from the following sources is used to develop watershed-based protection and prevention strategies.

LONG-TERM TREND ASSESSMENT

As part of the watershed assessments, surface data from each station are analyzed for statistically significant long-term trends using a modification of Kendall's tau, which is a nonparametric test removing seasonal effects. Flows are not available for most stations, and the parametric concentrations are not flow-corrected. Seasonal Kendall's tau analysis is used to test for the presence of a statistically significant trend of a parameter, either increasing or decreasing, usually over a twelve to fifteen year period. It indicates whether the concentration of a given parameter is exhibiting consistent change in one direction over the specified time period. A two sided test at $p=0.1$ is used to determine statistically significant trends, and the direction of trend. An estimate of the magnitude of any statistically significant trend is calculated.

A rigorous evaluation for trends in time-series data usually includes a test for autocorrelation. The data are not tested for autocorrelation prior to the trend analysis. It is felt that autocorrelation

would not seriously compromise a general characterization of water quality trends based on such a long series of deseasonalized monthly samples.

One of the advantages of the seasonal Kendall test is that values reported as being below detection limits (DL) are valid data points in this nonparametric procedure, since they are all considered to be tied at the DL value. When the DL changed during the period of interest, all values are considered to be tied at the highest DL occurring during that period. Since it is possible to measure concentrations equal to the value of the DL, values less than DL are reduced by subtraction of a constant so that they remain tied with each other, but are less than the values equal to the DL. Since fecal coliform bacteria detection limits vary with sample dilution, there is no set DL; therefore, for values reported as less than some number, the value of the number is used.

Sediment Screening

There are no sediment standards; therefore, in order to identify sediments with elevated metals concentrations, percentiles are constructed using five years of statewide sediment data. Only values greater than the detection limit were used for chromium, copper, nickel, lead, and zinc. Because so few concentrations of cadmium and mercury are measured above the detection limit, all samples were pooled for these metals. A sediment metal concentration is considered to be high if it is in the top 10% of the pooled results, and very high if it is in the top 5%. Any analytical result above detection limits is flagged for pesticides, PCBs, and other priority pollutants. Sites with noted high metals concentrations or the occurrence of other contaminants above detection limits are prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Water Column Metals Analyses

The USEPA criteria for heavy metals to protect aquatic life are specified as a four-day average and a one-hour average, and have been adopted as state standards. Because of the quarterly sampling frequency for heavy metals, the USEPA advises against comparisons to chronic toxicity standards (four-day average concentration); therefore, only the acute standard (one-hour average) for the protection of aquatic life is used in the water quality assessment (Table 1).

Zinc and copper are elevated in surface waters statewide and concentrations are frequently measured in excess of the calculated acute aquatic life standards. To identify areas where zinc, copper, and other metals are elevated in the water column above normal background concentrations, concentrations greater than the detection limit from all SCDHEC monitoring sites statewide for a five year period are pooled and the 90th and 95th percentiles are computed. This is done separately for each metal for both fresh and saltwaters. The individual measurements from each monitoring station are then compared to these percentiles, as well as to state standards. As in sediments, a metal concentration is referred to as "high" if it is in the top 10% of the pooled results, and "very high" if

it is in the top 5%. All water column values referred to as "high" or "very high" are also in excess of the acute aquatic life standard listed in Table 1. For chromium, because so few concentrations are above the detection limit, all samples collected are used to generate the percentiles. Sites with high metals concentrations are prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Table 1. Metal Standards in Water (μg/l)

Metal	Present Detection Level	Freshwater 1Hr. Acute Ave.	Saltwater 1Hr. Acute Ave.	Human Health
*Cadmium	10.0	1.79	43.0	5.000
Chromium (VI)	10.0	16.00	1100.0	50.000
*Copper	10.0	9.22	2.9	
*Lead	50.0	33.78	140.0	50.000
Mercury	0.2	2.40	2.1	0.153
*Nickel	20.0	789.00	75.0	4584.000
*Zinc	10.0	65.00	95.0	

* Freshwater standards based on a hardness of 50 mg/l as $CaCO_3$.

The analytical procedures used by the Department yield total metal concentration, which is a relatively conservative measure, since the total metal concentration is always greater than the acid-soluble or dissolved fraction. Most heavy metal criteria for freshwater are calculated from formulas using water hardness. The formulas used to calculate criteria values are constructed to apply to the entire United States, including Alaska and Hawaii. As with all the USEPA criteria, there is also a large margin of safety built into the calculations. The applicability of the hardness-based criteria derived from the USEPA formulas to South Carolina waters has been a subject of much discussion. Hardness values vary greatly nationwide (from zero into the hundreds), with South Carolina representing the lower end of the range (statewide average value is approximately 20 mg/l). Representatives of the USEPA Region IV standards group have stated that no toxicity data for hardness values less than 50 mg/l were used in the development of the formulas. They have expressed reservations about the validity of the formulas when applied to hardness values below 50 mg/l. Based on this opinion, South Carolina's State standards for metals are based on a hardness of 50 mg/l for waters where hardness is 50 mg/l or less, resulting in several criteria values below the Department's current analytical detection limits. Therefore, any detectable concentration of cadmium, copper, or lead is an excursion beyond recommended criteria.

The SCDHEC monitoring data have historically indicated that zinc and copper levels in South Carolina waters are elevated relative to USEPA criteria, apparently a statewide phenomenon in both fresh and salt waters, and possibly resulting from natural conditions, nonpoint sources, or airborne

deposition. These levels do not appear to adversely affect state fisheries, which suggests that the levels are the result of long-term local conditions to which the fauna have adapted, as opposed to point source pollution events. It is difficult to assess the significance of heavy metal excursions due to the questionable applicability of the formulas at low hardness values and calculated criteria below present detection limits.

Point Source Contributions

Wasteload Allocation Process

A wasteload allocation (WLA) is the portion of a stream's assimilative capacity for a particular pollutant which is allocated to an existing or proposed point source discharge. Existing WLAs are updated during the basin review process and included in permits during the normal permit expiration and reissuance process. New WLAs are developed for proposed projects seeking a discharge permit or for existing discharges proposing to increase their effluent loading at the time of application. Wasteload allocations for oxygen demanding parameters are developed by the Water Quality Modeling Section, and WLAs for toxic pollutants and metals are developed by the appropriate permitting division.

The ability of a stream to assimilate a particular pollutant is directly related to its physical and chemical characteristics. Various techniques are used to estimate this capacity. Simple mass balance/dilution calculations may be used for a particular conservative (nondecaying) pollutant while complex models may be used to determine the fate of nonconservative pollutants that degrade in the environment. Waste characteristics, available dilution, and the number of discharges in an area may, along with existing water quality, dictate the use of a simple or complex method of analysis. Projects which generally do not require complex modeling include: groundwater remediation, noncontact cooling water, mine dewatering, air washers, and filter backwash.

Streams are designated either effluent limited or water quality limited based on the level of treatment required of the dischargers to that particular portion of the stream. In cases where the USEPA published effluent guidelines and the minimum treatment levels required by law are sufficient to maintain instream water quality standards, the stream is said to be effluent limited. Streams lacking the assimilative capacity for a discharge at minimum treatment levels are said to be water quality limited. In cases where better than technology limits are required, water quality, not minimum requirements, controls the permit limits. The Department's Water Quality Modelling Section recommends limits for numerous parameters including ammonia nitrogen (NH3-N), dissolved oxygen (DO), total residual chlorine (TRC), and five-day biochemical oxygen demand (BOD5). Limits for other parameters, including metals, toxics, and nutrients are developed by the Water Facilities Permitting Division or the Industrial, Agricultural, and Stormwater Permitting Division in conjunction with support groups within the Department.

Permitting

The Water Facilities Permitting Division and the Industrial, Agricultural, and Stormwater Permitting Division are responsible for drafting and issuing National Pollutant Discharge Elimination

System (NPDES) permits. Facilities are defined as either "major" or "minor". For municipal permits, a facility is considered a "major" if it has a permitted flow of 1 MGD or more and is not a private facility. The determination for industrial facilities is based on facility and stream characteristics, including toxicity, amount of flow, load of oxygen, proximity of drinking water source, potential to exceed stream standards, and potential effect on coastal waters.

A completed draft permit is sent to the permittee, the SCDHEC District office, and if it is a major permit, to the USEPA for review. When the permit draft is finalized, a public notice is issued. Comments from the public are considered and, if requested, a public hearing may be arranged. Both oral and written comments are collected at the hearing, and after considering all information, the Department staff make the decision whether to issue the permit as drafted, issue a modified permit, or to deny the permit. Everyone who participated in the process receives a notice of the final decision. A copy of the final permit will be sent to anyone who requests a it. It is anticipated that minor permits will be grouped by watershed and publicly noticed together; major permits will individually stand public review. Staff decisions may be appealed according to the procedures in R.61-72.

The permitting Divisions use general permits with statewide coverage for certain categories of minor NPDES permits. Discharges covered under general permits include utility water, potable surface water treatment plants, potable groundwater treatment plants with iron removal, petroleum contaminated groundwater, and mine dewatering activities. Additional activities proposed for general permits include bulk oil terminals, aquacultural facilities, and ready-mix concrete/concrete products. Land application systems for land disposal and lagoons are also permitted.

Nonpoint Source Contributions

Nonpoint source pollutants are generally introduced to a waterbody during a storm event and enter the system from diverse areas. Nonpoint source contributions originate from a variety of activities that include agriculture, silviculture, construction, urban stormwater runoff, hydrologic modification, landfills, mining, and residual wastes.

Section 319 of the 1987 Amendments to the Clean Water Act required states to assess the nonpoint source water pollution associated with surface and groundwater within their borders and then develop and implement a management strategy to control and abate the pollution. The first Assessment of Nonpoint Source Pollution in South Carolina accomplished this purpose. The NPS Management Program developed strategies and targeted waterbodies for priority implementation of management projects. The priority list has been updated several times since then. The current list appears in the State Nonpoint Source Pollution Management Program. Comprehensive projects are currently being implemented in a number of these watersheds. Components of the projects vary depending on the particular NPS impacts in the watershed, but all include BMP demonstrations, education, and monitoring.

Section 6217 of the 1990 Coastal Zone Act Reauthorization Amendments (CZARA) requires states with federally approved Coastal Zone Management Programs to develop Coastal Nonpoint Source Pollution Control Programs. At the federal level, the program is administered and funded jointly by the National Oceanic and Atmospheric Administration (NOAA) and EPA. In South

Carolina, the Department's Office of Ocean and Coastal Resource Management and the Bureau of Water are responsible for development and implementation of the program. The Department submitted a State Nonpoint Source Pollution Management Program in October 1995, which satisfies the requirements of §6217 and §319.

The purpose of South Carolina's Nonpoint Source Pollution Management Program is to insure the protection and restoration of the state's waters from nonpoint source water pollution impacts. The Plan document describes programs (both regulatory and voluntary) for NPS abatement, targets watersheds for NPS project implementation, and describes the state's strategy under each of the eight categories of NPS sources identified in South Carolina. In each of the categorical sections, management measures are described. Management measures are defined as "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution". The management measures address the following major categories: agriculture, forestry, urban areas, marinas/recreational boating, hydromodification, mining, land application of wastes, and wetlands.

Landfill Activities

All landfill activities within the State are permitted and regulated by the Department's Bureau of Land and Waste Management. All active and closed industrial and municipal solid waste landfills are identified in the appropriate watershed evaluations.

Mining Activities

Mining activities within the State are permitted by the Mining and Reclamation Division of the Department's Bureau of Land and Waste Management. Soil excavation activities and locations are identified in the appropriate watershed evaluations.

Camping Facilities

The types of camping facilities permitted by the Department through R.61-39 are Resident Camps and Family Camps. Resident camps are organized camps where one or more buildings are provided for sleeping quarters. These camps are typically operated for educational, recreational, religious, or health purposes. Family camps are organized camps where camp sites are provided for use by the general public or certain groups. The camp sewage is discharged into a public collection, treatment and disposal system if available, or an onsite wastewater treatment and disposal system (septic tank) is used. Camp locations are identified in the appropriate watershed evaluations.

Groundwater Concerns

Groundwater is an important resource for drinking water use, together with agricultural, industrial and commercial usages. Based on USEPA drinking water standards, the overall quality of South Carolina's groundwater is excellent. Contaminated groundwater is expensive and difficult to restore; therefore, groundwater protection for present and future usage is the management emphasis.

Localized sources of groundwater contamination can include: septic tanks, landfills (municipal and industrial), surface impoundments, oil and gas brine pits, underground storage tanks, above ground storage tanks, injection wells, hazardous waste sites (abandoned and regulated), salt water intrusion, land application or treatment, agricultural activities, road salting, spills and leaks. For the purposes of this assessment, only groundwater contamination affecting surface waters will be identified. The SCDHEC groundwater contamination inventory was used to identify groundwater-related problem areas in the basin. Sites in the inventory are referenced by name and county, and are updated annually.

Water Supply

Water treatment facilities are permitted by the Department for municipal and industrial potable water production. As per the 1983 Water Use Reporting and Coordination Act (Act 282), all water uses over 100,000 gallons per day must report their usage. This includes industrial, agricultural, mining, golf courses, public supply, commercial, recreational, hydro power, thermo power, and nuclear power activities. Intake location and the volume removed from a stream are identified in the watershed evaluations for both municipal (potable) and industrial uses.

Growth Potential and Planning

Land use and management can define the impacts to water quality in relation to point and nonpoint sources. Assessing the potential for an area to expand and grow allows for water quality planning to occur and, if appropriate, increased monitoring for potential impairment of water quality. Indicators used to predict growth potential include water and sewer service, road and highway accessibility, and population trends. These indicators and others were used as tools to determine areas within the Edisto River Basin having the greatest potential for impacts to water quality as a result of development.

Many counties in the Edisto Basin lack county wide zoning ordinances; therefore, there is little local regulatory power to influence the direction or magnitude of regional growth. The majority of municipalities have zoning ordinances in place; however, much of the growth takes place just outside the municipal boundaries, where infrastructure is inadequate. Section 208 of the Clean Water Act serves to encourage and facilitate the development and implementation of areawide waste treatment management plans. The §208 Areawide Water Quality Management Plans were completed in great detail during the 1970's and have recently been updated. Information from the updated reports are used in the individual watershed evaluations.

Watershed boundaries extend along topographic ridges and drain surrounding surface waters. Roads are commonly built along ridge tops, with the best drainage conditions. Cities often develop in proximity to ridges as a result of their plateau terrain. It is not uncommon, then, to find cities or road corridors located along watershed boundaries, and thus influencing or impacting several watersheds.

Watershed Stewardship Programs

Public participation is an important component of the Department's Watershed Water Quality Management Program. For the Edisto Basin, workshops were held in the City of Orangeburg and the Town of Lexington during the assessment development to gain a better understanding of the watershed residents' concerns. Additional benefits to this interaction on the local level include improved public awareness about SCDHEC water programs, and increased local interest and participation in water quality improvement. The meetings are summarized in Appendix A. Described below are some of the Department's water programs that encourage public interest and involvement in water quality.

Source Water Assessment Program

A safe, adequate source of drinking water is key to development of communities and the health of citizens. The Safe Drinking Water Act (SDWA) provides authority to protect sources of drinking water. As a result of the 1996 amendments to the SDWA, source water protection has become a national priority. States are required to develop a plan for assessment of source waters for all federally defined public groundwater and surface water systems.

The Source Water Assessment Program (SWAP) involves determining the boundaries of the areas that are the source of waters for public water systems. For groundwater systems, these areas are defined using groundwater flow models. For surface water systems, the 14-digit Hydrologic Unit Code watershed is the designated protection area (although certain areas within the basin will be segmented as being of greater vulnerability to contamination from overland flow, groundwater contributions to surface water, and direct spills into the surface water). Known and potential sources of contamination in the delineated area must be identified, and the inventoried sources evaluated to determine the susceptibility of public water systems to such contaminants. Assessments must be made available to the public.

Local involvement will be a critical factor in the success of the SWAP, and local government, citizen groups, environmental groups, water suppliers, and the Department must all work together to increase the general public's awareness of where drinking water comes from and how to better protect sources of drinking water. Implementation of source water protection activities will also occur at the local level, and local authorities may wish to base zoning and land-use planning on the source water assessments. The SWAP will be a key part of the Department's watershed management approach. To avoid duplication, information gathered from existing regulatory programs and/or watershed protection efforts will be utilized (e.g., ambient monitoring programs, TMDLs, etc.).

South Carolina Water Watch

South Carolina Water Watch is a unique effort to involve the public and local communities in water quality protection. The Water Watch program was developed to encourage South Carolina's citizens to become stewards of the state's lakes, rivers, streams, estuaries, and wetlands. Volunteers

select a water resource on which to focus and perform activities aimed at protecting water quality, such as shoreline surveys, public education, and litter cleanups. The Water Watch coordinator assists participants with materials and training to help make projects successful. SCDHEC invites individuals, school groups, civic organizations, businesses, and local governments to learn about and protect the quality of our waterways by contacting the Water Watch coordinator at 803-898-4300.

Champions of the Environment

Champions of the Environment is a student recognition program that raises awareness of environmental issues. Nationally recognized for its innovative approach to environmental education, the program promotes hands-on learning by recognizing students working on exemplary environmental projects beyond the realm of the classroom. With scholarships and media coverage, Champions of the Environment encourages student initiative and self-esteem. The program promotes environmental awareness, leadership, conservation, creativity, and self-confidence through activities such as group projects, public speaking, and environmental research. Champions of the Environment is jointly sponsored by Dupont, Union Camp, WIS-TV, and SCDHEC. For more information contact the Champions of the Environment coordinator at 803-898-4300.

Clean Water State Revolving Fund

Congress created the Clean Water State Revolving Fund (SRF) in 1987, to replace the §201 Construction Grants program. In doing so, 'state banks' were created to lend money for virtually any type of water pollution control infrastructure project. Project types include construction of wastewater treatment systems, nonpoint source pollution control, wetlands and estuary protection, and other watershed projects. The interest rate on the loans is always below the current market rate. As repayments are made on the loans, funds are recycled to fund additional water protection projects. Approximately $3 billion is available annually on the national level for SRF. South Carolina has approximately $16.5 million available for loans in 1998. The vast majority of the SRF funds have been used for the construction of traditional municipal wastewater treatment systems. Because of its inherent flexibility, the SRF program is well suited to accommodate the watershed approach.

SRF loans are available to units of state, local, and regional government, and special purpose districts. South Carolina law prevents loans from being made directly to private organizations and individuals; however, it is possible for governmental entities to be the SRF recipient and in turn loan the funds to private concerns and individuals. Local governments such as cities and counties and other units of government such as Soil and Water Conservation Districts, Councils of Government, and Water and Sewer Districts are encouraged to apply for SRF loans for nonpoint source projects. Nonpoint source projects may include construction and maintenance of stormwater management facilities, establishment of a stormwater utility, purchase of land for wetlands and riparian zones, and implementation of source water protection assessments. For more information contact the State Revolving Fund coordinator at 803-898-4300.

Watershed Protection and Restoration Strategies

SCDHEC's Bureau of Water is responsible for ensuring that South Carolina's water is safe for drinking and recreation, and suitable to support aquatic life. This section provides an overview of other important Bureau programs and strategies applied statewide to protect and restore water quality. The point and nonpoint source controls described previously assist with achieving these goals.

Under section 303(d) of the Federal Clean Water Act, each state is required to provide a comprehensive inventory of impaired waters for which existing required pollution controls are not stringent enough to achieve State water quality standards or Federal Clean Water Act goals. This biennial list, commonly referred to as the "303(d) list" is the basis for targeting waterbodies for watershed-based solutions. A copy of the current 303(d) list can be obtained by contacting the Bureau of Water. Several Bureau programs address these impaired streams in an effort to restore them.

Total Maximum Daily Load

A Total Maximum Daily Load (TMDL) is the calculated maximum allowable pollutant loading to a waterbody at which water quality standards are maintained. A TMDL is made up of two main components, a load allocation and a wasteload allocation. A load allocation is the portion of the receiving water's loading capacity attributed to existing or future nonpoint sources or to natural background sources. The waste load allocation is the portion of a receiving water's loading capacity allocated to an existing or future point source.

A TMDL is a means for recommending controls needed to meet water quality standards in a particular water or watershed. Historically, the typical TMDL has been developed as a wasteload allocation, considering a particular waterbody segment, for a particular point source, to support setting effluent limitations. In order to address the combined cumulative impacts of all sources, broad watershed-based TMDLs are now being developed.

The TMDL process is linked to all other State water quality activities. Water quality impairments are identified through monitoring and assessment. Watershed-based investigations result in source identification and TMDL development. TMDLs form links between water quality standards and point and nonpoint source controls. Where TMDLs are established, they constitute the basis for NPDES permits and for strategies to reduce nonpoint source pollution. The effectiveness and adequacy of applied controls are evaluated through continued monitoring and assessment.

Antidegradation Implementation

The State's Antidegradation Policy as part of S.C. Regulation 61-68 is represented by a three-tiered approach to maintaining and protecting various levels of water quality and uses; streams included on the 303(d) list are addressed under Tier 1. Tier 1 antidegradation policies apply to all waters of the State and require that existing uses and the minimum level of water quality for those uses be maintained and protected. Tier 2 policies apply to high water quality where the water quality exceeds the mandatory minimum levels to support Clean Water Act's goals of propagation of fish,

shellfish, wildlife, and recreation in and on the water. The Department considers all the waters of the State as high quality waters. Tier 3 policies apply to the maintenance of water quality in waters which constitute an Outstanding National Resource Water and do not allow for any permanent permitted dischargers. Outstanding Resource Waters of the State are provided a higher level of protection than Tier 2, but do not meet the requirements of Tier 3.

The antidegradation rules will be implemented for Tier 1 protection when applying narrative standards included in Regulation 61-68 as follows: if nutrient loadings caused a waterbody to be included on the 303(d) list, then the Department will not allow a permitted net increase of loading for the appropriate nutrient(s) until such time as a TMDL is developed for the waterbody. In addition, Tier 1 protection will be implemented when applying numeric standards included in Regulation 61-68 for human health, aquatic life, and organoleptic protection as follows: if a waterbody has been affected by a parameter of concern causing it to be on the 303(d) list, then the Department will not allow a permitted net increase of loading for the parameter of concern unless the concentration will not contribute to a violation of water quality standards. Maintenance of current levels will be achieved by reallocation of existing total loads or by meeting applicable water quality standards at the end-of-pipe. No discharge will be allowed to cause or contribute to further degredation of a 303(d) listed waterbody. This no net increase will be achieved by reallocation of existing total load(s) or by meeting applicable water quality standard(s) at the end-of-pipe.

401 Water Quality Certification Program

If a Federal permit for a discharge into waters of the State, including wetlands, is required, the Department must issue Water Quality Certification pursuant to Section 401 of the Federal Clean Water Act. Certification is required for permits issued by the U.S. Army Corps of Engineers for construction in navigable waters and for deposition of dredged or fill material.

Regulation 61-101 presents administrative and technical guidance for the water quality certification program and requires DHEC to consider whether or not a project is water dependent; whether or not there are feasible alternatives which will have less adverse consequences on water quality and classified uses; the intended purpose of the project; and all potential water quality impacts of the project, both direct and indirect, over the life of the project. Any project with the potential to affect waters of the State must be conducted in such a manner to maintain the specified standards and classified and existing water uses.

As a routine part of the 401 Water Quality Certification review process, the waterbody in question is identified as impaired or not impaired according to the 303(d) list. If it is impaired, the parameter of concern is noted, along with any steps required to prevent further degradation of the water quality of that waterbody. In an effort to facilitate watershed restoration where appropriate, mitigation for unavoidable wetland impacts is encouraged in areas that improve 303(d) listed waters.

Stormwater Program

Stormwater discharges result from precipitation during rain events. Runoff washes pollutants associated with industrial activities (including construction activity), agricultural operations, and commercial and household sites directly into streams, or indirectly into drainage systems that eventually drain into streams. The SCDHEC Stormwater Permitting Program focuses on pollution prevention to reduce or eliminate stormwater pollution. The Department has general permitting authority for stormwater discharges associated with industrial activity, including construction. General permits SCR000000 and SCR100000 for industrial and construction activities, respectively, require permittees to develop and implement stormwater pollution prevention plans that establish best management practices to effectively reduce or eliminate the discharge of pollutants via stormwater runoff. The Stormwater and Agricultural Permitting Section is responsible for issuing NPDES storm water permits to prevent degradation of water quality as well as for issuing sediment and erosion control permits for construction sites. SCDHEC's Bureau of Ocean and Coastal Resource Management manages the State sediment and erosion control in the coastal area.

Regulation 61-9 requires a compilation of all existing State water quality data with STORET data being used as a baseline. If analysis indicates a decrease in water quality then corrective measures must be taken. The permittee will identify all impaired water bodies in a Stormwater Management Plan (SWMP). In addition, existing pollution discharge control methods will be identified and incorporated into the SWMP. Procedures, processes and methods to control the discharge of pollutants from the municipal separate storm sewer system (MS4) into impaired water bodies and publicly owned lakes included on the 303(d) list will be described in the SWMP. The effectiveness of these controls will be assessed and necessary corrective measures, if any, shall be developed and implemented.

South Carolina Animal Feeding Operations Strategy

Among the general categories of pollution sources, agriculture ranks as the number one cause of stream and lake impairment nationwide. Many diseases can potentially be contracted from drinking water or coming into contact with waters contaminated with animal wastes. The Department has recently published SC Regulation 61-43: *Standards for the Permitting of Agricultural Animal Facilities* to address the permitting of animal feeding operations (AFOs) and updated Regulation 61-9: *Water Pollution Control Permits* to address concentrated animal feeding operations (CAFOs). Implementing these regulations and their corresponding compliance efforts are a priority for the Department in order to reduce public health and environmental impacts from AFOs. There are currently no CAFOs in operation in South Carolina, and approximately 2,000 AFOs. Using the Watershed Program cycle and the division of the state into five regions, AFOs will be monitored and inspected by region. The 303(d) list will be used to prioritize the inspections. After all the inspections have been made in a region, the Department will move on the next sub-basin grouping in the watershed cycle. The Department is continuing to work in cooperation and coordination with the US Department of Agriculture, the Natural Resources Conservation Service, the South Carolina

Department of Agriculture, the South Carolina Soil and Water Conservation Districts, and the Clemson Extension Service.

Sanitary Sewer Overflow Strategy

Sanitary sewers are designed to collect municipal and industrial wastewater, with the allowance for some acceptable level of infiltration and infow, and transport these flows to a treatment facility. When the sewer system is unable to carry these flows, the system becomes surcharged and an overflow will occur. Sanitary sewer overflows (SSOs) have existed since the introduction of separate sanitary sewers, and most are caused by inadequate operation, maintenance, and management of the collection system.

The SSO strategy addresses compliance and enforcement efforts by the Department to ensure compliance by publicly/privately owned treatment plants (PPOTWs) with the requirements of the statutes and their NPDES and ND permits. The Department has initiated a Sanitary Sewer Overflow Compliance and Enforcement Strategy to shift resources historically applied to treatment plant inspections to include evaluations of pump stations and collection systems. To assist evaluators in selecting candidate systems, staff will utilize the 303(d) list of impaired waters to identify waters impacted by fecal coliform or other appropriate pollutants and correlate those with collection systems with incidences of SSOs. The Department's Enforcement Referral Procedures Document will be used to determine when a PPOTW should be referred to enforcement for SSOs. The enforcement process allows for the Department to consider actions taken by the PPOTW such as: timely and proper notification, containment and mitigation of discharge, voluntarily conducting self evaluations, and requests for compliance assistance. The Department will take immediate action where it has been determined that SSOs have occurred and the PPOTW has not made timely and proper notification.

Referral Strategy for Effluent Violations

The Department has developed referral effluent violation guidelines to specifically address discharges into impaired waters. The goal of the referral guidelines is to reduce pollutant discharges into impaired waters in order to ultimately restore them to their full potential usage. To achieve this goal, enforcement actions are initiated earlier in an effort to improve the quality of waters which do not meet standards. If a stream is impaired by a pollutant and the permit limit for that pollutant is exceeded more than once in a running annual reporting period, formal enforcement action will be initiated against the discharger.

Edisto River Basin Description

The ***Edisto River Basin*** originates in the Sandhills region and flows through the Upper and Lower Coastal Plain Regions and into the Coastal Zone region. The Edisto River Basin encompasses 30 watersheds and some 2 million acres of which 1.8% is urban land, 22.7% is agricultural land, 10.9% is scrub/shrub land, 0.5% is barren land, 49.0% is forested land, 11.1% is forested wetland, 2.0% is nonforested wetland, and 2.0% is water. The urban land percentage is comprised chiefly of the City of Orangeburg and a portion of the City of Aiken. There are a total of 2,775.1 stream miles in the Edisto River Basin, and 31.7 square miles of estuarine areas.

The confluence of Chinquapin Creek and Lightwood Knot Creek form the North Fork Edisto River, which is joined downstream by Black Creek, Bull Swamp Creek, and Caw Caw Swamp. The South Fork Edisto River accepts drainage from Shaw Creek, Dean Swamp Creek, Goodland Creek, and Roberts Swamp before merging with the North Fork Edisto River to form the Edisto River. Downstream from the confluence, the Edisto River is joined by Cattle Creek, Indian Field Swamp, and Four Hole Swamp. Prior to joining the Edisto River, Four Hole Swamp accepts drainage from Cow Castle Creek, Providence Swamp, Horse Range Swamp, and Dean Swamp. Downstream from Four Hole Swamp, the Dawho River enters the Edisto River, and their confluence forms the South Edisto River and the North Edisto River, which drain to the Atlantic Ocean.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources and land uses in common. The physiographic regions that define the Edisto Basin are as follows:

The **Sand Hills** are an area of gently sloping to strongly sloping uplands with a predominance of sandy areas and scrub vegetation; elevations range from 250 to 450 feet.

The **Upper Coastal Plain** is an area of gentle slopes with increased dissection and moderate slopes in the northwestern section that contain the state's major farming areas; elevations range from 100 to 450 feet.

The **Lower Coastal Plain** is an area that is mostly nearly level and is dissected by many broad, shallow valleys with meandering stream channels; elevations range from 25 to 125 feet.

The **Coastal Zone** is a mostly tidally-influenced area that is nearly level and dissected by many broad, shallow valleys with meandering stream channels; most of the valleys terminate in tidal estuaries along the coast; elevations range from sea level to about 25 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina was derived from 1990 SCDNR SPOT multispectral satellite images using image mapping software to inventory the state's land classifications. The following classifications describe the Edisto River Basin:

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture and orchards, and may include some grass cover in Urban, Scrub/Shrub and Forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in the Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from Scrub/Shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches and unvegetated flats) and man-induced (rock quarries, mines and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series together comprising over 40% of the land area, were recorded for each watershed in percent descending order. The dominant individual soil series for the Edisto River Basin are described as follows:

Ailey soils are well drained loamy and sandy soils with clayey or loamy subsoil.

Albany soils are deep, somewhat poorly drained soils with sandy to loamy subsoil on nearly level terrain.

Blaney soils are nearly level to strongly sloping, excessively drained and well drained soils, some sandy throughout and some with a loamy subsoil and a fragipan on coastal plains.

Bohicket soils are very poorly drained soils, clayey throughout or mucky and underlain with clayey layers, frequently flooded.

Chipley soils are moderately to excessively well drained soils, sandy throughout, on high ridges.

Chisolm soils are deep, well to moderately drained soils with sandy to loamy subsoil on nearly level to gently sloping terrain.

Daleville soils are nearly level, poorly drained soils, with silty loam in slight depressions and drainageways on upland terraces.

Dorovan soils are deep, level, very poorly drained, organic soils on floodplains adjacent to upland.

Foxworth soils are well drained, sandy marine sediment derived, with acidic soils.

Fuquay soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Goldsboro soils are moderately well to poorly drained soils with loamy subsoil on nearly level ridges and in shallow depressions.

Hobcaw soils are nearly level, very poorly drained soils in depressions.

Johnston soils are nearly level, moderately well drained to very poorly drained soils, loamy throughout with a sandy surface layer on floodplains.

Kiawah soils are deep, somewhat poorly drained to poorly drained, acidic soils, sandy throughout, with a surface soil and subsoil of loamy fine sand.

Lakeland soils are well drained, sandy soils with a loamy subsoil and excessively drained soils.

Leon soils are somewhat poorly drained to poorly drained, level to nearly level, sandy soils with weakly cemented layers stained by organic matter.

Lumbee soils are poorly drained and very poorly drained, sandy and loamy soils with a loamy subsoil.

Lynchburg soils are moderately well to poorly drained soils, with loamy subsoil, on nearly level ridges and in shallow depressions.

Meggett soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Mouzon soils are poorly drained, loamy and sandy soils with a loamy subsoil.

Noboco soils are well drained, sandy soils with a loamy or clayey subsoil.

Ogeechee soils are poorly drained and moderately well drained, loamy soils with clayey or loamy subsoil, on terraces.

Orangeburg soils are well drained soils that have a sandy or loamy surface layer and a loamy or clayey subsoil.

Rains soils are moderately well to poorly drained soils, with a loamy subsoil, on nearly level ridges and in shallow depressions.

Troup soils are well drained, sandy soils with loamy subsoil and excessively drained soils.

Varina soils are nearly level to sloping, well drained soils, with a sandy surface layer and a clayey or loamy subsoil.

Vaucluse soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Wadmalaw soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Wagram soils are well drained to very poorly drained, depressional to nearly level and gently sloping soils with a loamy to sandy surface layer and a clayey to loamy subsoil.

Yauhannah soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yonges soils are moderately well drained to poorly drained, nearly level soils with a sandy surface layer and a predominantly loamy subsoil.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments which do erode. The range of K-factor values in the Edisto River Basin is from 0.11 to 0.20, among the 29 hydrologic units or watersheds.

Climate

Data compiled from National Weather Service stations in Aiken, Blackville, Bamberg, Orangeburg, Branchville, Walterboro, Pelion, and Springfield were used to determine the general climate information for the Edisto River Basin. Historical climatological records were compiled to provide the normal values. The normal annual rainfall in the area was 48.37 inches. The highest seasonal rainfall occurred in the summer, due to thunderstorms, with 15.76 inches; 9.27, 11.16 and 12.18 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 64.1°F. On a seasonal basis, summer temperatures averaged 79.2°F and fall, winter, and spring temperatures averaged 65.3, 50.0, and 64.0°F, respectively.

Fish Consumption Advisory

A fish consumption advisory has been issued by SCDHEC for the North Fork Edisto River, South Fork Edisto River, Four Hole Swamp, and the freshwater portions of the Edisto River advising people to limit the amount of some types of fish consumed from these rivers and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The fish consumption guidelines are based on diets of one type of fish only. If a person consumes several of the species listed for a river, then the person should cut back even further on the amounts of each species consumed. For example, if a person eats a pound of largemouth bass from the North Fork Edisto River, the person should not eat any bowfin from that river that month. The types of fish with mercury and the acceptable amounts of those fish that can be consumed are as follows: ***North Fork Edisto River*** (Bowfin - 1 lb./month, Largemouth bass - 1lb./month); ***South Fork Edisto River*** (Bowfin - 1.25 lbs./month, Largemouth bass - 0.5 lb./month); ***Edisto River and Four Hole Swamp*** (Bowfin - 1 lb./month, Catfish - 0.75 lb./month, Largemouth bass - 0.75 lb./month).

03050203-010

(Chinquapin Creek and Lightwood Knot Creek)

General Description

Watershed 03050203-010 is located in Lexington and Aiken Counties and consists primarily of ***Chinquapin Creek and Lightwood Knot Creek*** and their tributaries. The watershed occupies 50,712 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Blaney-Troup series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 7%, with a range of 0-15%. Land use/land cover in the watershed includes: 7.63% urban land, 20.69% agricultural land, 6.48% scrub/shrub land, 0.38% barren land, 62.49% forested land, 1.67% forested wetland (swamp), and 0.66% water.

Chinquapin and Lightwood Knot Creeks join to form the North Fork Edisto River. Chinquapin Creek originates near the Town of Monetta and accepts drainage from Duncan Creek, Horsepen Creek, Mare Creek, Rock Creek, and Shirley Branch before merging with Lightwood Knot Creek. The Town of Batesburg lies near the headwaters of Duncan Creek and uses a small lake associated with the drainage for its water supply. Lightwood Knot Creek flows through several ponds including Abells Millpond and Brodie Millpond, before accepting drainage from Hellhole Creek (Mill Creek, Rocky Ford Creek, Tanker Branch), Marlowe Creek, Thasher Branch, Mill Creek, and Long Branch. There are a total of 74.5 stream miles and numerous small lakes (10-50 acres) in this watershed, all classified FW.

Water Quality

Station	Type	Class	Description
E-091	P	FW	CHINQUAPIN CREEK AT SC 391 5.5 MI S BATESBURG
E-601	BIO	FW	CHINQUAPIN CREEK AT SR 210
E-101	S	FW	LIGHTWOOD KNOT CK OFF S-32-77, AT BATESBURG WTR INTAKE
E-600	BIO	FW	LIGHTWOOD KNOT CK AT UNNAMED RD W OF SR160

Chinquapin Creek - There are two monitoring sites along Chinquapin Creek, which was Class B until April, 1992. At the upstream site **(E-091)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH, a significant increasing trend in total nitrogen concentration, and a very high concentration of lead measured in 1993. A high concentration of copper and a very high concentration of zinc were measured in the 1996 sediment sample, and P,P'DDE and P,P'DDD (metabolites of DDT) were detected. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

At the downstream site **(E-601)**, aquatic life uses are fully supported based on macroinvertebrate community data.

Lightwood Knot Creek - There are two monitoring sites on Lightwood Knot Creek. At the upstream site **(E-101)**, aquatic life uses are fully supported, but there is a significant increasing trend in five-day biochemical oxygen demand. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. P,P'DDD (a metabolite of DDT) and P,P'DDT were detected in the 1994 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions, however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. Aquatic life uses are fully supported at the downstream site **(E-600)** based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
DUNCAN CREEK TOWN OF BATESBURG PIPE #: 001 FLOW: 2.5 WQL FOR NH3-N, DO, TRC	SC0024465 MAJOR MUNICIPAL WATER QUALITY
DUNCAN CREEK TOWN OF BATESBURG/WTP PIPE #: 001 FLOW: 0.0285	SCG645001 MINOR DOMESTIC EFFLUENT

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP KINARD/RESIDENT LIGHTWOOD KNOT CREEK TRIBUTARY	32-305-0003 ACTIVE
NAZARENE CAMP/RESIDENT CHINQUAPIN TRIBUTARY	32-305-1802 ACTIVE
CHURCH OF GOD PROPHECY/RESIDENT MARLOWE CREEK	32-305-0011 ACTIVE

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
LEXINGTON LANDFILL #2 DOMESTIC	DWP-013 CLOSED
TOWN OF BATESBURG-LEESVILLE INDUSTRIAL	IWP-235 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
JB RAWL RAWL-COTTON BRANCH ROAD MINE	0941-32 SAND
WILSON BROTHERS SAND COMPANY, INC. RICARD MINE	0639-32 SAND
WILSON BROTHERS SAND COMPANY, INC. SMITH MINE	0934-32 SAND
WILSON BROTHERS SAND COMPANY, INC. FRICK MINE	0718-32 SAND

Water Supply

WATER USER (TYPE) *WATERBODY*	*REGULATED CAPACITY (MGD)* *PUMPING CAPACITY (MGD)*
TOWN OF BATESBURG (M) LIGHTWOOD KNOT CREEK	2.1 4.3
TOWN OF BATESBURG (M) DUNCAN CREEK	1.2 2.5

Growth Potential

There is a low potential for growth in this rural, undeveloped watershed. The Town of Batesburg/Leesville has the only water and sewer service in the area.

03050203-020

(North Fork Edisto River)

General Description

Watershed 03050203-020 is located in Aiken and Lexington Counties and consists primarily of the ***North Fork Edisto River*** and its tributaries from its origin to Black Creek. The watershed occupies 59,194 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Troup-Fuquay series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.32% urban land, 12.55% agricultural land, 13.60% scrub/shrub land, 68.42% forested land, 4.44% forested wetland (swamp), and 0.97% water.

The North Fork Edisto River accepts drainage from the Chinquapin Creek and Lightwood Knot Creek watershed (03050203-010), Carneys Creek, Crooker Branch, and Goose Platter Creek in the upper portion of the watershed. Other tributaries that enter the river as it moves downstream include Chalk Hill Creek (Tom Branch), Marrow Bone Swamp Creek (Juniper Creek), Wolf Pit Branch, Big Branch, Hood Branch (Church Branch), Rambo Branch, and Giddy Swamp Creek. There are numerous small recreational ponds or lakes including Steedman Pond, Chalk Hill Millpond, Collums Millpond, and Amelia Lake. There are a total of 70.2 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-084	W	FW	NORTH FORK EDISTO RIVER AT S-02-74
E-102	W	FW	NORTH FORK EDISTO RIVER AT S-02-110

North Fork Edisto River - There are two SCDHEC monitoring stations along this section of the North Fork Edisto River, which was Class B until April, 1992. Aquatic life and recreational uses are fully supported at both sites **(E-102, E-084)**. Both sites are part of a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
WILSON BROTHERS SAND CO., INC. AIKEN MINE	1006-02 SAND
H. ANDERSON CONSTRUCTION CO. I-20 PIT	0668-32 SAND

Growth Potential

There is a low potential for growth in this watershed.

03050203-030

(Black Creek)

General Description

Watershed 03050203-030 is located in Lexington County and consists primarily of ***Black Creek*** and its tributaries. The watershed occupies 43,709 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Fuquay series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 7%, with a range of 2-15%. Land use/land cover in the watershed includes: 5.09% urban land, 21.51% agricultural land, 9.44% scrub/shrub land, 0.26% barren land, 57.42% forested land, 5.07% forested wetland (swamp), and 1.21% water.

Black Creek originates near the Town of Gilbert and drains into the North Fork Edisto River. Black Creek flows through Taylor Pond and several other ponds before accepting the drainage of Pond Branch and flowing into Paxton Millpond. Downstream of the millpond, Little Black Creek enters Black Creek, which then flows through Clarks Millpond to accept drainage from Cedar Pond Branch, Spring Branch, Big Branch, McCartha Branch, and Coney Branch. There are a total of 43.7 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-599	BIO	FW	BLACK CREEK AT SR 278
E-103	W	FW	BLACK CREEK AT S-32-53 (RAMBO BRIDGE)

Black Creek - There are two monitoring sites along Black Creek, which was Class B until April, 1992. At the upstream site **(E-599)**, aquatic life uses are fully supported based on macroinvertebrate community data. Aquatic life and recreational uses are fully supported at the downstream site **(E-103)**. This is a blackwater system, which are often characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

LAND APPLICATION FACILITY NAME	*PERMIT # TYPE*
SPRAY IRRIGATION GILBERT SCHOOL SYSTEM WWTP	ND0013587 MINOR DOMESTIC

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
OWEN INDUSTRIAL PRODUCTS INDUSTRIAL	IWP-241 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
KE SHEALY & SON POND BRANCH MINE	0368-32 SAND

Growth Potential

There is a low potential for growth in this watershed.

03050203-040

(North Fork Edisto River)

General Description

Watershed 03050203-040 is located in Lexington, Aiken, and Orangeburg Counties and consists primarily of the ***North Fork Edisto River*** and its tributaries from Black Creek to Bull Swamp Creek. The watershed occupies 115,363 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Vaucluse-Lakeland-Troup series. The erodibility of the soil (K) averages 0.13; the slope of the terrain averages 5%, with a range of 0-25%. Land use/land cover in the watershed includes: 2.05% urban land, 25.22% agricultural land, 12.64% scrub/shrub land, 0.51% barren land, 48.86% forested land, 10.29% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.42% water.

This section of the North Fork Edisto River accepts drainage from Cedar Creek (Lynch Branch, Rast Pond, Fort Pond, Thrasher Branch, Crawford Branch), Jackson Branch, Hollow Creek (Ritter Branch, Little Hollow Creek), Pond Branch (Hunter Branch), Salem Creek, Penn Branch, and Big Beaver Creek (Little Beaver Creek). Further downstream, Turkey Branch (Gibson Branch, Hutto Mill Pond) enters the river. There are numerous ponds and a total of 110.8 stream miles in this watershed, all classified FW. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

Station #	Type	Class	Description
E-092	P	FW	NORTH FORK EDISTO RIVER AT SC 3, 5.5 MI NW OF NORTH
E-104	W	FW	NORTH FORK EDISTO RIVER AT S-38-73

North Fork Edisto River - There are two SCDHEC monitoring sites along this section of the North Fork Edisto River, which was Class B until April, 1992. At the upstream site **(E-092)**, aquatic life uses are not supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, including high and very high concentrations of zinc measured in 1994 and 1995. In addition, there are significant increasing trends in pH and turbidity. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems, however the increasing trend in pH suggests changing conditions in this stream. A high concentration of zinc was measured in 1994, and P,P'DDE (a metabolite of DDT) was detected in the 1995, 1996, and 1997 sediment samples. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration. Aquatic life and recreational uses are fully supported at the downstream site **(E-104)**, which is also a blackwater system.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
NORTH FORK EDISTO RIVER TOWN OF NORTH PIPE #:002 FLOW: 0.2/0.3	SC0047821 MINOR MUNICIPAL EFFLUENT
NORTH FORK EDISTO RIVER TOWN OF NORTH PIPE #:001 FLOW: M/R SPRAYFIELD	SC0047821 MINOR MUNICIPAL EFFLUENT

LAND APPLICATION *FACILITY NAME*	*PERMIT #* *TYPE*
SPRAY IRRIGATION PELION ELEM. SCHOOL	ND0013561 COMMUNITY
SEPTAGE INJECTION CE TAYLOR PUMPING, INC.	ND0070149 INDUSTRIAL
SPRAYFIELD TOWN OF PELION	ND0013561 DOMESTIC

Growth Potential

There is a low potential for growth in this watershed. There is a small industrial park north of the Town of Pelion that may attract future industrial prospects, but there is currently no industry in the watershed. S.C. Highway 302 and a rail line pass through the area.

03050203-050

(Bull Swamp Creek)

General Description

Watershed 03050203-050 is located in Lexington, Orangeburg, and Calhoun Counties and consists primarily of ***Bull Swamp Creek*** and its tributaries. The watershed occupies 62,118 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Lakeland-Vaucluse series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 8%, with a range of 0-25%. Land use/land cover in the watershed includes: 1.21% urban land, 23.79% agricultural land, 8.87% scrub/shrub land, 0.91% barren land, 57.18% forested land, 7.50% forested wetland (swamp), and 0.54% water.

Bull Swamp Creek originates near the Town of Gaston and flows through the Town of Swansea before draining into the North Fork Edisto River. Bull Swamp Creek flows through Spires Pond before accepting drainage from Boggy Branch, Fourth Creek, Third Creek (Redmond Pond), Cow Branch, Gardner Branch, and Little Bull Swamp Creek (Cowpen Swamp, Turkey Branch). Bull Swamp Creek then flows through Etheridge Mill Pond (100 acres) and into the North Fork Edisto River. There are a total of 61.9 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-591	BIO	FW	BULL SWAMP CREEK AT SC 6
E-034	S	FW	BULL SWAMP CREEK AT CULVERT, 1.1 MI NW OF SWANSEA
E-035	S	FW	BULL SWAMP CREEK AT US 321, 0.9 MI S OF SWANSEA
E-042	W/BIO	FW	BULL SWAMP CREEK AT S-38-189

Bull Swamp Creek - There are four monitoring sites along Bull Swamp Creek, which was Class B until April, 1992. At the furthest upstream site **(E-591)**, aquatic life uses are partially supported based on macroinvertebrate community data. At the next site downstream **(E-034)**, aquatic life uses are not supported due to dissolved oxygen excursions, compounded by significant increasing trends in pH and turbidity. This is a secondary monitoring station and sampling is intentionally biased towards periods with the potential for low dissolved oxygen concentrations. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in total phosphorus suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Further downstream **(E-035)**, aquatic life uses are fully supported, but there is a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is intentionally biased towards periods with the potential for low dissolved oxygen concentrations. P,P'DDT was detected in the 1993 and 1995 sediment samples. Although the use of DDT was banned in 1973, it is very persistent in the environment. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in total phosphorus suggest improving conditions for these

parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions. At the furthest downstream site **(E-042)**, aquatic life uses are fully supported based on macroinvertebrate community data. All sites are part of a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems. Recreational uses are fully supported at this site.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BULL SWAMP CREEK TOWN OF SWANSEA PIPE #: 001 FLOW: 0.160 WETLAND; WQL FOR NH3-N, TRC	SC0023205 MINOR MUNICIPAL WATER QUALITY
BOGGY BRANCH GASTON COPPER RECYCLING PLT PIPE #: 001 FLOW: 1.0	SC0034541 MINOR INDUSTRIAL WATER QUALITY

Growth Potential

There is a low potential for growth in this watershed. The construction of a sewer line from the Town of Swansea to the City of Cayce WWTP may provide growth to the area.

03050203-060

(North Fork Edisto River)

General Description

Watershed 03050203-060 is located in Orangeburg and Calhoun Counties and consists primarily of the ***North Fork Edisto River*** and its tributaries from Bull Swamp Creek to Caw Caw Swamp. The watershed occupies 53,167 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Dothan-Fuquay-Noboco-Johnston series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 1.61% urban land, 23.70% agricultural land, 12.66% scrub/shrub land, 0.59% barren land, 42.69% forested land, 18.43% forested wetland (swamp), and 0.34% water.

This section of the North Fork Edisto River incorporates a total of 59.3 stream miles, all classified FW. Tributaries that drain into the river include: Long Branch, Double Branch, Great Branch (Grape Branch, Moss Pond), Limestone Creek (Little Limestone Creek), Mill Branch, and Fourmile Creek. There are numerous recreational ponds in this watershed. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

Station #	Type	Class	Description
E-593	BIO	FW	GREAT BRANCH AT SC 4
E-099	P	FW	NORTH FORK EDISTO RIVER AT S-38-74, NW ORANGEBURG

North Fork Edisto River (E-099) - This stream was Class B until April, 1992. Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by significant increasing trends in pH and turbidity. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems; however the increasing trend in pH suggests changing conditions in this stream. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration.

Great Branch (E-593) - Aquatic life uses are fully supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Growth Potential

There is a low potential for growth in this watershed; however, the existing infrastructure of U.S. Highway 178 out of the City of Orangeburg may encourage some growth.

03050203-070

(Caw Caw Swamp)

General Description

Watershed 03050203-070 is located in Calhoun and Orangeburg Counties and consists primarily of ***Caw Caw Swamp*** and its tributaries. The watershed occupies 51,379 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Wagram-Lakeland-Dothan series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 5.96% urban land, 21.14% agricultural land, 8.41% scrub/shrub land, 0.91% barren land, 54.68% forested land, 8.38% forested wetland (swamp), and 0.52% water.

Caw Caw Swamp flows through Redmond Pond and is joined by Murph Mill Creek (Mack Branch, Crim Creek), Sweetwater Lake, Burke Creek, Saddler Swamp, Early Branch, Cooner Branch, and Turkey Hill Branch. Downstream of Turkey Hill Branch, the swamp flows through a 100 acre-lake and drains into the North Fork Edisto River. There are a total of 54.5 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-105	W	FW*	CAW CAW SWAMP AT S-38-1032

Caw Caw Swamp (E-105) - Aquatic life uses and recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
CAW CAW SWAMP SC22 & I-26 INTERCHANGE PIPE #: 001 FLOW: 0.10	PROPOSED MINOR MUNICIPAL EFFLUENT

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
SWEETWATER CAMPGROUND/FAMILY CAW CAW SWAMP	09-307-0001 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
REA CONSTRUCTION CO. MINE #8	0536-38 SAND

Growth Potential

There is a low to moderate potential for urban growth in the northwest section of the City of Orangeburg. Interstate 26 bisects the watershed which includes four interchanges near the Town of St. Matthews. U.S. Highway 601 and a rail line run along the eastern watershed border connecting Orangeburg to St. Matthews.

03050203-080

(North Fork Edisto River)

General Description

Watershed 03050203-080 is located in Orangeburg County and consists primarily of the lowest reach of the ***North Fork Edisto River*** and its tributaries from Caw Caw Swamp to its confluence with the South Fork Edisto River. The watershed occupies 49,830 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Johnston-Goldsboro-Noboco-Meggett-Dorovan series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 9.09% urban land, 27.40% agricultural land, 9.64% scrub/shrub land, 0.39% barren land, 33.89% forested land, 19.27% forested wetland (swamp), and 0.32% water.

This section of the North Fork Edisto River originates at the City of Orangeburg, and accepts drainage from Pen Branch, Anderson Branch, Whirlwind Creek, Dry Swamp, and Cooper Swamp before merging with the South Fork Edisto River. Whirlwind Creek flows through a 40 acre-lake used for water supply and as a county fish hatchery. There are a total of 63.3 stream miles in this watershed, all classified FW. As a reach of the North Fork Edisto River, this watershed accepts the drainage of all streams entering the river upstream of the watershed.

Water Quality

Station #	Type	Class	Description
E-007	P	FW	NORTH FORK EDISTO RIVER AT US 601 AT ORANGEBURG
E-007A	S	FW	N.FORK EDISTO R. AT POWER LINE CROSSING, 2 MI BELOW E-007
E-007B	S	FW	NORTH FORK EDISTO RIVER, 4 MI BELOW E-007 AT A CABIN
E-007C	P	FW	N. FORK EDISTO R. AT POLICEMEN CAMP, 6 MI BELOW E-007
E-008	P	FW	NORTH FORK EDISTO RIVER AT S-38-39, WSW OF ROWESVILLE
E-008A	W	FW	NORTH FORK EDISTO RIVER AT S-38-63

North Fork Edisto River - There are six SCDHEC monitoring sites along this section of the North Fork Edisto River, which was Class B until April, 1992. At the furthest upstream site **(E-007)**, aquatic life uses are fully supported, but there is a significant increasing trend in turbidity and a very high concentration of chromium measured in 1996. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are fully supported but there is a significant increasing trend in fecal coliform bacteria concentration.

At the next site downstream **(E-007A)**, aquatic life uses are partially supported due to pH excursions, compounded by significant increasing trends in pH and turbidity. In sediment, diethyl phthalate was detected in 1996, and P,P'DDE (a metabolite of P,P'DDT) was detected in 1997. Although the use of DDT was banned in 1973, it is very persistent in the environment. A significant increasing trend in pH suggests improving conditions for this parameter. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration.

Further downstream **(E-007B)**, aquatic life uses are partially supported due to pH excursions, compounded by a significant increasing trend in turbidity. Recreational uses are partially supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration. At the next site downstream **(E-007C)**, aquatic life uses are fully supported, but there are significant increasing trends in total nitrogen concentration and turbidity. Recreational uses are fully supported at this site. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in total phosphorus at both E-007B and E-007C suggest improving conditions for these parameters.

At **E-008**, aquatic life uses are fully supported based on macroinvertebrate community data, but there were occurrences of zinc in excess of the aquatic life acute standards, a very high concentration of copper measured in 1996, diethyl phthalate detected in 1994, bis(2-ethylhexyl)phthalate detected in 1997, and a significant increasing trend in turbidity. In sediment, high concentrations of lead were measured in 1995 and 1996, a high concentration of mercury was measured in 1995, a very high concentration of mercury was measured in 1996, and a very high concentration of lead was measured in 1997. Also in sediment, di-n-butylphthalate was detected in 1995, P,P'DDD and O,P'DDE were detected in 1994, and P,P'DDE was detected in 1994, 1995, and 1996. Recreational uses are fully supported at this site.

At the furthest downstream site **(E-008A)**, aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted at E-007 and E-008A, they were typical of values seen in such systems; however the increasing trend in pH at E-007A suggests changing conditions for that portion of the stream. Natural conditions likely contributed to the pH excursions seen at E-007A and E-007B.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
NORTH FORK EDISTO RIVER ALBEMARLE CORP./ORANGEBURG PIPE #: 001 FLOW: 0.991 WQL FOR NH3-N, TRC	SC0001180 MAJOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER CITY OF ORANGEBURG WWTP PIPE #: 001 FLOW: 9.000 WQL FOR NH3-N, TRC	SC0024481 MAJOR MUNICIPAL WATER QUALITY

NORTH FORK EDISTO RIVER GREENWOOD MILLS, INC./LINE PIPE #: 001 FLOW: 0.0003	SC0001163 MINOR INDUSTRIAL EFFLUENT
NORTH FORK EDISTO RIVER CITY OF ORANGEBURG/PEARSON WTP PIPE #: 001 FLOW: 0.35	SCG641002 MINOR DOMESTIC EFFLUENT
NORTH FORK EDISTO RIVER SOUTHSIDE APARTMENTS PIPE #: 001 FLOW: 0.03	SC0029751 MINOR DOMESTIC EFFLUENT
NORTH FORK EDISTO RIVER ORANGEBURG SAUSAGE CO. PIPE #: 001 FLOW: 0.0072 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0030066 MINOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER FASHION FABRICS OF AMERICA PIPE #: 001 FLOW: 0.5917 WQL FOR NH3-N, TRC	SC0043419 MAJOR INDUSTRIAL WATER QUALITY
NORTH FORK EDISTO RIVER COUNCIL ENERGY PIPE #: 001 FLOW: M/R WETLAND; WQL FOR BOD5	SC0045560 MINOR INDUSTRIAL WATER QUALITY
DITCH TO NORTH FORK EDISTO RIVER ORANGEBURG NATIONAL FISH HATCHERY PIPE #: 001 FLOW: M/R	SC0047023 MINOR INDUSTRIAL EFFLUENT
DITCH TO NORTH FORK EDISTO RIVER ORANGEBURG NATIONAL FISH HATCHERY PIPE #: 002 FLOW: M/R	SC0047031 MINOR INDUSTRIAL EFFLUENT
COOPER SWAMP SILVER LAKE FARMS HATCHERY PIPE #: 001 FLOW: M/R	SC0044067 MINOR INDUSTRIAL EFFLUENT
WHIRLWIND CREEK EDISTO HIGH SCHOOL PIPE #: 001 FLOW: 0.017 PIPE #: 001 FLOW: 0.021 (PROPOSED) WQL FOR NH3-N, DO, TRC, BOD5	SC0040185 MINOR DOMESTIC WATER QUALITY WATER QUALITY

Water Supply

WATER USER (TYPE) ***WATERBODY***	***REGULATED CAPACITY (MGD)*** ***PUMPING CAPACITY (MGD)***
CITY OF ORANGEBURG (M) NORTH FORK EDISTO RIVER	36.0 44.6
ALBEMARLE CORP.-ORANGEBURG PLT. (I) NORTH FORK EDISTO RIVER	1.44 1,000 GPM

Growth Potential

There is a low to moderate potential for growth in this watershed. The western portion of the City of Orangeburg is located in this watershed and U.S. Highway 601 connects it to the Towns of Bamberg and St. Matthews. The U.S. Highway 21 corridor runs from Orangeburg to the Town of Rowesville and is paralleled by a rail line.

03050204-010

(South Fork Edisto River)

General Description

Watershed 03050204-010 is located in Aiken, Edgefield, and Saluda Counties and consists primarily of the ***South Fork Edisto River*** and its tributaries from its origin to Shaw Creek. The watershed occupies 136,926 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Troup-Fuquay-Lakeland series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 6%, with a range of 0-25%. Land use/land cover in the watershed includes: 0.61% urban land, 26.72% agricultural land, 10.50% scrub/shrub land, 0.12% barren land, 58.64% forested land, 2.68% forested wetland (swamp), and 1.06% water.

The South Fork Edisto River originates near the Town of Johnston and incorporates the drainage of First Branch, Hall Branch, and Temples Creek (Flat Rock Branch). The river then flows through Holmes Pond and accepts drainage from Satcher Branch, Long Branch, Beech Creek (Spann Branch, Bog Branch), Mill Creek (Flat Rock Creek, Pitts Branch, Lotts Creek), Easter Branch, Bulls Branch, Long Branch, Jumping Gut Creek, Mile Branch, and Kalop Branch. Further downstream, the river accepts drainage from Bridge Creek (Reedy Fork, Mill Branch), McTier Creek (Gully Creek, Harrison High Pond, Sawyer Pond, Boggy Branch, Holston Branch), Little Branch, Sandy Branch, Big Branch, Muddy Branch, and Beaverdam Branch (Smith Branch). In the lower portion of the watershed, Rocky Springs Creek (Wildcat Branch, Long Branch, Huttos Pond, Pitman Branch, Poplar Branch) enters the river followed by Purvis Branch, Clarks Mill Creek, and Cedar Creek (Neeses Lake). There are numerous ponds and lakes located along the tributaries draining into the river, used for recreation and irrigation. This watershed contains a total of 218.2 stream miles, all classified FW.

Water Quality

Station #	Type	Class	Description
E-001	S	FW	FIRST BRANCH AT S-19-41, BESIDE WTR PLANT AT JOHNSTON
E-002	S	FW	S. FORK EDISTO R. AT S-19-57, BELOW JOHNSTON WWTP
E-090	P/BIO	FW	SOUTH FORK EDISTO RIVER AT US 1, 12 MI NE AIKEN
E-578	BIO	FW	MCTIER CREEK AT S-02-209
E-021	W	FW	SOUTH FORK EDISTO RIVER AT SC 302

South Fork Edisto River - There are three SCDHEC monitoring sites along this section of the South Fork Edisto River, which was Class B until April, 1992. At the upstream site **(E-002)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the midstream site **(E-090)**, aquatic life uses are fully supported based on macroinvertebrate community data, but there is a significant decreasing trend in pH and a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. In sediments, a very high concentration of lead was measured in 1995 and a high concentration of mercury was measured in 1997. Recreational uses are fully supported, but there is a significant increasing trend in fecal coliform bacteria concentration.

At the downstream site **(E-021)**, aquatic life uses are fully supported, but there was a very high concentration of chromium measured in 1996. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted, they were typical of values seen in such systems. Recreational uses are partially supported due to fecal coliform bacteria excursions.

First Branch (E-001) - This stream was Class B until April, 1992. Aquatic life uses are fully supported, but there is a significant decreasing trend in pH. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. This is also a secondary monitoring station and sampling is intentionally biased towards periods with the potential for low dissolved oxygen concentrations. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggests improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

McTier Creek (E-578) - This stream was Class B until April, 1992. Aquatic life uses are fully supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
SOUTH FORK EDISTO RIVER ECW&SA/JOHNSTON #1 PLT PIPE #: 001 FLOW: 0.968 WQL FOR NH3-N, DO, TRC, BOD5	SC0025691 MINOR MUNICIPAL WATER QUALITY
SOUTH FORK EDISTO RIVER JM HUBER CORP./EDISTO PLANT PIPE #: 001 FLOW: ----	SC0024341 MINOR INDUSTRIAL EFFLUENT

BEAVERDAM BRANCH KENTUCKY-TENNESSEE CLAY CO. PIPE #: 001 FLOW: 0.15-0.45	SC0046388 MINOR INDUSTRIAL EFFLUENT
FLAT ROCK CREEK TOWN OF RIDGE SPRING/SOUTH LAGOON PIPE #: 001 FLOW: 0.150 WQL FOR NH3-N, DO, TRC, BOD5	SC0022268 MINOR MUNICIPAL WATER QUALITY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP GRAVITT/RESIDENT GULLY CREEK TRIBUTARY	02-305-1800 ACTIVE
CAMP GRAVITT #2/RESIDENT GULLY CREEK TRIBUTARY	02-305-1805 ACTIVE
CAMP LONG/RESIDENT BIG BRANCH	02-305-1801 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
JAMES HENRY BLEDSOE CONSTRUCTION CO. MONETTA CLAYPIT	0956-02 SAND/CLAY
HOLMES TIMBER, INC. ABNEY MINE	0954-02 SAND/CLAY
GL WILLIAMS LANDSCAPING, INC. PIT 49	0978-02 SAND
JM HUBER CORP. CORDER MINE	0406-02 KAOLIN
SOUTHEASTERN CLAY COMPANY SEIGLER MINE	0070-02 KAOLIN
BLEECK ENTERPRISES, INC. ENTERPRISE MINE	1086-02 KAOLIN CLAY
SOUTHEASTERN CLAY COMPANY SHADE MINE	0071-02 KAOLIN
WR GRACE & CO. SCOTT MINE	0072-02 KAOLIN
KENTUCKY TENNESSEE CLAY CO. GENTRY MINE	0594-02 KAOLIN

JM HUBER CORP. BRODIE MINE	0038-02 KAOLIN
JM HUBER CORP. LAUGHLIN WEST MINE	1136-02 KAOLIN
SOUTHERN BRICK COMPANY ANDERSON MINE	0618-02 KAOLIN
JM HUBER CORP. LAUGHLIN MINE	0811-02 KAOLIN

Water Supply

WATER USER (TYPE) *WATERBODY*	*REGULATED CAPACITY (MGD)* *PUMPING CAPACITY (GPM)*
JM HUBER CORP.- EDISTO PLT (I) SOUTH FORK EDISTO RIVER	0.288 200
JM HUBER CORP.- EDISTO PLT. (I) SOUTH FORK EDISTO RIVER	2.448 1,700

Growth Potential

The greatest potential for growth in this agricultural-based watershed surrounds the three interchanges of Interstate 20: U.S. Highway 1, S.C. Highway 391, and S.C. Highway 39. A rail line runs between the Towns of Johnston and Monetta, both of which show slightly increasing populations. The Town of Johnston has tied into the Edgefield County Water and Sewer Authority's Regional Sewer Collection System. Other growth potentials for the area included the industrial park at the interchange of S.C. Highways 23 and 121 in Johnston, and the recent addition of both a federal and a state prison in the area.

03050204-020

(Shaw Creek)

General Description

Watershed 03050204-020 is located in Aiken and Edgefield Counties and consists primarily of ***Shaw Creek*** and its tributaries. The watershed occupies 86,451 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Lakeland-Orangeburg-Wagram series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 5%, with a range of 0-25%. Land use/land cover in the watershed includes: 1.38% urban land, 31.04% agricultural land, 7.01% scrub/shrub land, 0.20% barren land, 55.69% forested land, 4.01% forested wetland (swamp), and 0.62% water.

Shaw Creek originates near the Town of Trenton and flows past the City of Aiken to drain into the South Fork Edisto River. There are numerous recreational ponds and lakes in the watershed, and several in the upper portion of the watershed are used for irrigational purposes as well. Shaw Creek receives drainage from Buck Branch and Tiger Creek before flowing through Lone Pond and accepting drainage from Hillyer Branch, Paces Branch, Beaverdam Branch, Hall Branch, Melton Branch, Curry Branch, Mason Branch, Boggy Branch, Brogdon Branch, Dairy Branch, and Long Branch. The river then accepts drainage from Bradley Mill Branch, Joyce Branch, Redds Branch, Clearwater Branch, Chavous Branch, and Cedar Branch (Cedar Lake). There are a total of 144.8 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-579	BIO	FW	SHAW CREEK AT S-02-153
E-094	P	FW	SHAW CREEK AT S-02-26, 4.2 MI NE AIKEN
E-106	W	FW	SHAW CREEK AT S-02-576

Shaw Creek - There are three SCDHEC monitoring sites along Shaw Creek. Aquatic life uses are fully supported at the upstream site **(E-579)** based on macroinvertebrate community data. At the midstream site **(E-094)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH, a significant increasing trend in turbidity, and a very high concentration of zinc measured in 1996. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported at the downstream site **(E-106)**. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted at E-094 and E-106, they were typical of values seen in such systems.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
SHAW CREEK KENTUCKY TENNESSEE CLAY CO. PIPE #: 001 FLOW: M/R	SCG730046 MINOR INDUSTRIAL EFFLUENT
SHAW CREEK UNITED CATALYSTS PIPE #: 001 FLOW: M/R	SC0043456 MINOR INDUSTRIAL EFFLUENT
SHAW CREEK CITY OF AIKEN/SHAW CREEK WATER TRT PLT PIPE #: 001 FLOW: M/R	SCG641003 MINOR DOMESTIC EFFLUENT
CLEARWATER CREEK UNITED CATALYSTS PIPE #: 001 FLOW: M/R	SC0043456 MINOR INDUSTRIAL EFFLUENT
PACES BRANCH ECW&SA/TRENTON CITY PIPE #: 001 FLOW: 0.073 WQL FOR NH3-N, DO, TRC	SC0025682 MINOR MUNICIPAL WATER QUALITY
JOYCE BRANCH ECC AMERICA, INC./PAYNE MINE PIPE #: 001 FLOW: M/R	SC0042552 MINOR INDUSTRIAL EFFLUENT
LAND APPLICATION **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAYFIELD HOMAT/RAMADA INN	ND0065871 DOMESTIC
SPRAYFIELD SC FORESTRY/TAYLOR TREE NURSERY	ND0076830 INDUSTRIAL
SPRAYFIELD OWENS CORNING	ND0070963 INDUSTRIAL

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
PINEACRES CAMPGROUND/FAMILY BUCKHORN CREEK	02-307-1806 ACTIVE

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
CITY OF AIKEN LANDFILL MUNICIPAL	DWP-037 CLOSED
OWENS CORNING INDUSTRIAL	022431-1601 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
EC CULBREATH & SON, INC. CULBREATH ASPHALT PLANT	0152-02 SAND
FELDSPAR PRODUCTS, INC. EUREKA MINE #1	0821-02 SAND
KENTUCKY TENNESSEE CLAY CO. SMITH MINE	0452-02 KAOLIN
KENTUCKY TENNESSEE CLAY CO. ALEXANDER-RAMEY MINE	0080-02 KAOLIN
ECC AMERICA, INC. PAYNE MINE	0792-02 KAOLIN
GL WILLIAMS & SON TRUCKING, INC. APAC MINE	1142-02 SAND/CLAY
UNITED CATALYSTS PROTHRO MINE	0824-02 KAOLIN

Water Supply

WATER USER (TYPE) *WATERBODY*	*REGULATED CAPACITY (MGD)* *PUMPING CAPACITY (MGD)*
CITY OF AIKEN (M) SHAW CREEK	6.0 12.8

Growth Potential

There is a high potential for commercial growth surrounding the interchanges of Interstate 20 and U.S. Highway 1 and S.C. Highway 19; both Highways 1 and 19 have plans for widening to four lanes. Highway 19 runs through the City of Aiken and intersects with several rail lines that would increase industrial potential. The Town of Trenton has tied into the Edgefield County Water and Sewer Authority's Regional Sewer Collection System, which should enhance industrial growth.

03050204-030

(South Fork Edisto River)

General Description

Watershed 03050204-030 is located in Aiken, Barnwell, and Orangeburg Counties and consists primarily of the ***South Fork Edisto River*** and its tributaries from Shaw Creek to Dean Swamp Creek. The watershed occupies 77,389 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Lakeland-Troup-Varina-Dothan series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.48% urban land, 20.55% agricultural land, 9.90% scrub/shrub land, 0.02% barren land, 60.84% forested land, 8.02% forested wetland (swamp), 0.03% nonforested wetland (marsh), and 0.16% water.

As a reach of the South Fork Edisto River, this watershed accepts the drainage from all streams entering the river upstream. This section of the South Fork Edisto River also accepts drainage from Burcalo Creek, Hunter Branch (Tylers Pond), Pond Branch (Buzzard Branch, Long Branch, Spring Branch), and Yarrow Branch. There are several small recreational ponds in the watershed and a total of 68.8 stream miles, all classified FW. Another natural resource is Aiken State Park, located near the top of the watershed.

Water Quality

Station #	Type	Class	Description
E-595	BIO	FW	YARROW BRANCH AT SR 161
E-011	W	FW	SOUTH FORK EDISTO RIVER AT SC 39

South Fork Edisto River (E-011) - This stream was Class B until April, 1992. Aquatic life uses are fully supported. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Yarrow Branch (E-595) - This stream was Class B until April, 1992. Aquatic life uses are fully supported based on macroinvertebrate community data.

Aiken State Park Cabin Lake - Cabin Lake was treated from 1992-1995 by the Water Resources Division of the SCDNR with aquatic herbicides in an attempt to control the aquatic plants that prevent access to the lake for fishing and boating. In addition, grass carp, a biological control agent, were introduced in 1992 at the stocking rate of 20 fish/vegetated acre for a total of 200 fish.

Aiken State Park Swimming Lake -Swimming Lake was treated with herbicides from 1992-1995 by the SCDNR to provide access for swimming and boating. Grass carp were introduced to the swimming lake in 1993 at the stocking rate of 10 fish/vegetated acre for a total of 30 fish.

Aiken State Park Childs Fishing Lake - Childs Fishing Lake was treated with herbicides in 1992, 1993, and 1994 by the SCDNR to provide access for bank fishing. Grass carp were also introduced to this lake in 1992.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
AIKEN STATE PARK/RESIDENT SOUTH FORK EDISTO RIVER	02-305-1804 ACTIVE

Growth Potential

There is a low potential for growth projected for this watershed. A rail line and U.S. Highway 78 run along the western edge of the watershed through the Town of Windsor to the City of Aiken, and provide potential for industrial growth.

03050204-040

(Dean Swamp Creek)

General Description

Watershed 03050204-040 is located in Aiken and Orangeburg Counties and consists primarily of ***Dean Swamp Creek*** and its tributaries. The watershed occupies 41,055 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Ailey series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 7%, with a range of 0-25%. Land use/land cover in the watershed includes: 1.65% urban land, 25.43% agricultural land, 10.19% scrub/shrub land, 0.01% barren land, 55.88% forested land, 6.37% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.46% water.

Dean Swamp Creek originates near the Town of Crossroads, and flows through several millponds before accepting drainage from Jordan Creek, Abrams Branch, and Bratcher Branch. Dean Swamp Creek then flows through Dean Swamp Pond (100 acres) and drains into the South Fork Edisto River. There are several small recreational ponds and a total of 44.2 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-107	W	FW	DEAN SWAMP CREEK AT SC 4

Dean Swamp Creek (E-107) - This stream was Class B until April, 1992. Aquatic life and recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM	*NPDES#*
FACILITY NAME	*TYPE*
PERMITTED FLOW @ PIPE (MGD)	*LIMITATION*
COMMENT	
DEAN SWAMP CREEK	SC0026204
TOWN OF WAGENER	MINOR MUNICIPAL
PIPE #: 001 FLOW: 0.13	WATER QUALITY
PIPE #: 001 FLOW: 0.26 (PROPOSED)	WATER QUALITY
WQL FOR NH3-N, TRC	

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
AIKEN COUNTY LANDFILL MUNICIPAL	021001-1101 ACTIVE

Growth Potential

Some industrial growth is possible due to the rail line that runs along the eastern edge of the watershed from the Town of Springfield to the Towns of Salley and Perry. However, there is a decreasing population trend in the towns located within this watershed.

03050204-050

(South Fork Edisto River)

General Description

Watershed 03050204-050 is located in Barnwell, Orangeburg, and Bamberg Counties and consists primarily of the ***South Fork Edisto River*** and its tributaries from Dean Swamp Creek to its confluence with the North Fork Edisto River. The watershed occupies 163,795 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Fuquay-Varina-Dothan-Johnston-Meggett series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.92% urban land, 36.33% agricultural land, 11.73% scrub/shrub land, 0.55% barren land, 26.82% forested land, 23.28% forested wetland (swamp), 0.05% nonforested wetland (marsh), and 0.32% water.

As a reach of the South Fork Edisto River, this watershed accepts the drainage from all streams entering the river upstream. Spur Branch enters the river at the top of the watershed, followed by Whaley Creek (Matthews Millpond), Dry Branch, and the Goodland Creek watershed (03050204-060). Further downstream, Windy Hill Creek (Sheepford Branch) enters the river near the Town of Blackville, followed by Rocky Swamp Creek (Campbell Branch, Pleasant Branch), Rogers Branch, Snake Branch, and Little River (Willow Swamp) near the Town of Norway. Sykes Swamp enters the river next, followed by Hays Mill Creek (Stout Creek), Scratchnose Swamp (Reed Branch), Sucksand Branch, and the Roberts Swamp watershed (03050204-070). Snake Swamp (Sam Branch) and Isaac Jennings Canal flow past the Town of Cope at the base of the watershed to enter the river. There are a total of 286.6 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-029	BIO	FW	WINDY HILL CREEK AT SR 38
E-012	S	FW	SOUTH FORK EDISTO RIVER AT S-38-39 BRIDGE

South Fork Edisto River (E-012) - This stream was Class B until April, 1992. Aquatic life uses are fully supported based on macroinvertebrate community data, but there is a significant decreasing trend in dissolved oxygen, a significant increasing trend in turbidity, and a high concentration of zinc measured in 1997. Recreational uses are fully supported, but there is a significant increasing trend in fecal coliform bacteria concentration.

Windy Hill Creek (E-029) - This stream was Class B until April, 1992. Aquatic life uses are partially supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
SOUTH FORK EDISTO RIVER TOWN OF BAMBERG PIPE #: 001 FLOW: 2.5/2.0 (PROPOSED) WQL FOR TRC	SC0047163 MAJOR MUNICIPAL WATER QUALITY
SOUTH FORK EDISTO RIVER TOWN OF SPRINGFIELD/PLANT #1 PIPE #: 001 FLOW: 0.120	SC0023272 MINOR MUNICIPAL EFFLUENT
SOUTH FORK EDISTO RIVER SCE&G/COPE POWER PLANT PIPE #: 001 FLOW: 4.36 WQL FOR TRC	SC0045772 MINOR INDUSTRIAL WATER QUALITY
WINDY HILL CREEK TOWN OF BLACKVILLE PIPE #: 001 FLOW: 0.33 PIPE #: 001 FLOW: 0.80 (PROPOSED) WQL FOR NH3-N, DO, TRC, BOD5	SC0026417 MINOR MUNICIPAL WATER QUALITY WATER QUALITY
WILLOW SWAMP TOWN OF NORWAY PIPE #: 001 FLOW: 0.165 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0045993 MINOR MUNICIPAL WATER QUALITY

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
SCE&G COPE STATION INDUSTRIAL	383320-1601 ACTIVE

Growth Potential

There is a low potential for growth in this watershed. Slight increases in commercial growth would be possible with the proposed widening of U.S. Highway 78, which runs from the Town of Denmark to the Town of Bamberg. Industrial growth is possible due to the rail lines already in place. One rail line runs from the Town of Blackville to the Town of Springfield, and another from Denmark to the Town of Norway and on upstate to the City of Columbia. U.S. Highway 321 parallels the rail line that bisects the watershed. The Town of Denmark shows declining population trends, but the Town of Bamberg shows slightly increasing population growth. The SCE&G Cope Power Plant could boost residential and commercial growth in the area, primarily for the Town of Bamberg.

03050204-060

(Goodland Creek)

General Description

Watershed 03050204-060 is located in Orangeburg and Aiken Counties and consists primarily of ***Goodland Creek*** and its tributaries. The watershed occupies 26,687 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Troup series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 4%, with a range of 0-10%. Land use/land cover in the watershed includes: 0.79% urban land, 35.14% agricultural land, 15.40% scrub/shrub land, 0.09% barren land, 27.59% forested land, 20.02% forested wetland (swamp), 0.03% nonforested wetland (marsh), and 0.44% water.

Goodland Creek flows through Capers Mill Pond and accepts drainage from Gin Branch and Tampa Creek before draining into the South Fork Edisto River. There are a total of 28.2 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-036/E-598	S/BIO	FW	GOODLAND CREEK AT SC 4, 2.1 MI E OF SPRINGFIELD

Goodland Creek (E-036 and E-598) - This stream was Class B until April, 1992. Aquatic life uses are fully supported based on macroinvertebrate community data, but there are significant decreasing trends in dissolved oxygen and pH and a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration.
A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
GOODLAND CREEK TOWN OF SPRINGFIELD/PLANT #2 PIPE #: 001 FLOW: 0.06	SC0023281 MINOR MUNICIPAL EFFLUENT

Growth Potential

There is a low potential for growth in this watershed.

03050204-070

(Roberts Swamp)

General Description

Watershed 03050204-070 is located in Orangeburg County and consists primarily of ***Roberts Swamp*** and its tributaries. The watershed occupies 21,741 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Dothan-Fuquay-Noboco series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.01% urban land, 40.95% agricultural land, 12.96% scrub/shrub land, 0.96% barren land, 30.50% forested land, 13.82% forested wetland (swamp), and 0.80% water.

Roberts Swamp flows through Twin Lakes and accepts drainage from Deadfall Swamp and Twomile Swamp, before flowing past the Town of Cope and into the South Fork Edisto River (03050204-050). There are a total of 40.9 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-592	BIO	FW	ROBERTS SWAMP AT SR 690
E-039	W	FW	ROBERTS SWAMP AT SC 332

Roberts Swamp - There are two monitoring sites along Roberts Swamp, which was Class B until April, 1992. At the upstream site **(E-592)**, aquatic life uses are partially supported based on macroinvertebrate community data. Aquatic life and recreational uses are fully supported at the downstream site **(E-039)**.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Growth Potential

The SCE&G Cope Power Plant, near the Town of Cope, may provide some growth in the watershed.

03050205-010

(Edisto River)

General Description

Watershed 03050205-010 is located in Bamberg, Orangeburg, Dorchester, and Colleton Counties and consists primarily of the ***Edisto River*** and its tributaries, from its origin to Cattle Creek. The watershed occupies 80,651 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Johnston-Lumbee series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.14% urban land, 11.83% agricultural land, 7.63% scrub/shrub land, 0.43% barren land, 60.15% forested land, 19.68% forested wetland (swamp), and 0.14% water.

The headwaters of the Edisto River are formed from the confluence of the North Fork Edisto River and the South Fork Edisto River near the Town of Bamberg. This section of the Edisto River accepts drainage from Betty Branch (Staley Branch, Mill Branch), Broad Branch, Pen Branch, Brier Creek, Bush Branch, and Box Branch. There are a total of 112.7 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-013	P	FW	EDISTO RIVER AT US 78, W OF BRANCHVILLE
E-013A	W	FW	EDISTO RIVER AT US 21

Edisto River - There are two monitoring sites along this section of the Edisto River. At the upstream site **(E-013)**, aquatic life uses are partially supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported, but there is a significant increasing trend in fecal coliform bacteria concentration. At the downstream site **(E-013A)**, aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions were noted at both sites, they were typical of values seen in such systems.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
EDISTO RIVER TOWN OF BRANCHVILLE PIPE #: 001 FLOW: 0.15 PIPE #: 001 FLOW: 0.60 (PROPOSED)	SC0047333 MINOR MUNICIPAL EFFLUENT EFFLUENT
PEN BRANCH TOWN OF BRANCHVILLE PIPE #: 001 FLOW: 0.15 WQL FOR NH3-N, DO, TRC, BOD5	SC0021113 MINOR MUNICIPAL WATER QUALITY

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
PALMETTO SAND COMPANY BRANCHVILLE MINE #1	0401-38 SAND

Growth Potential

There is a low to moderate potential for growth in this watershed. The Town of Branchville is located in the center of the watershed with U.S. Highway 78 and a rail line connecting it to the Towns of Bamberg and St. George, and U.S. Highway 21 and another rail line connecting it to the City of Orangeburg. The infrastructure is in place, but census data shows a 37% decline in population over the last decade.

03050205-020

(Cattle Creek)

General Description

Watershed 03050205-020 is located in Orangeburg and Dorchester Counties and consists primarily of ***Cattle Creek*** and its tributaries. The watershed occupies 42,982 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.04% urban land, 14.22% agricultural land, 10.58% scrub/shrub land, 0.95% barren land, 48.11% forested land, 26.09% forested wetland (swamp), and 0.01% water.

Cattle Creek originates near the Town of Bowman and accepts drainage from Sandy Run, Murray Branch, Mill Branch, and Big Branch before flowing into the Edisto River. There are a total of 56.6 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-108	W	FW	CATTLE CREEK AT S-18-19

Cattle Creek (E-108) - Aquatic life uses are partially supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
DORCHESTER COUNTY HARTZOG PIT	0412-18 SAND/CLAY

Growth Potential

There is a low potential for growth in this watershed.

03050205-030

(Edisto River)

General Description

Watershed 03050205-030 is located in Colleton and Dorchester Counties and consists primarily of the ***Edisto River*** and its tributaries from Cattle Creek to Indian Field Swamp. The watershed occupies 45,828 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chipley-Rains-Leon-Hobcaw-Lynchburg series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.74% urban land, 15.21% agricultural land, 2.77% scrub/shrub land, 0.85% barren land, 70.08% forested land, 9.07% forested wetland (swamp), 0.33% nonforested wetland (marsh), and 0.95% water.

This watershed accepts the drainage from the upstream reach of the Edisto River. This section of the river flows past Colleton State Park and accepts drainage from Brickhouse Branch, Crooked Creek, and Skull Branch. There are 59.3 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-014	S	FW	EDISTO RIVER AT US 15, S OF ST. GEORGE
E-086	P	FW	EDISTO RIVER AT S-18-29

Edisto River - There are two SCDHEC monitoring sites along this section of the Edisto River. Aquatic life uses are fully supported at the upstream site **(E-014)**, but there is a significant decreasing trend in pH and a significant increasing trend in turbidity. Recreational uses are fully supported, but there is a significant increasing trend in fecal coliform bacteria concentration. Aquatic life and recreational uses are fully supported at the downstream site **(E-086)**, but there are significant increasing trends in pH and turbidity.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***

EDISTO RIVER	SC0002020
SCE&G/CANADYS STATION	MAJOR INDUSTRIAL
PIPE #: 001,002,005 FLOW: MR	EFFLUENT
PIPE #: 003 FLOW: 1.18	EFFLUENT
PIPE #: 004 FLOW: 0.00	EFFLUENT
PIPE #: 006 FLOW: 3.79	EFFLUENT

Growth Potential

There is a low potential for growth projected in this watershed.

03050205-040

(Indian Field Swamp)

General Description

Watershed 03050205-040 is located in Dorchester and Orangeburg Counties and consists primarily of ***Indian Field Swamp*** and its tributaries. The watershed occupies 101,890 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Lynchburg-Rains-Hobcaw-Mouzon series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 2.17% urban land, 21.98% agricultural land, 8.17% scrub/shrub land, 1.18% barren land, 51.93% forested land, 14.20% forested wetland (swamp), 0.18% nonforested wetland (marsh), and 0.19% water.

Mill Branch and Snell Branch combine to form Indian Field Swamp, which eventually drains into the Edisto River. Downstream from the confluence, Dove Branch and Wadboo Branch enter the swamp, followed by Spring Branch, Big Branch, Tom and Kate Branch, Pineland Branch, Millpond Branch, and Gum Branch. Polk Swamp (Bear Branch, Cowtail Creek) flows past the Town of St. George and drains into Indian Field Swamp at the base of the watershed. There are a total of 144.1 stream miles in this watershed. Indian Field Swamp and Polk Swamp are classified FW* (Site specific standards - DO not less than 4.0 mg/l, pH between 5.0-8.5 SU), and the remaining streams are classified FW.

Water Quality

Station #	Type	Class	Description
E-016	P	FW*	POLK SWAMP AT S-18-180, 2 MI S OF ST. GEORGE
E-109	W	FW*	POLK SWAMP AT S-18-19
E-597	BIO	FW*	INDIAN FIELD SWAMP AT US 78
E-032	W	FW*	INDIAN FIELD SWAMP AT S-18-19

Indian Field Swamp - There are two monitoring sites along Indian Field Swamp, which was Class B until April, 1992. Aquatic life uses are fully supported at the upstream site **(E-597)** based on macroinvertebrate community data. At the downstream site **(E-032)**, aquatic life uses are fully supported, but there was a very high concentration of chromium measured in 1997. Recreational uses are fully supported.

Polk Swamp - There are two monitoring sites along Polk Swamp, which was Class B until April, 1992. At the upstream site **(E-016)**, aquatic life uses are fully supported based on macroinvertebrate community data, but there is a significant decreasing trend in dissolved oxygen and a very high concentration of chromium measured in 1996. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. At the downstream site **(E-109)**, aquatic life uses are fully supported. This is a

blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values seen at both sites. Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
TOM AND KATE BRANCH BLUE CIRCLE CEMENT CO. PIPE #: 001 FLOW: 3.0	SC0022586 MINOR INDUSTRIAL EFFLUENT
TOM AND KATE BRANCH TOWN OF HARLEYVILLE PIPE #: 001 FLOW: 0.120 PIPE #: 001 FLOW: 0.175 (PROPOSED) WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0038504 MINOR MUNICIPAL WATER QUALITY WATER QUALITY
POLK SWAMP TOWN OF ST. GEORGE PIPE #: 001 FLOW: 0.80 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0025844 MINOR MUNICIPAL WATER QUALITY

LAND APPLICATION *FACILITY NAME* *COMMENT*	*PERMIT #* *TYPE*
SPRAY FIELD UPPER DORCHESTER COUNTY WWTP	ND0074713 MINOR MUNICIPAL

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
PAUL W. JONES HAULING P&M MINE	0950-18 SAND
TRULUCK INDUSTRIES REEVES-EDISTO MINE	0973-18 SAND
PALMETTO SAND COMPANY INDIAN FIELD CREEK PLANT	0786-18 SAND

Growth Potential

Interstate 95 crosses US 78 near the Town of St. George in the center of the watershed. This interchange area has a high growth potential, particularly if US 78 is widened as proposed. The I-95 interchange with US 178 is another growth area. A rail line parallels Highway 78 through St. George and together with the presence of I-95, provides a high industrial growth potential.

03050205-050

(Edisto River)

General Description

Watershed 03050205-050 is located in Dorchester and Colleton Counties and consists primarily of the ***Edisto River*** and its tributaries from Indian Field Swamp to Four Hole Swamp. The watershed occupies 9,885 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chipley-Ogeechee-Leon-Albany-Rains series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.65% urban land, 9.84% agricultural land, 3.42% scrub/shrub land, 0.48% barren land, 73.89% forested land, 10.30% forested wetland (swamp), 0.45% nonforested wetland (marsh), and 0.97% water.

As a reach of the Edisto River, this watershed accepts the drainage from all streams entering the river upstream. This section of the Edisto River also accepts drainage from Poorly Branch. There are a total of 15.0 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-015	P	FW	EDISTO RIVER AT SC 61, AT GIVHANS FERRY STATE PARK

Edisto River - This watershed was unaccessible for monitoring purposes, so the uppermost site in watershed 03050205-060 **(E-015)** was used to represent the water quality of 03050205-050. Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards. In addition, there was a significant decreasing trend in pH and significant increasing trends in turbidity and total suspended solids. The phthalate ester, di-n-butylphthalate, was detected in the 1994 and 1996 sediment samples. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported, but there is a significantly increasing trend in fecal coliform bacteria concentration.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

There are currently no point source dischargers in this watershed.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
JF CLECKLEY & COMPANY CLECKLEY MINE #7	0484-18 SAND
TRULUCK INDUSTRIES GIVHANS PIT	0552-15 SAND

Growth Potential

There is a low potential for growth projected for this watershed.

03050205-060

(Edisto River and South Edisto River)

General Description

Watershed 03050205-060 is located in Colleton, Dorchester, and Charleston Counties and consists primarily of the ***Edisto River*** and the ***South Edisto River*** and their tributaries from Four Hole Swamp to the Atlantic Ocean. The watershed occupies 154,919 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bohicket-Chipley-Rains-Chisolm-Yauhannah series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.88% urban land, 3.81% agricultural land, 3.58% scrub/shrub land, 0.13% barren land, 65.24% forested land, 8.23% forested wetland (swamp), 10.21% nonforested wetland (marsh), and 7.92% water.

This lowest reach of the Edisto River receives the drainage from the upper reaches of the Edisto River and Four Hole Swamp. The Dawho River (03050205-070) enters the Edisto River and forms the South Edisto River, which drains into the Atlantic Ocean. There are a total of 102.9 stream miles and 13.6 square miles of estuarine areas in this watershed. The Edisto River is classified FW from its origin downstream to its intersection with U.S. Highway 17, and below this point to its confluence with the Dawho River, the river is classified ORW. Cold Water Branch, Deep Creek (Maple Cane Swamp, Horse Pen Branch), and Sandy Run (Big Bay Swamp, Craven Branch, Boston Branch) drain into the Edisto River at the top of the watershed. Further downstream near the Town of Jacksonboro, the Edisto River accepts drainage from Spooler Swamp, Bull Bridge Creek, Allen Meadow, Penny Creek (Adams Run), Horse Creek, and Ashe Creek.

The South Edisto River is classified ORW from its headwaters to Mud Creek, and below Mud Creek to the Atlantic Ocean the river is classified SFH. Mosquito Creek, Sampson Island Creek, and Alligator Creek are all classified ORW and drain into the upper portion of the South Edisto River. Mosquito Creek connects to the Ashepoo River (Savannah-Salkehatchie Basin) through Bull Cut, and the upper South Edisto River connects to watershed 03050205-070 through the Dawho River and Watts Cut (SFH). Further downstream, St. Pierre Creek accepts drainage from Bailey Creek, Shingle Creek (Milton Creek), Store Creek, and Fishing Creek (Sandy Creek) before draining into the South Edisto River. Big Bay Creek (SFH) enters downstream from Fishing Creek and accepts drainage from Mud Creek (ORW) and Scott Creek (ORW) near The Mound. Scott Creek also drains into the Atlantic Ocean via Jeremy Inlet (SFH).

There are several additional natural resource areas in the watershed including Givhans Ferry State Park near the top of the watershed, and Edisto Beach State Park at the base of the watershed. There are also numerous ponds and lakes (18-400 acres) owned privately and by the State (S.C. State Forestry Commission) for recreation and wildlife purposes.

Water Quality

Station #	Type	Class	Description
E-015	P	FW	EDISTO RIVER AT SC 61 AT GIVHANS FERRY STATE PARK
MD-119	P	FW/ORW	EDISTO RIVER AT US 17, 12.5 MI NW RAVENEL
MD-244	W	SFH	SOUTH EDISTO RIVER BELOW ST. PIERRE CREEK

Edisto River - There are two monitoring sites along this section of the Edisto River. At the upstream site **(E-015)** aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards. In addition, there is a significant decreasing trend in pH and significant increasing trends in turbidity and total suspended solids. The phthalate ester, di-n-butylphthalate, was detected in the 1994 and 1996 sediment samples. At the downstream site **(MD-119)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH and a significant increasing trend in turbidity. A very high concentration of lead was measured in the 1997 sediment sample, and P,P'DDT, P,P'DDD, and P,P'DDE were detected in the 1994 sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions at both sites for these parameters. Recreational uses are fully supported at both sites, but there is a significantly increasing trend in fecal coliform bacteria concentration.

South Edisto River (MD-244) - Aquatic life and recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
SANDY RUN	SC0041971
FOSTER DIXIANA/SANDY RUN MINE	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT
LAND APPLICATION	***PERMIT #***
FACILITY NAME	***TYPE***
SPRAY IRRIGATION	ND0063789
TOWN OF EDISTO BEACH/FAIRFIELD	MINOR MUNICIPAL
SPRAY IRRIGATION	ND0071510
JEREMY CAY	MINOR COMMUNITY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
GIVHANS FERRY STATE PARK/FAMILY EDISTO RIVER	18-307-1051 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BECKER MATERIALS, INC. SANDY RUN MINE	0755-15 SAND
BANKS CONSTRUCTION SANDPIT ROAD MINE	1076-18 SAND
BOHICKET CONSTRUCTION CO., INC. EDINGSVILLE ONE	1090-08 SAND/CLAY
PALMETTO SAND COMPANY HARTZ BLUFF MINE	0620-18 SAND
AMERICAN PEAT & ORGANICS, INC. TI-TI MINE	0173-15 PEAT

Water Supply

WATER USER (TYPE) *WATERBODY*	*REGULATED CAPACITY (MGD)* *PUMPING CAPACITY (GPM)*
WESTVACO CORP./KRAFT DIV.(I) EDISTO RIVER	36.288 15,000
CITY OF CHARLESTON (M) EDISTO RIVER	***** *****

Growth Potential

A high growth potential is projected for the upper portion of the watershed surrounding the Cottageville area. The Cottageville growth along U.S. Highway 17A to Charleston is one of the fastest growing areas in the state. There is a low to moderate growth potential for the lower portion of the watershed, primarily in the unincorporated areas centered around the Town of Edisto Beach. Much of the growth is tourism-based and thus elicits primarily seasonal influence on the area. Only a small proportion of the town is sewered and there are no plans to expand the sewer service area. However, the Town of Edisto Beach will extend sewer lines to serve areas where septic systems have failed (at owner expense). The ORW classification of most of the waters in this watershed prohibits new point source discharges of wastewater to surface waters. Growth that occurs will have to rely primarily on septic tanks and/or land application systems.

03050205-070

(North Edisto River)

General Description

Watershed 03050205-070 is located in Charleston County and consists primarily of the ***North Edisto River*** and its tributaries. The watershed occupies 110,310 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Yonges-Kiawah-Foxworth-Wadmalaw series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 1.34% urban land, 8.49% agricultural land, 7.39% scrub/shrub land, 0.47% barren land, 41.35% forested land, 1.40% forested wetland (swamp), 20.57% nonforested wetland (marsh), and 18.99% water.

The Dawho River joins with the Wadmalaw River to form the North Edisto River (ORW), which drains into the Atlantic Ocean. There are a total of 235.1 stream miles and 71.6 square miles of estuarine areas in this watershed. The Dawho River accepts drainage from the Edisto River watershed (03050205-060), Fishing Creek, and North Creek before merging with the Wadmalaw River. With the exception of North Creek (SFH), all these streams are classified ORW.

Upstream from the confluence, Church Creek (Raven Point Creek) flows into Wadmalaw Sound and is also connected to Bohicket Creek near Hoopstick Island. Also draining into the sound are the Stono River and Oyster House Creek. New Cut connects the Stono River to Church Creek. The Wadmalaw River flows out of Wadmalaw Sound and accepts drainage from Gibson Creek, Toogoodoo Creek (Lower Toogoodoo Creek, Swinton Creek), and Tom Point Creek (also known as McLeod Creek) before merging with the Dawho River. Tom Point Creek is connected to Toogoodoo Creek through Garden Creek. Church Creek is classified ORW from Wadmalaw Sound to Raven Point Creek, and SFH from Raven Point Creek to Hoopstick Island. All the remaining streams are classified ORW.

Downstream from the confluence, Whooping Island Creek (Sand Creek) and Russel Creek join to form Steamboat Creek (Long Creek), which drains into the North Edisto River. Also draining into the North Edisto River are Westbank Creek, Leadenwah Creek, Bohicket Creek (Adams Creek, Fickling Creek), Ocella Creek, South Creek (Townsend River, Frampton Creek), and Privateer Creek. Frampton Creek and Townsend Creek (ORW) also drain directly into the ocean via Frampton Inlet (ORW). The Intracoastal Waterway runs through Watts Cut and North Creek, down the Dawho River, up into the Wadmalaw River, through Wadmalaw Sound, and into the Stono River and the Catawba-Santee Basin.

Water Quality

Station #	Type	Class	Description
MD-120	P	ORW	DAWHO RIVER AT SC 174, 9 MI N OF EDISTO BEACH STATE PARK
MD-195	P	SFH	CHURCH CREEK AT SC 700, 1 MI SW OF CEDAR SPRINGS
MD-209	P	ORW	BOHICKET CREEK AT FICKLING CREEK
MD-210	S	ORW	BOHICKET CREEK MOUTH AT NORTH EDISTO RIVER
MD-211	S	ORW	N. EDISTO R. MOUTH BETWEEN KIAWAH IS. & BOTANY BAY IS.

North Edisto River (MD-211) - Aquatic life uses are fully supported, but there is a significant decreasing trend in pH and a significant increasing trend in turbidity. Recreational uses are also fully supported.

Dawho River (MD-120) - Aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards, including two very high concentrations of zinc measured in 1996. In addition, there is a significant decreasing trend in pH and a significant increasing trend in turbidity. This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. A high concentration of copper and a very high concentration of zinc were measured in the 1993 sediment sample. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Church Creek (MD-195) - Aquatic life uses are fully supported, but there are significant decreasing trends in dissolved oxygen concentration and pH, a significant increasing trend in turbidity, and a high concentration of zinc measured in 1993. This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. P,P'DDT and P,P'DDE, a metabolite of DDT, were detected in the 1995 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported.

Bohicket Creek - There are two monitoring sites along Bohicket Creek. At the upstream site **(MD-209)**, aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards. In addition, there are significant decreasing trends in dissolved oxygen concentration and pH, and a significant increasing trend in turbidity. At the downstream site **(MD-210)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. P,P' DDT was detected in the 1997 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported at both sites, but there is a significant increasing trend in fecal coliform concentration at MD-209. This is a tidally influenced system with significant marsh drainage, which are often characterized by naturally low dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values at both sites.

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
NORTH CREEK EDISTO SEAFARMS PIPE #: 002 & 003 FLOW: M/R STORMWATER	SC0040401 MINOR INDUSTRIAL EFFLUENT
OYSTER HOUSE CREEK YOUMANS GAS AND OIL PIPE #: 001 FLOW: 0.000005	SC0044270 MINOR INDUSTRIAL EFFLUENT
LOWER TOOGOODOO CREEK BAPTIST HILL HIGH SCHOOL PIPE #: 001 FLOW: 0.01 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0029386 MINOR DOMESTIC WATER QUALITY
CHURCH CREEK UNUSUAL ATTITUDES/CHURCHILL MN PIPE #: 001 FLOW: 0.048	SC0047597 MINOR INDUSTRIAL EFFLUENT
WEE CREEK USF&WL/BEARS BLUFF HATCHERY PIPE #: 001 FLOW: M/R	SC0047848 MINOR INDUSTRIAL EFFLUENT
RUSSEL CREEK SUNBELT SEAFOOD FARM PIPE #: 001 FLOW: 0.072 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0041688 MINOR INDUSTRIAL WATER QUALITY
FRAMPTON CREEK EDISTO SEAFARMS/FRAMPTON CREEK HATCHERY PIPE #: 001 FLOW: M/R WQL FOR NH3-N, BOD5, DO	SC0047678 MINOR INDUSTRIAL WATER QUALITY
LAND APPLICATION **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAY IRRIGATION TOWN OF SEABROOK ISLAND	ND0063347 DOMESTIC

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP HO-NON-WAH/RESIDENT FICKLING CREEK	10-305-0004 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BANKS CONSTRUCTION COMPANY JOHNS ISLAND #1	0122-10 SAND
LAND ASSOCIATES, INC. LAND ASSOCIATES SAND MINE	0215-10 SAND/CLAY
RENTZ LANDCLEARING RENTZ MINE	0994-08 SAND/CLAY
CHARLESTON CO. PUBLIC WORKS DEPT. EDISTO PIT	1038-08 SAND/CLAY

Growth Potential

There is a low potential for growth in this rural agricultural-based watershed. The ORW classification of most of the waters in this watershed prohibits new point source discharges of wastewater to surface waters. Growth that occurs will have to rely on septic tanks and/or land application (ND) systems.

03050206-010

(Four Hole Swamp)

General Description

Watershed 03050206-010 is located in Orangeburg and Calhoun Counties and consists primarily of ***Four Hole Swamp*** and its tributaries from its origin to Bull Swamp. The watershed occupies 51,469 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Dothan-Rains-Wagram-Lakeland series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 3.09% urban land, 41.96% agricultural land, 12.11% scrub/shrub land, 1.04% barren land, 23.83% forested land, 17.56% forested wetland (swamp), and 0.41% water.

This section of Four Hole Swamp originates near the Town of St. Matthews and flows through Bull Pond before accepting drainage from Bay Branch, Flea Bite Creek, Cook Branch, Gin Branch, and Bull Swamp (Little Bull Creek, Gramling Creek, Little Bull Swamp). There are a total of 55.2 stream miles in this watershed. Four Hole Swamp, Bull Swamp, and Gramling Creek are classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5), and the remaining streams are classified FW.

Water Quality

Station #	Type	Class	Description
E-022	S	FW*	GRAMLING CK AT CULVERT ON SC 33, 2 MI E OF ORANGEBURG
E-076	S	FW	LITTLE BULL CREEK AT SC 33 BELOW UTICA TOOL CO
E-590	BIO	FW*	BULL SWAMP AT SR 154
E-589	BIO	FW*	GRAMLING CREEK AT SR 154
E-059	P	FW*	FOUR HOLE SWAMP AT S-38-50, 5.2 MI SE OF CAMERON

Four Hole Swamp (E-059) - This stream was Class B until April, 1992. Aquatic life uses are not supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, including a very high concentration of copper measured in 1993, a high concentration of zinc measured in 1993, and very high concentrations of zinc measured in 1994 and 1996. In addition, there is a significant decreasing trend in pH, a significant increasing trend in turbidity, and very high concentrations of cadmium, chromium, and lead measured in 1993. P,P'DDT was detected in the 1993 and 1995 sediment samples, and P,P'DDE (a metabolite of DDT) was detected in the 1993, 1995, and 1996 samples. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Little Bull Creek (E-076) - This stream was Class B until April, 1992. Aquatic life uses are partially supported based on macroinvertebrate community data. In addition, there are dissolved oxygen

excursions, a significant decreasing trend in pH, and a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Bull Swamp (E-590) - This stream was Class B until April, 1992. Aquatic life uses are partially supported based on macroinvertebrate community data.

Gramling Creek - There are two monitoring sites along Gramling Creek, which was Class B until April, 1992. At the upstream site **(E-022)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. This is also a secondary monitoring station and sampling is intentionally biased towards periods with the potential for low dissolved oxygen concentrations. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions; however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. At the downstream site **(E-589)**, aquatic life uses are partially supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
FOUR HOLE SWAMP WESTVACO CORP./CAMERON LUMBER MILL PIPE #: 001 FLOW: M/R STORMWATER	SCR000889 MINOR INDUSTRIAL EFFLUENT
GRAMBLING CREEK ROOSEVELT GARDEN APTS PIPE #: 001 FLOW: 0.0676	SC0029645 MINOR DOMESTIC WATER QUALITY
GRAMBLING CREEK AMERICAN YARD PRODUCTS PIPE #: 001-005 FLOW: M/R	SCG250130 MINOR INDUSTRIAL EFFLUENT

LAND APPLICATION FACILITY NAME	*PERMIT # TYPE*
TILE FIELD EASTWOOD SD	ND0067288 MINOR COMMUNITY

Mining Activities

MINING COMPANY MINE NAME	*PERMIT # MINERAL*
BLUE CIRCLE, INC. JAMISON CLAY PIT	0206-38 CLAY
T&N ENTERPRISES ELLOREE MINE	0942-38 CLAY

Growth Potential

Interstate 26 bisects the watershed with interchanges at U.S. Highway 601 and S.C. Highway 33 and should encourage some growth around the interchanges. Rail lines parallel Highways 601 and 33, all of which run out of the City of Orangeburg. U.S. Highway 176 parallels I-26 and runs through the Town of Cameron.

03050206-020

(Four Hole Swamp)

General Description

Watershed 03050206-020 is located in Orangeburg and Calhoun Counties and consists primarily of ***Four Hole Swamp*** and its tributaries from Bull Swamp to Cow Castle Creek. The watershed occupies 72,460 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Goldsboro-Hobcaw-Lynchburg-Mouzon series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 4.61% urban land, 40.97% agricultural land, 10.94% scrub/shrub land, 2.16% barren land, 25.76% forested land, 15.38% forested wetland (swamp), 0.01% nonforested wetland (marsh), and 0.17% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp also accepts drainage from Middle Pen Swamp, Polk Spring Creek, Indian Camp Branch, Goodbys Swamp (Keller Branch), Mill Branch, and Bush Branch. There are a total of 112.7 stream miles in this watershed. Four Hole Swamp and Middle Pen Swamp are classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5), and the remaining streams are classified FW.

Water Quality

Station #	Type	Class	Description
E-111	W	FW*	FOUR HOLE SWAMP AT SC 210

Four Hole Swamp (E-111) - This stream was Class B until April, 1992. Aquatic life and recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
MIDDLE PEN SWAMP DITCH DAYS INN/ORANGEBURG PIPE #: 001 FLOW: 0.02 WQL FOR NH3-N, DO, TRC, BOD5	SC0024422 MINOR DOMESTIC WATER QUALITY

MIDDLE PEN SWAMP DITCH NORTHWOOD ESTATES/MID-CAROLINA PIPE #: 001 FLOW: 0.0725 WQL FOR NH3-N, DO, TRC, BOD5	SC0030937 MINOR DOMESTIC WATER QUALITY
MIDDLE PEN SWAMP BROOKLAND PLANTATION HOME PIPE #: 001 FLOW: 0.009	SC0032671 MINOR COMMUNITY EFFLUENT

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BLUE CIRCLE, INC. BLUE CIRCLE CLAY PIT	0939-38 CLAY

Growth Potential

Interstate 26 crosses this watershed and should promote some growth around the interchange of U.S. Highway 301 out of the City of Orangeburg. U.S. Highway 176 also crosses U.S. Highway 301 as it parallels I-26.

03050206-030

(Cow Castle Creek)

General Description

Watershed 03050206-030 is located in Orangeburg County and consists primarily of ***Cow Castle Creek*** and its tributaries. The watershed occupies 42,569 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Lynchburg-Rains series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.77% urban land, 28.02% agricultural land, 14.53% scrub/shrub land, 1.25% barren land, 40.82% forested land, 13.60% forested wetland (swamp), and 0.01% water.

Cow Castle Creek originates near the City of Orangeburg and accepts drainage from Crum Branch, Buck Branch, and Patrick Branch before flowing into Four Hole Swamp. There are a total of 64.5 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-050	W	FW	COW CASTLE CREEK AT S-38-170

Cow Castle Creek (E-050) - This stream was Class B until April, 1992. Aquatic life uses are fully supported. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
COW CASTLE CREEK TOWN OF BOWMAN PIPE #: 001 FLOW: 0.236 WQL FOR NH3-N, BOD5	SC0040037 MINOR MUNICIPAL WATER QUALITY

Growth Potential

Interstate 26 crosses this watershed and should promote some growth around the two interchanges near the Town of Bowman. U.S. Highway 178 parallels I-26 and runs through Bowman. At the top of the watershed, a growth corridor runs from the City of Orangeburg to the Town of Rowesville along U.S. Highway 21, as does a rail line.

03050206-040

(Four Hole Swamp)

General Description

Watershed 03050206-040 is located in Orangeburg and Dorchester Counties and consists primarily of ***Four Hole Swamp*** and its tributaries from Cow Castle Creek to Dean Swamp. The watershed occupies 66,408 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Rains-Lynchburg-Hobcaw series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.91% urban land, 21.41% agricultural land, 8.58% scrub/shrub land, 0.38% barren land, 53.82% forested land, 13.41% forested wetland (swamp), 0.13% nonforested wetland (marsh), and 0.36% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp also receives drainage from the Cow Castle Creek watershed (03050206-030) and the Providence Swamp watershed (03050206-050). Target Swamp enters this watershed downstream of the Providence Swamp drainage followed by Spring Branch and Mill Branch. Further downstream Huttos Lake and Rowser Lake drain into Four Hole Swamp. Home Branch originates near the Town of Holly Hill and flows past the Town of Four Holes before entering the swamp. Mill Run and Dam Branch drain into the swamp at the base of the watershed. There are a total of 84.8 stream miles in this watershed. Four Hole Swamp is classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5), and the remaining streams are classified FW.

Water Quality

Station #	Type	Class	Description
E-112	W	FW*	FOUR HOLE SWAMP AT SC 453

Four Hole Swamp (E-112) - This stream was Class B until April, 1992. Aquatic life uses are partially supported due to dissolved oxygen excursions. This is a blackwater system, which are often characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
FOUR HOLE SWAMP GA PACIFIC/HOLLY HILL PIPE #: 002 FLOW: 1.000 PIPE #: 003 FLOW: 0.038 WETLAND; WQL FOR NH3-N, DO, TRC, BOD5	SC0001147 MINOR INDUSTRIAL EFFLUENT EFFLUENT
FOUR HOLE SWAMP GIANT CEMENT CO. PIPE #: 001 FLOW: 0.0073 PIPE #: 002 FLOW: 2.494 PIPE #: 004 FLOW: 0.140 PIPE #: 002 FLOW: M/R WETLAND	SC0022667 MINOR INDUSTRIAL EFFLUENT EFFLUENT EFFLUENT EFFLUENT
HOME BRANCH HOLNAM, INC. PIPE #: 001 FLOW: 8.000 PIPE #: 001A FLOW: 0.002 WETLAND	SC0002992 MINOR INDUSTRIAL EFFLUENT EFFLUENT
HUTTOS LAKE GIANT CEMENT CO. PIPE #: 003 FLOW: 0.545 PIPE #: 004 FLOW: 0.140	SC0022667 MINOR INDUSTRIAL EFFLUENT EFFLUENT

LAND APPLICATION *FACILITY NAME*	*PERMIT #* *TYPE*
SPRAY IRRIGATION CITY OF HOLLY HILL	ND0063380 MINOR MUNICIPAL

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
GIANT CEMENT CO. C&D LANDFILL	IWP-244 NOT YET OPEN
GA PACIFIC INDUSTRIAL	383304-1601 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BLUE CIRCLE INC. EVANS PIT	1087-38 CLAY

HOLNAM, INC.	0054-38
MARL & CLAY QUARRY	LIMESTONE

Water Supply

WATER USER (TYPE) / *WATERBODY*	*REGULATED CAPACITY (MGD)* / *PUMPING CAPACITY (GPM)*
GIANT CEMENT CO.-HARLEYVILLE (I)	4.608
FOUR HOLE SWAMP	3,200

Growth Potential

Interstates 95 and 26 cross in this watershed and should promote some growth around the following interchanges: I-95 & I-26, I-95 & U.S. Highway 178, and I-26 & S.C. Highway 15; U.S. Highway 176 crosses a rail line in the City of Holly Hill.

03050206-050)

(Providence Swamp)

General Description

Watershed 03050206-050 is located in Orangeburg County and consists primarily of ***Providence Swamp*** and its tributaries. The watershed occupies 38,648 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Goldsboro-Dothan-Noboco-Hobcaw series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.03% urban land, 49.57% agricultural land, 11.62% scrub/shrub land, 0.40% barren land, 36.17% forested land, 2.01% forested wetland (swamp), 0.09% nonforested wetland (marsh), and 0.11% water.

The Providence Swamp accepts drainage from White Cane Branch, Cantey Branch (Ball Branch), Buck Branch, Jack Branch, and Horse Range Swamp (Kettle Branch, Bachelor Branch) before flowing into Four Hole Swamp. There are a total of 51.0 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-051	P	FW	PROVIDENCE SWAMP AT E FRONTAGE RD TO I-95
E-052	W	FW	HORSE RANGE SWAMP AT US 176

Providence Swamp (E-051) - This stream was Class B until April, 1992. Aquatic life uses are fully supported, but there was a significant decreasing trend in dissolved oxygen and a high concentration of zinc measured in 1996. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

Horse Range Swamp (E-052) - This stream was Class B until April, 1992. Aquatic life uses are fully supported. This is a blackwater system, which are often characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. Recreational uses are partially supported due to fecal coliform bacteria excursions.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

LAND APPLICATION FACILITY NAME	*PERMIT # TYPE*
TILE FIELD	ND0067130
I-95 TRUCK STOP	MINOR COMMUNITY

Growth Potential

There is a low potential for growth in this watershed; however, I-95 crosses the watershed and some growth may occur around the interchanges of I-95 & U.S. Highway 176 and I-95 & U.S. Highway 15.

03050206-060

(Dean Swamp)

General Description

Watershed 03050206-060 is located in Orangeburg and Berkeley Counties and consists primarily of ***Dean Swamp*** and its tributaries. The watershed occupies 67,812 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Hobcaw series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.40% urban land, 21.65% agricultural land, 10.99% scrub/shrub land, 0.25% barren land, 59.26% forested land, 7.16% forested wetland (swamp), 0.28% nonforested wetland (marsh), and 0.01% water.

Sandy Run (Moon Savanna) originates near the Town of Eutawville and accepts the drainage of Cedar Swamp (Toney Bay) before merging with Black Creek (Little Black Creek) to form Dean Swamp, which also accepts the drainage of Briner Branch before draining into Four Hole Swamp. There are a total of 102.9 stream miles in this watershed, all classified FW.

Water Quality

Station #	Type	Class	Description
E-596	BIO	FW	CEDAR SWAMP AT CEMENT BRIDGE RD OFF SR 640
E-030	W	FW	DEAN SWAMP AT US 176

Dean Swamp (E-030) - This stream was Class B until April, 1992. Aquatic life uses are fully supported. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentrations. Natural conditions in this stream may have contributed to the observed low dissolved oxygen values. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Cedar Swamp (E-596) - This stream was Class B until April, 1992. Aquatic life uses are fully supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM
FACILITY NAME
PERMITTED FLOW @ PIPE (MGD)
COMMENT

NPDES#
TYPE
LIMITATION

SANDY RUN MARTIN MARIETTA/ORANGEBURG PIPE #: 001 FLOW: M/R	SC0042862 MINOR INDUSTRIAL EFFLUENT
SANDY RUN TRIBUTARY FRIGIDAIRE HOME PRODUCTS PIPE #: 001-005 FLOW: M/R	SCG250130 MINOR INDUSTRIAL EFFLUENT
BRINER BRANCH CHEVRON FOOD MART/HOLLY HILL PIPE #: 001 FLOW: 0.036 WQL FOR BOD5, TOXICS	SC0043087 MINOR INDUSTRIAL WATER QUALITY

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARTIN MARIETTA AGGREGATES BERKELEY QUARRY	0098-08 LIMESTONE
SOUTHERN AGGREGATES ORANGEBURG QUARRY	0802-38 LIMESTONE

Growth Potential

There is a low potential for growth in this watershed. A rail line and S.C. Highway 453 runs from the City of Holly Hill to the Town of Eutawville. This road is bisected by U.S. Highway 176 in the City of Holly Hill.

03050206-070

(Four Hole Swamp)

General Description

Watershed 03050206-070 is located in Dorchester and Berkeley Counties and consists primarily of ***Four Hole Swamp*** and its tributaries from Dean Swamp to its confluence with the Edisto River. The watershed occupies 78,518 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Hobcaw-Mouzon-Albany-Daleville-Rains series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.70% urban land, 9.27% agricultural land, 4.12% scrub/shrub land, 0.33% barren land, 68.72% forested land, 16.22% forested wetland (swamp), 0.25% nonforested wetland (marsh), and 0.39% water.

As a reach of Four Hole Swamp, this watershed accepts the drainage from all streams entering the swamp system upstream. This section of Four Hole Swamp accepts drainage from Merkel Branch (Lake Merkel), Santee Branch (Rock Branch), and Walnut Branch (Coldwater Branch, Little Walnut Branch, Cane Branch, Crawford Branch, Lang Branch, Deep Branch, Marshall Branch) near the Town of Dorchester. Halfway Gut Creek enters the swamp next, followed by Timothy Creek, which flows past the Town of Ridgeville. Powder Horn Branch drains into the swamp at the base of the watershed. There are a total of 92.0 stream miles in this watershed. Four Hole Swamp is classified FW* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5), and the remaining streams are classified FW. The Francis Beidler Forest, a nature preserve, is another natural resource in the watershed.

Water Quality

Station #	Type	Class	Description
E-100	P	FW*	FOUR HOLE SWAMP AT US 78, E OF DORCHESTER
E-015A	W	FW*	FOUR HOLE SWAMP AT S-18-19

Four Hole Swamp - There are two monitoring sites along this section of Four Hole Swamp, which was Class B until April, 1992. At the upstream site **(E-100)**, aquatic life uses are fully supported, but there is a significant decreasing trend in pH and significant increasing trends in turbidity and total suspended solids. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. A very high concentration of copper and a high concentration of lead were measured in the 1995 sediment sample. The pesticide isophorone was detected in the 1996 sediment sample, and the phthalate ester di-n-butylphthalate was detected in the 1994 sample. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentration. At the downstream site **(E-015A)**, aquatic life uses are fully supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the streams within this watershed (see advisory p.31).

Permitted Activities

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
TIMOTHY CREEK SHOWA DENKO CARBON INDUSTRIES PIPE #: 001 FLOW: 0.58 (PROPOSED) WETLAND; WQL FOR DO, TRC, BOD5	SC0038555 MAJOR INDUSTRIAL WATER QUALITY
LAND APPLICATION *FACILITY NAME*	*PERMIT #* *TYPE*
SPRAY FIELD McDOUGALL YOUTH CENTER	ND0074098 MINOR COMMUNITY

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
SANDY PINES LANDFILL MUNICIPAL	182401-1101 CLOSED
OAKRIDGE LANDFILL SUBTITLE D	182400-1101 ACTIVE
SCA LANDFILL MUNICIPAL	DWP-080 CLOSED
OLD DORCHESTER COUNTY (5-6 SITES) MUNICIPAL	DWP-080 CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
DORCHESTER DIRT CO., INC. DIAMOND MINE #3	1027-18 SAND/CLAY
D&A PARTNERSHIP CARTER MINE	1047-18 SAND/CLAY
D&A PARTNERSHIP GIVENS MINE	1085-18 SAND/CLAY
SANDERS BRO. ASSOC. BIG OAK MINE	1031-18 SAND

BLUE CIRCLE CEMENT CO. HARLEYVILLE QUARRY	0110-18 LIMESTONE
GIANT CEMENT CO. HARLEYVILLE MINE	0120-18 LIMESTONE
DORCHESTER MINING, INC. DORCHESTER MINE	0923-18 SAND/CLAY
CHAMBERS OAKRIDGE LANDFILL, INC. DORCHESTER DIRT PIT	0530-18 SAND/CLAY
MORGAN CORPORATION MORGAN MINE	1000-18 SAND/CLAY
ACD, A PARTNERSHIP RIDGEVILLE MINE	0870-18 CLAY

Growth Potential

Interstate 26 bisects this watershed and some growth may occur near the interchanges at the Towns of Harleyville and Ridgeville. A rail line and U.S. Highway 178/78 parallels I-26; another rail line crosses Highway 78 at S.C. Highway 453.

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Public Participation Summary

The **Edisto River** Watershed Workshop was held in Orangeburg on October 28, 1997. We gathered to discuss three questions: (1.) What are your water quality concerns for the watersheds (or waterbodies) in the Edisto River Basin? (2.) What do you see as the contributing factors (sources) to the impaired waters in the watersheds of the Edisto River Basin? (3.) What efforts are needed to address these identified water quality concerns and problems? The complete listing of concerns and comments from the workshop follows.

Water Quality Concerns:

Salt water intrusion due to excess aquifer depletion
Human contact with fecal coliform
Wetlands degradation
Nonpoint source pollution from golf courses, agriculture, forestry, and other land disturbing activities
Lack of BMP implementation in industrial, agricultural, and other land uses
Mercury and fecal coliform bacteria levels in rivers
Testing for drinking water parameters in surface water samples
Better monitoring of point source discharges above drinking water intakes
Increased communication to drinking water plants about potential point source impacts
New monitoring stations
Impacts from livestock in streams
Including accurate data from storm events and nonpoint source pollution into wasteload models
Outreach and education efforts to outfitters and recreational users of the Edisto River
Streambank erosion as a result of wave energy from boat traffic
Mercury levels in fish
Contamination and depletion of aquifers
Better monitoring of aquifers

Contributing Factors to 303(d) Impaired Waters

Industrial and municipal point sources in the North Edisto River
Agricultural runoff in Cow Castle Creek
Fishing degradation in Bull Swamp
Sedimentation in the Edisto River form silviculture activities
Fecal contamination from septic tanks, dog kennels, and other runoff
Discharge of boat waste into Lake Murray and Intracoastal Waterway
Determining fecal coliform bacteria sources
Pesticides and PCB's in Ace Basin sediments
Relating air impacts to water quality
The interbasin transfer of polluted waters
Wastewater collection system overflows

Efforts needed

Making water quality data available through the Internet

NPDES municipal stormwater regulation expanded to include smaller municipalities

Increased public and professional awareness and education, targeting landscapers, septic tank maintenance, and water conservation

More agricultural demonstration projects

Increased monitoring during storm events

More 'Friends of' groups for waterbodies

Improved BMP usage

Contaminant source identification

Better intra-agency cooperation

Finding alternative water supplies

Developing watershed runoff models

Water Quality Trends and Status by Station

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

- P = Primary station, sampled monthly all year round
- S = Secondary station, sampled monthly May - October
- P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
- W = Special watershed station added for the Saluda Basin study
- BIO = Indicates macroinvertebrate community data assessed

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)		
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	NH3	Ammonia (mg/l)
pH	pH (SU)	CD	Cadmium (ug/l)
TP	Total Phosphorus (mg/l)	CR	Chromium (ug/l)
TN	Total Nitrogen (mg/l)	CU	Copper (ug/l)
TURB	Turbidity (NTU)	PB	Lead (ug/l)
TSS	Total Suspended Solids (mg/l)	HG	Mercury (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	NI	Nickel (ug/l)
		ZN	Zinc (ug/l)

Statistical Abbreviations:

N For standards compliance, number of surface samples collected between January, 1993 and December, 1997
For trends, number of surface samples collected between January, 1983 and December, 1997

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples which contravened the applied standard

MED For heavy metals with a human health criterion, this is the median of all surface samples between January, 1993 and December, 1997. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January, 1993 and December, 1997

Key to Trends:

- D Statistically significant decreasing trend in parameter concentration
- I Statistically significant increasing trend in parameter concentration
- * No statistically significant trend
- Blank Insufficient data to test for long term trends

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION				DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	pH	N	MAG
03050203010																				
E-091	P	CHINQUAPIN CK	FW	59	0	0		*	164		D	179	-0.1	59	0	0		D	179	-0.02
E-601	BIO	CHINGUAPIN CK	FW																	
E-101	S	LIGHTWOOD KNOT CK	FW	29	0	0		*	63		I	64	0.1	29	6	21	5.7	*	64	
E-600	BIO	LIGHTWOOD KNOT CK	FW																	
03050203020																				
E-084	SE	N FORK EDISTO RVR	FW	12	0	0								12	2	17	6			
E-102	SE	N FORK EDISTO RVR	FW	12	0	0								12	4	33	5.4			
03050203030																				
E-599	BIO	BLACK CREEK	FW																	
E-103	SE	BLACK CK	FW	13	0	0								13	7	54	5.7			
03050203040																				
E-092	P	N FORK EDISTO RVR	FW	59	0	0		*	161		D	172	-0.063	60	18	30	5.7	I	171	0.05
E-104	SE	N FORK EDISTO RVR	FW	12	0	0								12	4	33	5.8			
03050203050																				
E-591	BIO	BULL SWAMP CK	FW																	
E-034	S	BULL SWAMP CK	FW	30	22	73	3.8	I	79	0.125	*	85		30	22	73	5.6	I	85	0.028
E-035	S	BULL SWAMP CK	FW	30	0	0		I	81	0.05	*	82		30	8	27	5.6	*	87	
E-042	SE/BIO	BULL SWAMP CK	FW	12	0	0								12	2	17	5.9			
03050203060																				
E-593	BIO	GREAT BRANCH	FW																	
E-099	P	N FORK EDISTO RVR	FW	62	0	0		*	167		D	173	-0.06	62	18	29	5.4	I	178	0.04
03050203070																				
E-105	SE	CAW CAW SWAMP	FW*	12	0	0								12	0	0				
03050203080																				
E-007	P	N FORK EDISTO RVR	FW	59	0	0		*	113		*	118		59	12	20	5.8	*	121	
E-007A	S	N FORK EDISTO RVR	FW	30	1	3	4.9	*	80		*	85		30	6	20	5.8	I	87	0.029
E-007B	S	N FORK EDISTO RVR	FW	30	0	0		I	79	0.05	*	84		30	4	13	5.8	*	86	
E-007C	P	N FORK EDISTO RVR	FW	60	1	2	4.8	I	111	0.046	*	115		60	5	8	5.7	*	118	
E-008	P/BIO	N FORK EDISTO RVR	FW	60	0	0		I	171	0.088	D	171	-0.067	60	4	7	5.9	*	183	
E-008A	SE	N FORK EDISTO RVR	FW	12	0	0								12	2	17	5.9			

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TRENDS											
				TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03050203010															
E-091	P	CHINQUAPIN CK	FW	D	171	-0.03	I	149	0.031	*	177				
E-601	BIO	CHINGUAPIN CK	FW												
E-101	S	LIGHTWOOD KNOT CK	FW	D	65	-0.001				*	63				
E-600	BIO	LIGHTWOOD KNOT CK	FW												
03050203020															
E-084	SE	N FORK EDISTO RVR	FW												
E-102	SE	N FORK EDISTO RVR	FW												
03050203030															
E-599	BIO	BLACK CREEK	FW												
E-103	SE	BLACK CK	FW												
03050203040															
E-092	P	N FORK EDISTO RVR	FW	D	171	-0.001	*	152		I	173	0.175			
E-104	SE	N FORK EDISTO RVR	FW												
03050203050															
E-591	BIO	BULL SWAMP CK	FW												
E-034	S	BULL SWAMP CK	FW	D	84	0				I	83	0.05			
E-035	S	BULL SWAMP CK	FW	D	81	-0.002				I	81	0.117			
E-042	SE/BIO	BULL SWAMP CK	FW												
03050203060															
E-593	BIO	GREAT BRANCH	FW												
E-099	P	N FORK EDISTO RVR	FW	D	175	-0.001	*	147		I	175	0.238			
03050203070															
E-105	SE	CAW CAW SWAMP	FW*												
03050203080															
E-007	P	N FORK EDISTO RVR	FW	D	121	-0.003	*	60		I	177	0.217			
E-007A	S	N FORK EDISTO RVR	FW	D	85	-0.002				I	84	0.325			
E-007B	S	N FORK EDISTO RVR	FW	D	84	-0.007				I	83	0.283			
E-007C	P	N FORK EDISTO RVR	FW	D	115	-0.009	I	61	0.023	I	114	0.242			
E-008	P/BIO	N FORK EDISTO RVR	FW	D	173	-0.008	*	150		I	173	0.192	D	152	-0.126
E-008A	SE	N FORK EDISTO RVR	FW												

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.	CU N	CU EXC.	CU %	ZN N	ZN EXC.	ZN %
03050203010																			
E-091	P	CHINQUAPIN CK	FW	456.94	59	35	59	807	*	176		56	0	21	1	5	21	0	0
E-601	BIO	CHINGUAPIN CK	FW																
E-101	S	LIGHTWOOD KNOT CK	FW	48.08	25	3	12	1890	D	66	-17			5	0	0	5	0	0
E-600	BIO	LIGHTWOOD KNOT CK	FW																
03050203020																			
E-084	SE	N FORK EDISTO RVR	FW	68.16	12	0	0					11	0	4	0	0	4	0	0
E-102	SE	N FORK EDISTO RVR	FW	111.49	12	1	8	600				10	0	4	0	0	4	0	0
03050203030																			
E-599	BIO	BLACK CREEK	FW																
E-103	SE	BLACK CK	FW	87.08	11	0	0					12	0	4	0	0	4	0	0
03050203040																			
E-092	P	N FORK EDISTO RVR	FW	182	60	7	12	660	I	172	6.67	59	0	21	3	14	21	4	19
E-104	SE	N FORK EDISTO RVR	FW	101.67	11	0	0					12	0	4	0	0	4	0	0
03050203050																			
E-591	BIO	BULL SWAMP CK	FW																
E-034	S	BULL SWAMP CK	FW	194.48	28	5	18	702	*	86				1	0	0	1	0	0
E-035	S	BULL SWAMP CK	FW	271.3	28	6	21	1242	*	83				10	0	0	10	1	10
E-042	SE/BIO	BULL SWAMP CK	FW	75.02	12	0	0					12	0	4	0	0	4	0	0
03050203060																			
E-593	BIO	GREAT BRANCH	FW																
E-099	P	N FORK EDISTO RVR	FW	173.19	62	7	11	420	I	175	5.96	56	0	20	2	10	20	0	0
03050203070																			
E-105	SE	CAW CAW SWAMP	FW*	113.85	12	0	0					12	0	4	0	0	4	0	0
03050203080																			
E-007	P	N FORK EDISTO RVR	FW	182.57	59	6	10	628	I	117	9.05	54	0	20	1	5	20	0	0
E-007A	S	N FORK EDISTO RVR	FW	206.32	30	4	13	558	I	84	8.14	1	0						
E-007B	S	N FORK EDISTO RVR	FW	179.95	30	4	13	505	I	83	5.29	1	0						
E-007C	P	N FORK EDISTO RVR	FW	109.55	60	3	5	580	*	113		57	0	21	1	5	21	0	0
E-008	P/BIO	N FORK EDISTO RVR	FW	119.34	90	3	5	507	*	171		58	0	21	1	5	21	2	10
E-008A	SE	N FORK EDISTO RVR	FW	84.91	12	0	0					12	0	4	0	0	4	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD MED.	CD %	CR N	CR EXC.	CR MED.	CR %	PB N	PB EXC.	PB MED.	PB %	HG N	HG EXC.	HG MED.	HG %	NI N	NI EXC.	NI %
03050203010																						
E-091	P	CHINQUAPIN CK	FW	21	0	DL	0	21	0	DL	0	21	1	DL	5	20	0	DL	0	21	0	0
E-601	BIO	CHINGUAPIN CK	FW																			
E-101	S	LIGHTWOOD KNOT CK	FW	5	0	DL	0	5	0	DL	0	5	0	DL	0	5	0	DL	0	5	0	0
E-600	BIO	LIGHTWOOD KNOT CK	FW																			
03050203020																						
E-084	SE	N FORK EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
E-102	SE	N FORK EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050203030																						
E-599	BIO	BLACK CREEK	FW																			
E-103	SE	BLACK CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050203040																						
E-092	P	N FORK EDISTO RVR	FW	21	0	DL	0	21	0	DL	0	21	0	DL	0	20	0	DL	0	21	0	0
E-104	SE	N FORK EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050203050																						
E-591	BIO	BULL SWAMP CK	FW																			
E-034	S	BULL SWAMP CK	FW	1	0	DL	0	1	0	DL	0	1	0	DL	0	1	0	DL	0	1	0	0
E-035	S	BULL SWAMP CK	FW	10	0	DL	0	10	0	DL	0	10	0	DL	0	9	0	DL	0	10	0	0
E-042	SE/BIO	BULL SWAMP CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050203060																						
E-593	BIO	GREAT BRANCH	FW																			
E-099	P	N FORK EDISTO RVR	FW	20	0	DL	0	20	0	DL	0	20	0	DL	0	20	1	DL	5	20	0	0
03050203070																						
E-105	SE	CAW CAW SWAMP	FW*	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050203080																						
E-007	P	N FORK EDISTO RVR	FW	20	0	DL	0	20	1	DL	5	20	0	DL	0	19	0	DL	0	20	0	0
E-007A	S	N FORK EDISTO RVR	FW																			
E-007B	S	N FORK EDISTO RVR	FW																			
E-007C	P	N FORK EDISTO RVR	FW	21	0	DL	0	21	0	DL	0	21	0	DL	0	21	0	DL	0	21	0	0
E-008	P/BIO	N FORK EDISTO RVR	FW	21	0	DL	0	21	0	DL	0	21	0	DL	0	20	0	DL	0	21	0	0
E-008A	SE	N FORK EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION				DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	pH	N	MAG
03050204010																				
E-001	S	FIRST BRANCH	FW	30	5	17	3.6	*	68		D	67	-0.15	30	1	3	5.9	D	68	-0.05
E-002	S	S FORK EDISTO RVR	FW	30	0	0		I	78	0.174	D	79	-0.289	30	0	0		D	84	-0.045
E-090	P/BIO	S FORK EDISTO RVR	FW	60	0	0		*	164		D	177	-0.067	60	1	2	5.8	D	178	-0.044
E-578	BIO	MCTIER CK	FW																	
E-021	SE	S FORK EDISTO RVR	FW	12	0	0								12	3	25	5.8			
03050204020																				
E-579	BIO	SHAW CK	FW																	
E-094	P	SHAW CK	FW	58	0	0		*	160		D	172	-0.05	59	17	29	6	D	174	-0.03
E-106	SE	SHAW CK	FW	11	0	0								11	2	18	5.7			
03050204030																				
E-595	BIO	YARROW BRANCH	FW																	
E-011	SE	S FORK EDISTO RVR	FW	12	0	0								12	1	8	5.9			
03050204040																				
E-107	SE	DEAN SWAMP CK	FW	13	0	0								13	0	0				
03050204050																				
E-029	BIO	WINDY HILL CK	FW																	
E-012	P*/BIO	S FORK EDISTO RVR	FW	36	0	0		D	83	-0.07	*	79		36	4	11	5.8	*	83	
03050204060																				
E-036/E-598	P*/BIO	GOODLAND CK	FW	36	1	3	2.6	D	88	-0.063	D	94	-0.043	36	1	3	5.9	D	94	-0.025
03050204070																				
E-592	BIO	ROBERTS SWAMP	FW																	
E-039	SE	ROBERTS SWAMP	FW	13	1	8	4.9							13	0	0				
03050205010																				
E-013	P	EDISTO RVR	FW	61	2	3	3.8	*'	161		D	171	-0.05	61	7	11	5.8	*	173	
E-013A	SE	EDISTO RVR	FW	12	0	0								12	2	17	5.9			
03050205020																				
E-108	SE/BIO	CATTLE CK	FW	12	1	8	2.4							12	0	0				
03050205030																				
E-014	S	EDISTO RVR	FW	29	0	0		*	75		D	79	-0.05	29	2	7	5.8	D	80	-0.028
E-086	P	EDISTO RVR	FW	56	1	2	4.8	*	59		*	59		56	3	5	5.1	I	59	0.045

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TRENDS											
				TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03050204010															
E-001	S	FIRST BRANCH	FW	D	69	-0.001				*	67				
E-002	S	S FORK EDISTO RVR	FW	D	81	-0.042				*	82				
E-090	P/BIO	S FORK EDISTO RVR	FW	D	167	-0.003	D	145	-0.014	I	175	0.15			
E-578	BIO	MCTIER CK	FW												
E-021	SE	S FORK EDISTO RVR	FW												
03050204020															
E-579	BIO	SHAW CK	FW												
E-094	P	SHAW CK	FW	D	169	-0.001	*	142		I	172	0.225			
E-106	SE	SHAW CK	FW												
03050204030															
E-595	BIO	YARROW BRANCH	FW												
E-011	SE	S FORK EDISTO RVR	FW												
03050204040															
E-107	SE	DEAN SWAMP CK	FW												
03050204050															
E-029	BIO	WINDY HILL CK	FW												
E-012	P*/BIO	S FORK EDISTO RVR	FW	*	80					I	78	0.422			
03050204060															
E-036/E-598	P*/BIO	GOODLAND CK	FW	*	95					I	94	0.22			
03050204070															
E-592	BIO	ROBERTS SWAMP	FW												
E-039	SE	ROBERTS SWAMP	FW												
03050205010															
E-013	P	EDISTO RVR	FW	D	172	-0.003	D	150	-0.006	I	171	0.2			
E-013A	SE	EDISTO RVR	FW												
03050205020															
E-108	SE/BIO	CATTLE CK	FW												
03050205030															
E-014	S	EDISTO RVR	FW	D	79	-0.005				I	80	0.281			
E-086	P	EDISTO RVR	FW	*	57		*	51		I	59	0.4			

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.	CU N	CU EXC.	CU %	ZN N	ZN EXC.	ZN %
03050204010																			
E-001	S	FIRST BRANCH	FW	116.9	30	5	17	568	*	67									
E-002	S	S FORK EDISTO RVR	FW	182.48	30	3	10	537	D	84	-26								
E-090	P/BIO	S FORK EDISTO RVR	FW	157.62	60	4	7	505	I	173	3.29	60	0	21	1	5	21	1	5
E-578	BIO	MCTIER CK	FW																
E-021	SE	S FORK EDISTO RVR	FW	117.99	12	2	17	900				11	0	4	0	0	4	0	0
03050204020																			
E-579	BIO	SHAW CK	FW																
E-094	P	SHAW CK	FW	138.01	58	8	14	816	*	171		56	0	20	1	5	20	1	5
E-106	SE	SHAW CK	FW	116.67	11	0	0					10	0	3	0	0	3	0	0
03050204030																			
E-595	BIO	YARROW BRANCH	FW																
E-011	SE	S FORK EDISTO RVR	FW	134.08	11	2	18	540				11	0	4	0	0	4	0	0
03050204040																			
E-107	SE	DEAN SWAMP CK	FW	118.17	12	0	0					13	0	4	0	0	4	0	0
03050204050																			
E-029	BIO	WINDY HILL CK	FW																
E-012	P*/BIO	S FORK EDISTO RVR	FW	188.3	36	3	8	493	I	79	13.5	12	0	5	1	20	5	1	20
03050204060																			
E-036/E-598	P*/BIO	GOODLAND CK	FW	236.03	34	9	26	592	I	91	8.33	13	0	4	0	0	4	0	0
03050204070																			
E-592	BIO	ROBERTS SWAMP	FW																
E-039	SE	ROBERTS SWAMP	FW	96.41	12	0	0					13	0	4	0	0	4	0	0
03050205010																			
E-013	P	EDISTO RVR	FW	76.52	61	1	2	840	I	171	1.88	58	0	20	2	10	20	0	0
E-013A	SE	EDISTO RVR	FW	56.84	12	0	0					11	0	4	0	0	4	0	0
03050205020																			
E-108	SE/BIO	CATTLE CK	FW	214.29	44	3	27	867				12	0	4	0	0	4	0	0
03050205030																			
E-014	S	EDISTO RVR	FW	89.81	28	2	7	1248	I	81	4								
E-086	P	EDISTO RVR	FW	90.62	56	1	2	432	*	59		52	0	17	1	6	17	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD MED.	CD %	CR N	CR EXC.	CR MED.	CR %	PB N	PB EXC.	PB MED.	PB %	HG N	HG EXC.	HG MED.	HG %	NI N	NI EXC.	NI %
03050204010																						
E-001	S	FIRST BRANCH	FW																			
E-002	S	S FORK EDISTO RVR	FW																			
E-090	P/BIO	S FORK EDISTO RVR	FW	21	0	DL	0	21	0	DL	0	21	0	DL	0	20	0	DL	0	21	0	0
E-578	BIO	MCTIER CK	FW																			
E-021	SE	S FORK EDISTO RVR	FW	4	0	DL	0	4	1	DL	25	4	0	DL	0	4	0	DL	0	4	0	0
03050204020																						
E-579	BIO	SHAW CK	FW																			
E-094	P	SHAW CK	FW	20	0	DL	0	19	0	DL	0	20	0	DL	0	19	0	DL	0	20	0	0
E-106	SE	SHAW CK	FW	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	0
03050204030																						
E-595	BIO	YARROW BRANCH	FW																			
E-011	SE	S FORK EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050204040																						
E-107	SE	DEAN SWAMP CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050204050																						
E-029	BIO	WINDY HILL CK	FW																			
E-012	P*/BIO	S FORK EDISTO RVR	FW	5	0	DL	0	5	0	DL	0	5	0	DL	0	5	0	DL	0	5	0	0
03050204060																						
E-036/E-598	P*/BIO	GOODLAND CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050204070																						
E-592	BIO	ROBERTS SWAMP	FW																			
E-039	SE	ROBERTS SWAMP	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050205010																						
E-013	P	EDISTO RVR	FW	23	0	DL	0	21	0	DL	0	20	0	DL	0	19	0	DL	0	20	0	0
E-013A	SE	EDISTO RVR	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050205020																						
E-108	SE/BIO	CATTLE CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050205030																						
E-014	S	EDISTO RVR	FW																			
E-086	P	EDISTO RVR	FW	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION				DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	pH	N	MAG
03050205040																				
E-016	P/BIO	POLK SWAMP	FW*	55	14	25	3	D	99	-0.075	D	102	-0.1	55	0	0		*	104	
E-109	SE	POLK SWAMP	FW*	14	5	36	2.2							14	0	0				
E-597	BIO	INDIAN FIELD SWAMP	FW*																	
E-032	SE	INDIAN FIELD SWAMP	FW*	14	1	7	2.7							14	0	0				
03050205050																				
E-015	P	EDISTO RVR	FW	55	1	2	4.4	*	165		D	168	-0.05	55	2	4	5.9	D	177	-0.025
03050205060																				
E-015	P	EDISTO RVR	FW	55	1	2	4.4	*	165		D	168	-0.05	55	2	4	5.9	D	177	-0.025
MD-119	P	EDISTO RVR	FW/ORW	58	3	5	4.7	*	155		D	165	-0.036	58	2	3	5.9	D	165	-0.018
MD-244	SE	SOUTH EDISTO RVR	SFH	12	1	8	4.5							12	0	0				
03050205070																				
MD-120	P	DAWHO RVR	ORW	55	11	20	4.5	*	153		D	164	-0.054	55	2	4	6.3	D	164	-0.02
MD-195	P	CHURCH CK	SFH	58	21	36	2.8	D	163	-0.125	D	173	-0.06	58	0	0		D	174	-0.009
MD-209	P	BOHICKET CK	ORW	57	20	35	4.3	D	109	-0.05	*	97		58	0	0		D	117	-0.022
MD-210	S	BOHICKET CK	ORW	33	4	12	4.5	*	80		*	76		31	0	0		D	87	-0.009
MD-211	P*	NORTH EDISTO RVR	ORW	37	2	5	4.9	*	86		*	82		38	1	3	8.5	D	94	-0.01
03050206010																				
E-022	S	GRAMBLING CK	FW*	30	9	30	2	*	79		D	85	-0.091	30	0	0		D	85	-0.03
E-076	S/BIO	LITTLE BULL CK	FW	30	12	40	3.5	*	83		D	89	-0.112	30	0	0		D	89	-0.022
E-590	BIO	BULL SWAMP	FW*																	
E-589	BIO	GRAMBLING CK	FW*																	
E-059	P	FOUR HOLE SWAMP	FW*	60	2	3	3.2	*	159		D	170	-0.065	60	0	0		D	172	-0.017
03050206020																				
E-111	SE	FOUR HOLE SWAMP	FW*	12	1	8	3.3							12	0	0				
03050206030																				
E-050	SE	COW CASTLE CK	FW	12	4	33	3							12	0	0				
03050206040																				
E-112	SE	FOUR HOLE SWAMP	FW*	12	2	17	2.3							12	0	0				
03050206050																				
E-051	P	PROVIDENCE SWAMP	FW	59	15	25	3.4	D	152	-0.05	D	164	-0.075	59	0	0		*	164	

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TRENDS											
				TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03050205040															
E-016	P/BIO	POLK SWAMP	FW*	D	100	-0.05	*	52		*	104				
E-109	SE	POLK SWAMP	FW*												
E-597	BIO	INDIAN FIELD SWAMP	FW*												
E-032	SE	INDIAN FIELD SWAMP	FW*												
03050205050															
E-015	P	EDISTO RVR	FW	D	161	-0.003	D	145	-0.014	I	170	0.254	I	165	0.132
03050205060															
E-015	P	EDISTO RVR	FW	D	161	-0.003	D	145	-0.014	I	170	0.254	I	165	0.132
MD-119	P	EDISTO RVR	FW/ORW	D	161	-0.003	D	145	-0.01	I	166	0.233			
MD-244	SE	SOUTH EDISTO RVR	SFH												
03050205070															
MD-120	P	DAWHO RVR	ORW	D	160	-0.002	D	140	-0.02	I	166	0.366			
MD-195	P	CHURCH CK	SFH	D	168	-0.003	D	147	-0.02	I	174	0.129			
MD-209	P	BOHICKET CK	ORW	*	93		*	50		I	102	0.7			
MD-210	S	BOHICKET CK	ORW	D	72	-0.002				*	77				
MD-211	P*	NORTH EDISTO RVR	ORW	D	80	-0.001				I	84	0.76			
03050206010															
E-022	S	GRAMBLING CK	FW*	D	84	-0.007				*	85				
E-076	S/BIO	LITTLE BULL CK	FW	D	87	-0.004				I	89	0.231			
E-590	BIO	BULL SWAMP	FW*												
E-589	BIO	GRAMBLING CK	FW*												
E-059	P	FOUR HOLE SWAMP	FW*	D	171	-0.001	*	151		I	171	0.228	*	57	
03050206020															
E-111	SE	FOUR HOLE SWAMP	FW*												
03050206030															
E-050	SE	COW CASTLE CK	FW												
03050206040															
E-112	SE	FOUR HOLE SWAMP	FW*												
03050206050															
E-051	P	PROVIDENCE SWAMP	FW	*	155		*	138		*	164				

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.	CU N	CU EXC.	CU %	ZN N	ZN EXC.	ZN %
03050205040																			
E-016	P/BIO	POLK SWAMP	FW*	349.42	55	22	40	898	*	106		20	0	17	1	6	17	0	0
E-109	SE	POLK SWAMP	FW*	252.32	13	4	31	838				14	0	4	0	0	4	0	0
E-597	BIO	INDIAN FIELD SWAMP	FW*																
E-032	SE	INDIAN FIELD SWAMP	FW*	122	13	1	8	7600				14	0	4	0	0	4	0	0
03050205050																			
E-015	P	EDISTO RVR	FW	82.15	55	1	2	480	I	172	2.48	52	0	17	2	12	17	1	6
03050205060																			
E-015	P	EDISTO RVR	FW	82.15	55	1	2	480	I	172	2.48	52	0	17	2	12	17	1	6
MD-119	P	EDISTO RVR	FW/ORW	88.01	56	3	5	1233	I	166	2.11	56	0	19	0	0	19	1	5
MD-244	SE	SOUTH EDISTO RVR	SFH	3.78	12	0	0					11	0	3	0	0	3	0	0
03050205070																			
MD-120	P	DAWHO RVR	ORW	74.02	56	6	11	1000	*	166		54	0	18	0	0	19	2	11
MD-195	P	CHURCH CK	SFH	56.1	54	5	9	880	*	177		54	0	18	0	0	18	1	6
MD-209	P	BOHICKET CK	ORW	19.45	51	2	4	1050	I	101	1	50	0	16	2	13	16	0	0
MD-210	S	BOHICKET CK	ORW	3.88	27	0	0		*	78									
MD-211	P*	NORTH EDISTO RVR	ORW	2.55	34	0	0		*	83		11	0	3	0	0	3	0	0
03050206010																			
E-022	S	GRAMBLING CK	FW*	205.44	30	10	33	995	D	83	-8.6								
E-076	S/BIO	LITTLE BULL CK	FW	341.06	30	11	37	1063	*	88									
E-590	BIO	BULL SWAMP	FW*																
E-589	BIO	GRAMBLING CK	FW*																
E-059	P	FOUR HOLE SWAMP	FW*	223.18	60	14	23	639	*	171		59	0	21	4	19	21	3	14
03050206020																			
E-111	SE	FOUR HOLE SWAMP	FW*	94.23	12	1	8	1200				12	0	4	0	0	4	0	0
03050206030																			
E-050	SE	COW CASTLE CK	FW	157.2	12	1	8	600				12	0	4	0	0	4	0	0
03050206040																			
E-112	SE	FOUR HOLE SWAMP	FW*	83.85	12	0	0					12	0	4	0	0	4	0	0
03050206050																			
E-051	P	PROVIDENCE SWAMP	FW	124.68	59	6	10	769	*	163		52	0	18	1	6	18	1	6

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD MED.	CD %	CR N	CR EXC.	CR MED.	CR %	PB N	PB EXC.	PB MED.	PB %	HG N	HG EXC.	HG MED.	HG %	NI N	NI EXC.	NI %
03050205040																						
E-016	P/BIO	POLK SWAMP	FW*	17	0	DL	0	17	1	DL	6	17	0	DL	0	17	0	DL	0	17	0	0
E-109	SE	POLK SWAMP	FW*	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
E-597	BIO	INDIAN FIELD SWAMP	FW*																			
E-032	SE	INDIAN FIELD SWAMP	FW*	4	0	DL	0	4	1	DL	25	4	0	DL	0	4	0	DL	0	4	0	0
03050205050																						
E-015	P	EDISTO RVR	FW	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	0
03050205060																						
E-015	P	EDISTO RVR	FW	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	DL	0	17	0	0
MD-119	P	EDISTO RVR	FW/ORW	19	0	DL	0	19	0	DL	0	19	0	DL	0	19	0	DL	0	19	0	0
MD-244	SE	SOUTH EDISTO RVR	SFH	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	0
03050205070																						
MD-120	P	DAWHO RVR	ORW	18	0	DL	0	18	0	DL	0	18	0	DL	0	17	0	DL	0	18	0	0
MD-195	P	CHURCH CK	SFH	18	0	DL	0	17	0	DL	0	18	0	DL	0	18	0	DL	0	18	0	0
MD-209	P	BOHICKET CK	ORW	16	0	DL	0	16	0	DL	0	16	0	DL	0	15	0	DL	0	16	0	0
MD-210	S	BOHICKET CK	ORW																			
MD-211	P*	NORTH EDISTO RVR	ORW	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	0
03050206010																						
E-022	S	GRAMBLING CK	FW*																			
E-076	S/BIO	LITTLE BULL CK	FW																			
E-590	BIO	BULL SWAMP	FW*																			
E-589	BIO	GRAMBLING CK	FW*																			
E-059	P	FOUR HOLE SWAMP	FW*	21	1	DL	5	21	1	DL	5	21	1	DL	5	20	0	DL	0	21	0	0
03050206020																						
E-111	SE	FOUR HOLE SWAMP	FW*	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050206030																						
E-050	SE	COW CASTLE CK	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050206040																						
E-112	SE	FOUR HOLE SWAMP	FW*	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050206050																						
E-051	P	PROVIDENCE SWAMP	FW	18	0	DL	0	18	0	DL	0	17	0	DL	0	17	0	DL	0	18	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION				DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	pH	N	MAG
03050206055																				
E-052	SE	HORSE RANGE SWAMP	FW	12	3	25	3.2							12	0	0				
03050206060																				
E-596	BIO	CEDAR SWAMP	FW																	
E-030	SE	DEAN SWAMP	FW	12	3	25	3.8							12	0	0				
03050206070																				
E-100	P	FOUR HOLE SWAMP	FW*	56	4	7	2.5	*	160		D	167	-0.029	56	0	0		D	172	-0.012
E-015A	SE	FOUR HOLE SWAMP	FW*	14	0	0								14	0	0				

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TRENDS											
				TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03050206055															
E-052	SE	HORSE RANGE SWAMP	FW												
03050206060															
E-596	BIO	CEDAR SWAMP	FW												
E-030	SE	DEAN SWAMP	FW												
03050206070															
E-100	P	FOUR HOLE SWAMP	FW*	*	158		D	142	-0.013	I	166	0.1	I	161	0.044
E-015A	SE	FOUR HOLE SWAMP	FW*												

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.	CU N	CU EXC.	CU %	ZN N	ZN EXC.	ZN %
03050206055																			
E-052	SE	HORSE RANGE SWAMP	FW	240.81	12	2	17	1020				11	0	3	0	0	3	0	0
03050206060																			
E-596	BIO	CEDAR SWAMP	FW																
E-030	SE	DEAN SWAMP	FW	151.43	12	2	17	600				12	0	4	0	0	4	0	0
03050206070																			
E-100	P	FOUR HOLE SWAMP	FW*	132.98	55	7	13	576	I	167	6	53	0	18	0	0	18	0	0
E-015A	SE	FOUR HOLE SWAMP	FW*	136.02	14	1	7	600				14	0	4	0	0	4	0	0

WATER QUALITY SUMMARY - EDISTO RIVER BASIN

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD MED.	CD %	CR N	CR EXC.	CR MED.	CR %	PB N	PB EXC.	PB MED.	PB %	HG N	HG EXC.	HG MED.	HG %	NI N	NI EXC.	NI %
03050206055																						
E-052	SE	HORSE RANGE SWAMP	FW	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	DL	0	3	0	0
03050206060																						
E-596	BIO	CEDAR SWAMP	FW																			
E-030	SE	DEAN SWAMP	FW	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0
03050206070																						
E-100	P	FOUR HOLE SWAMP	FW*	18	0	DL	0	18	0	DL	0	18	0	DL	0	18	0	DL	0	18	0	0
E-015A	SE	FOUR HOLE SWAMP	FW*	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	DL	0	4	0	0

Edisto River
Watershed Unit Index Map

8-Digit Hydrologic Unit

11-Digit Hydrologic Unit

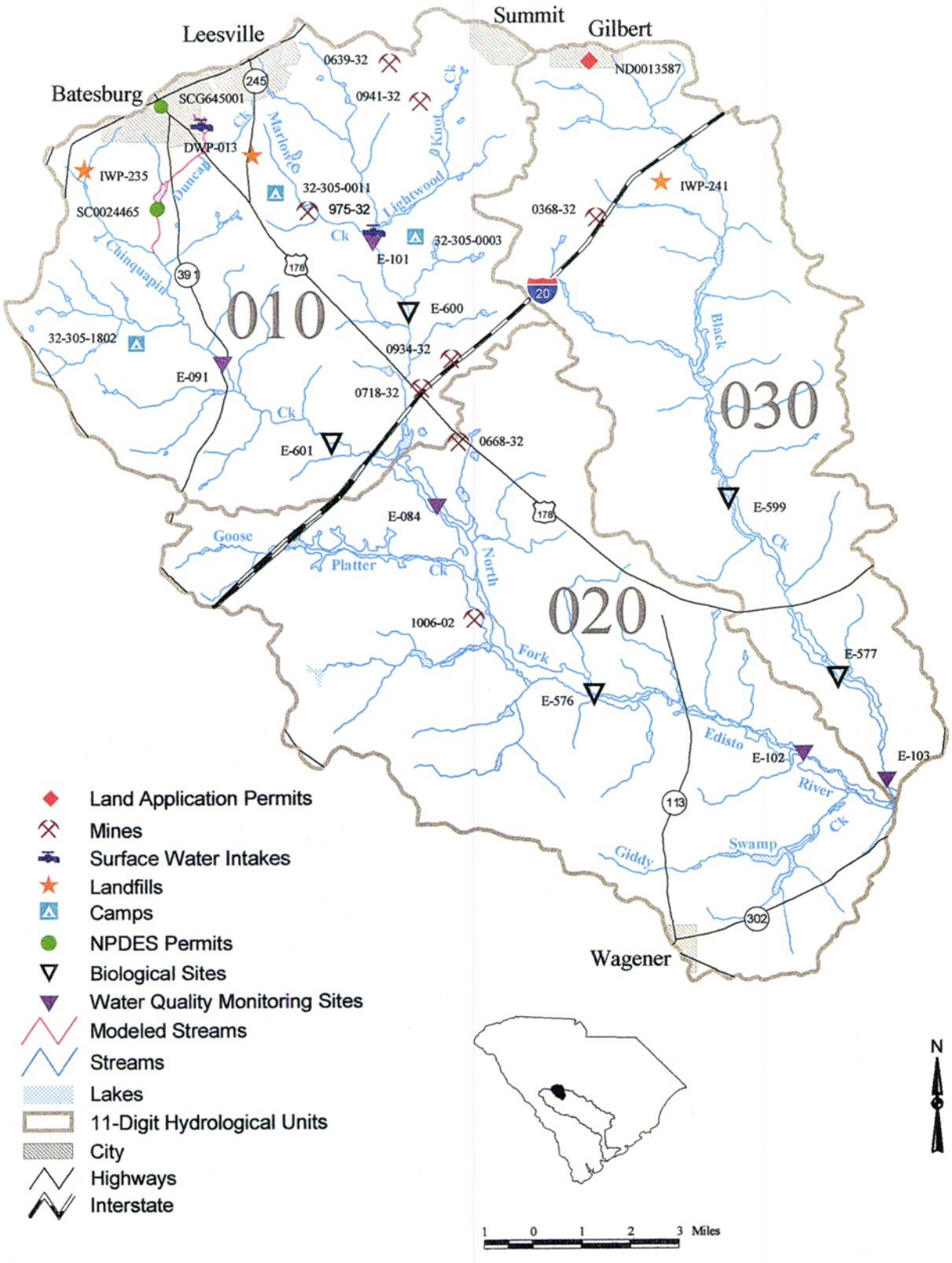
D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

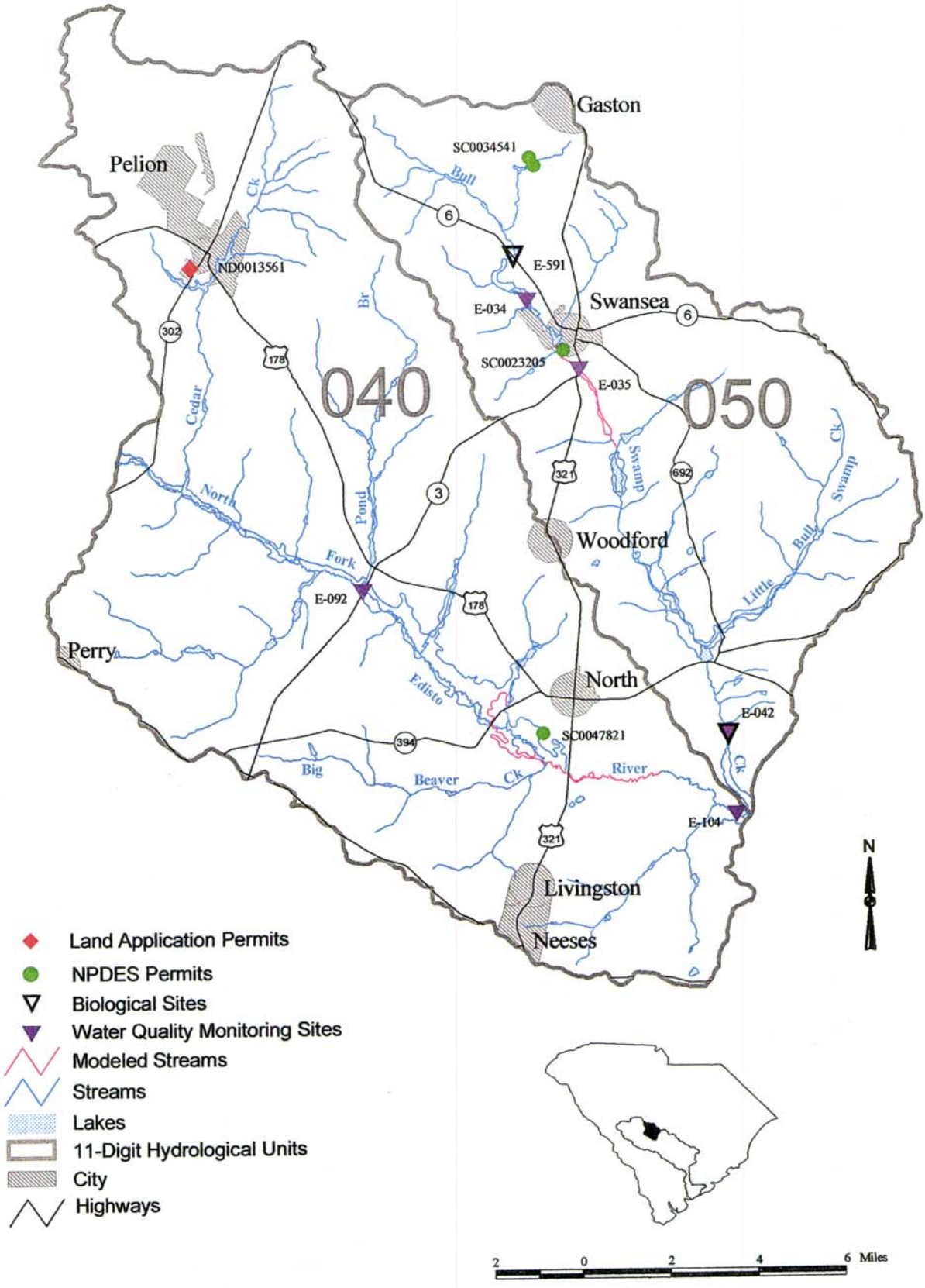
Chinguapin Creek/Lightwood Knot Creek, North Fork Edisto River, and Black Creek Watersheds

(03050203-010, -020, -030)



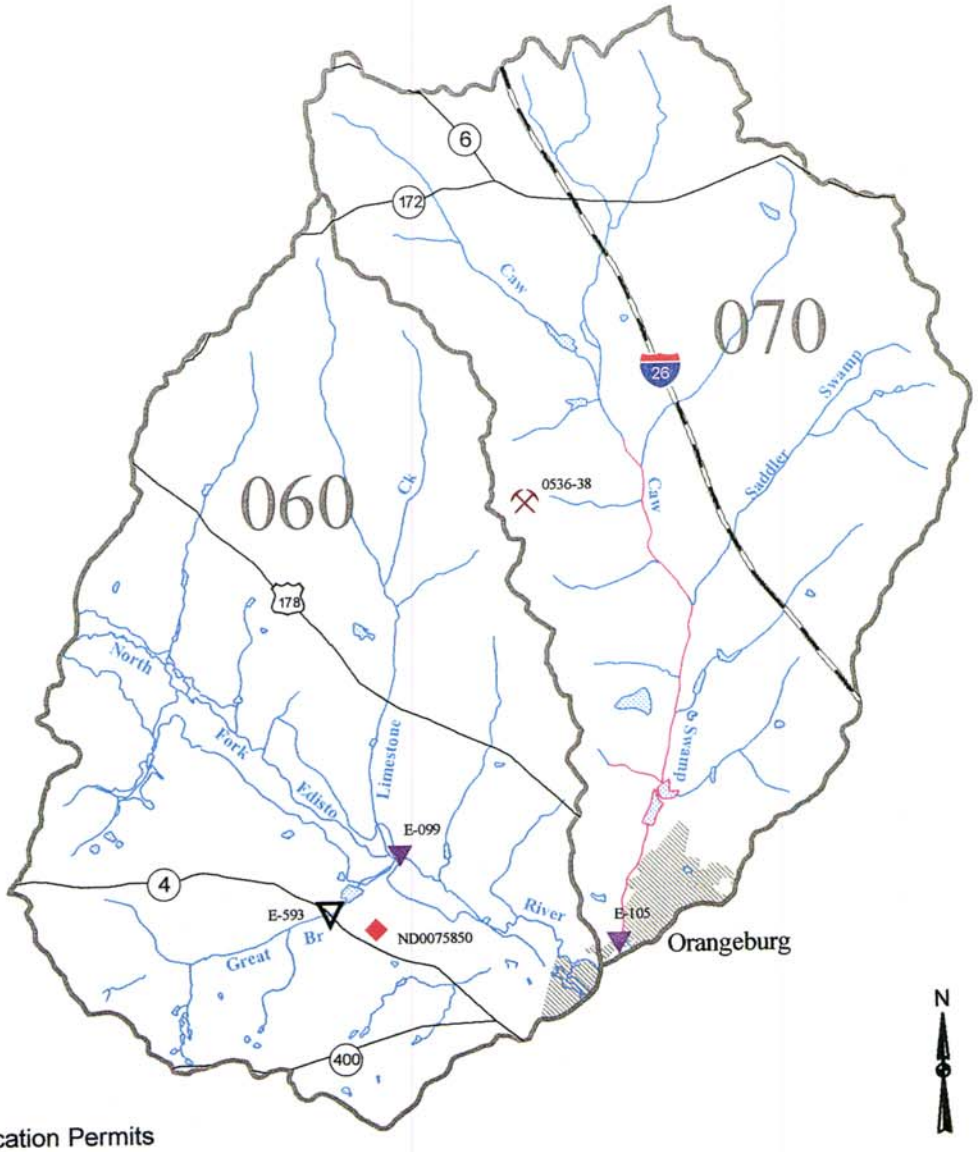
North Fork Edisto River and Bull Swamp Creek Watersheds

(03050203-040, -050)



North Fork Edisto River and Caw Caw Swamp Watersheds

(03050203-060, -070)

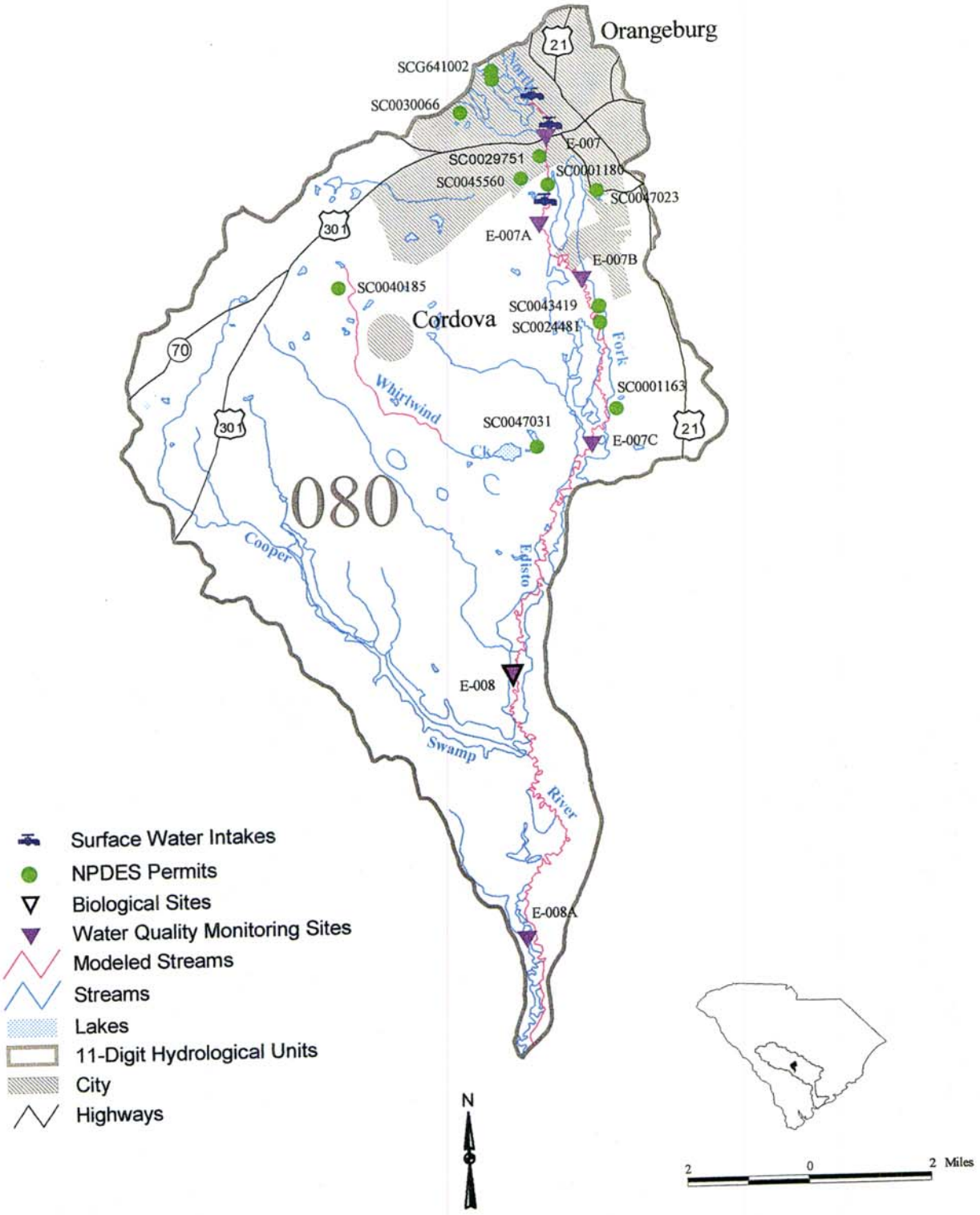


- Land Application Permits
- Mines
- Biological Sites
- Water Quality Monitoring Sites
- Modeled Streams
- Streams
- Lakes
- 11-Digit Hydrological Units
- City
- Highways
- Interstate

3 0 3 Miles

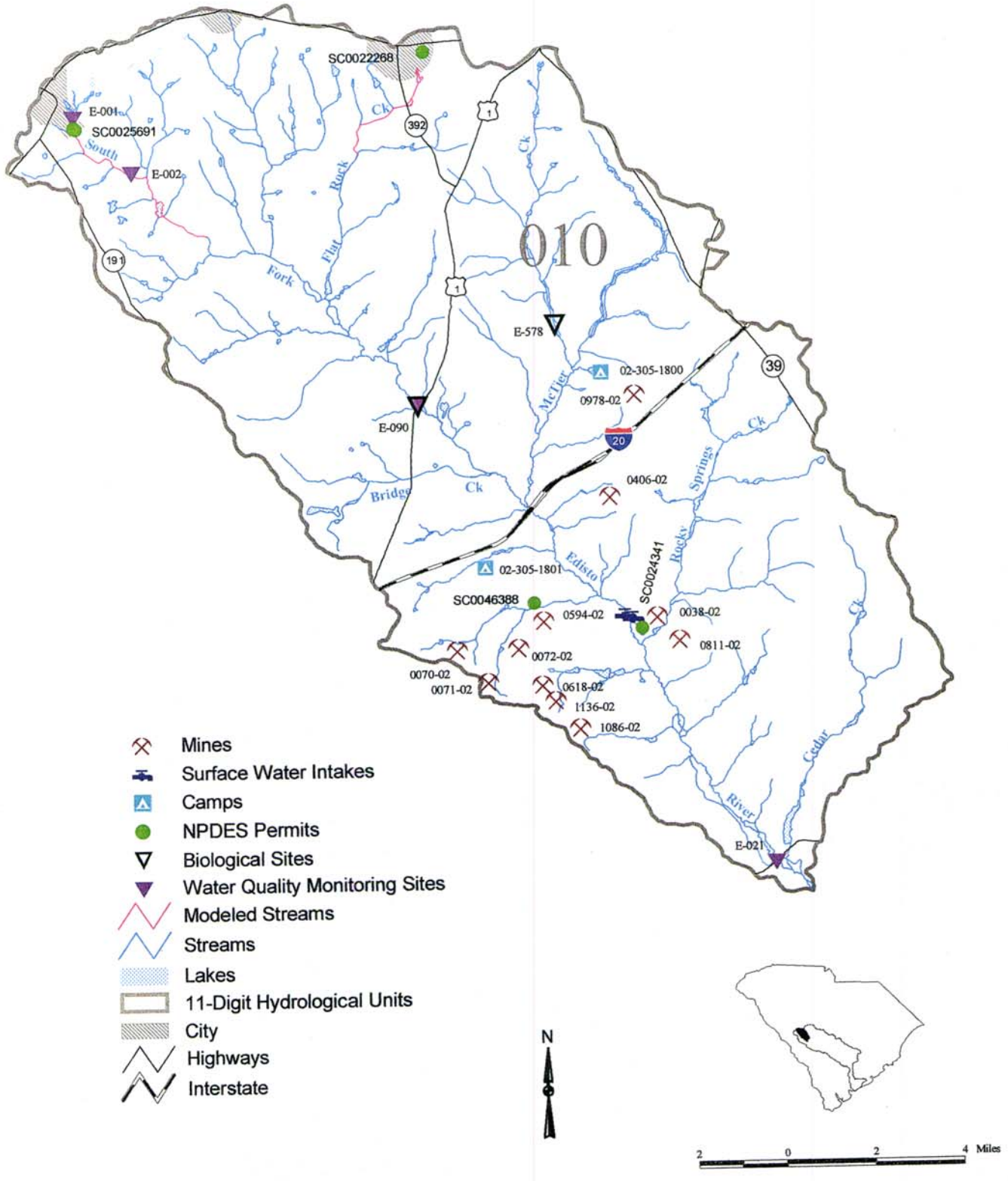
North Fork Edisto River Watershed

(03050203-080)



South Fork Edisto River Watershed

(03050204-010)



Shaw Creek Watershed

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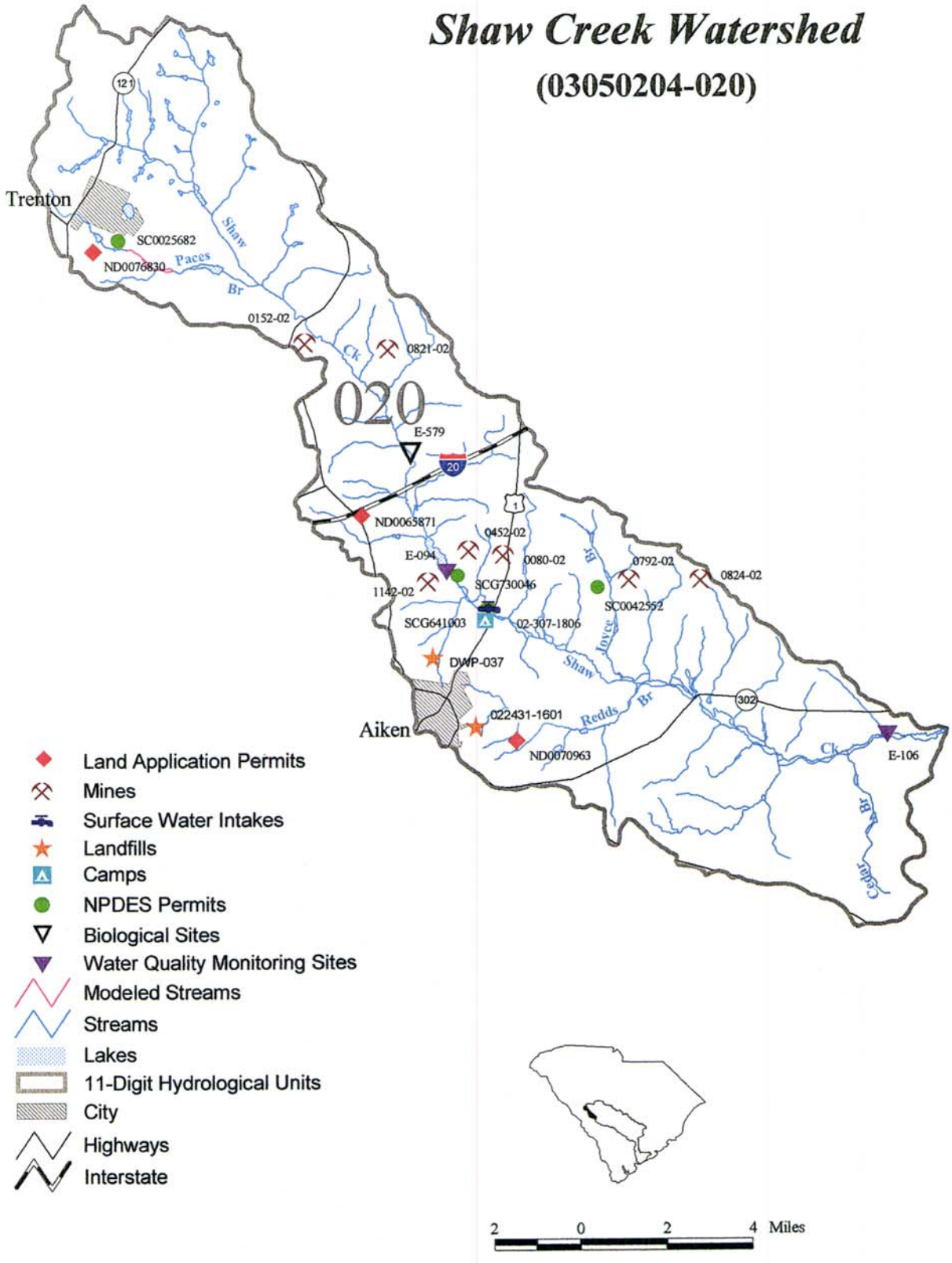
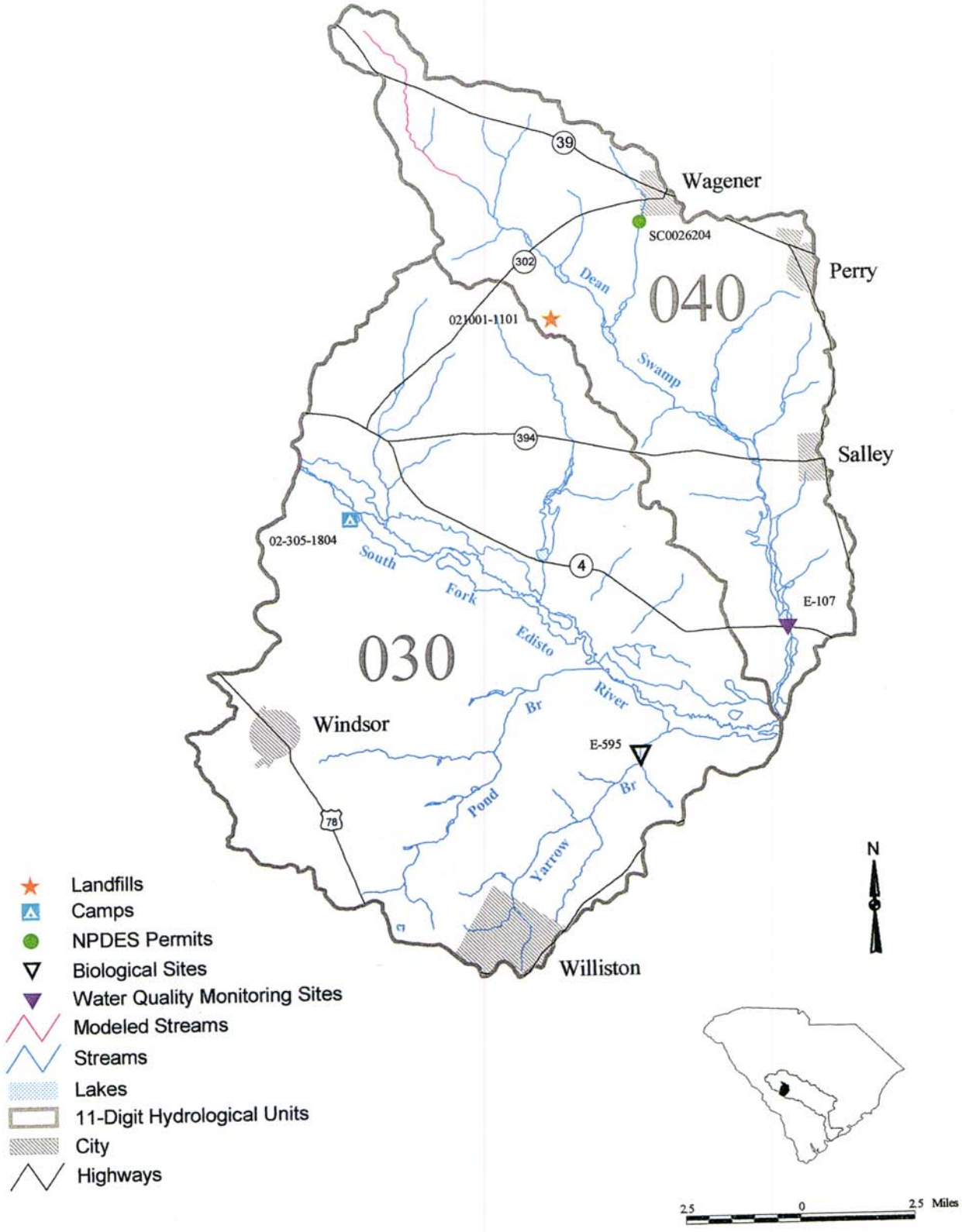


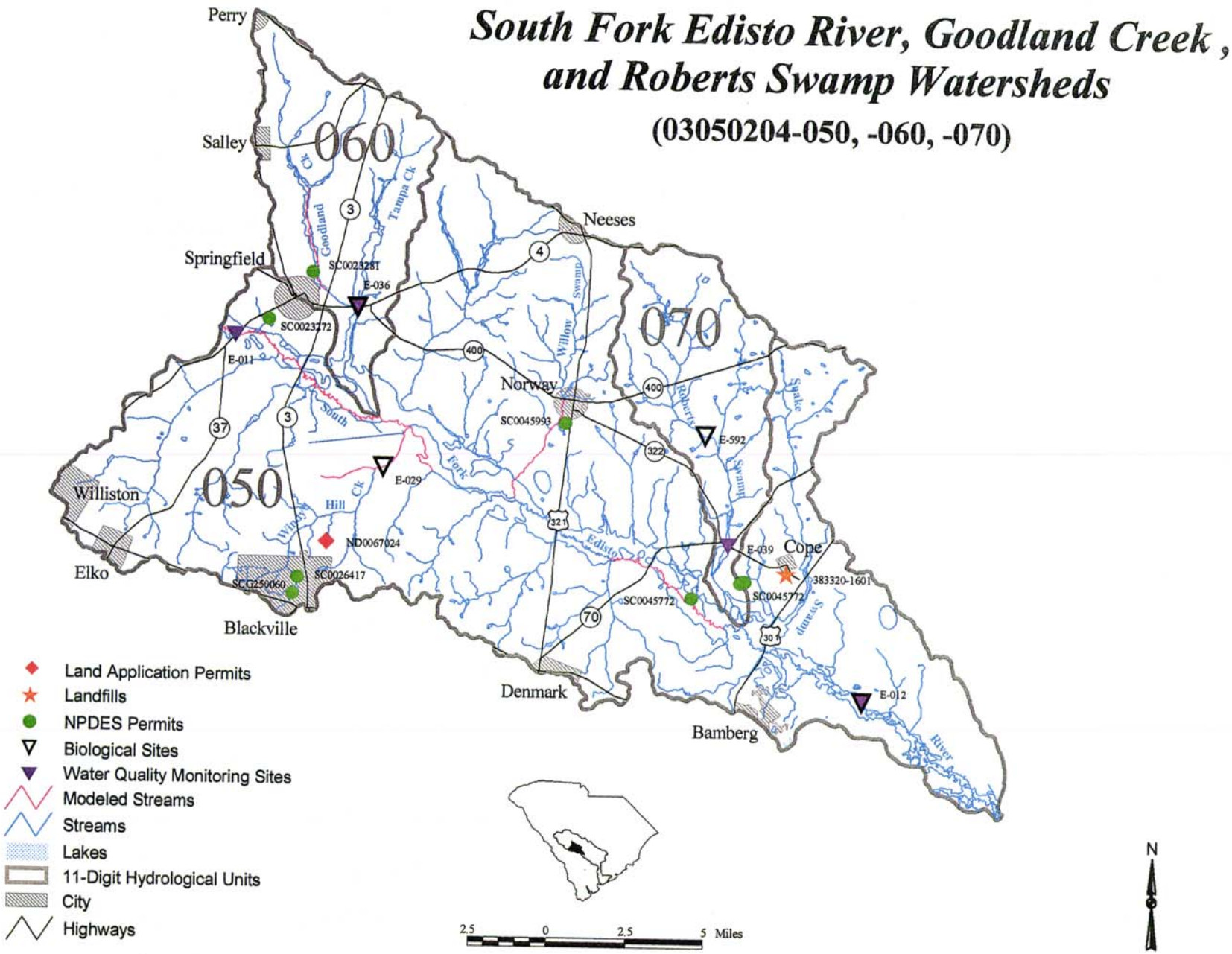
South Fork Edisto River and Dean Swamp Creek Watersheds

(03050204-030, -040)



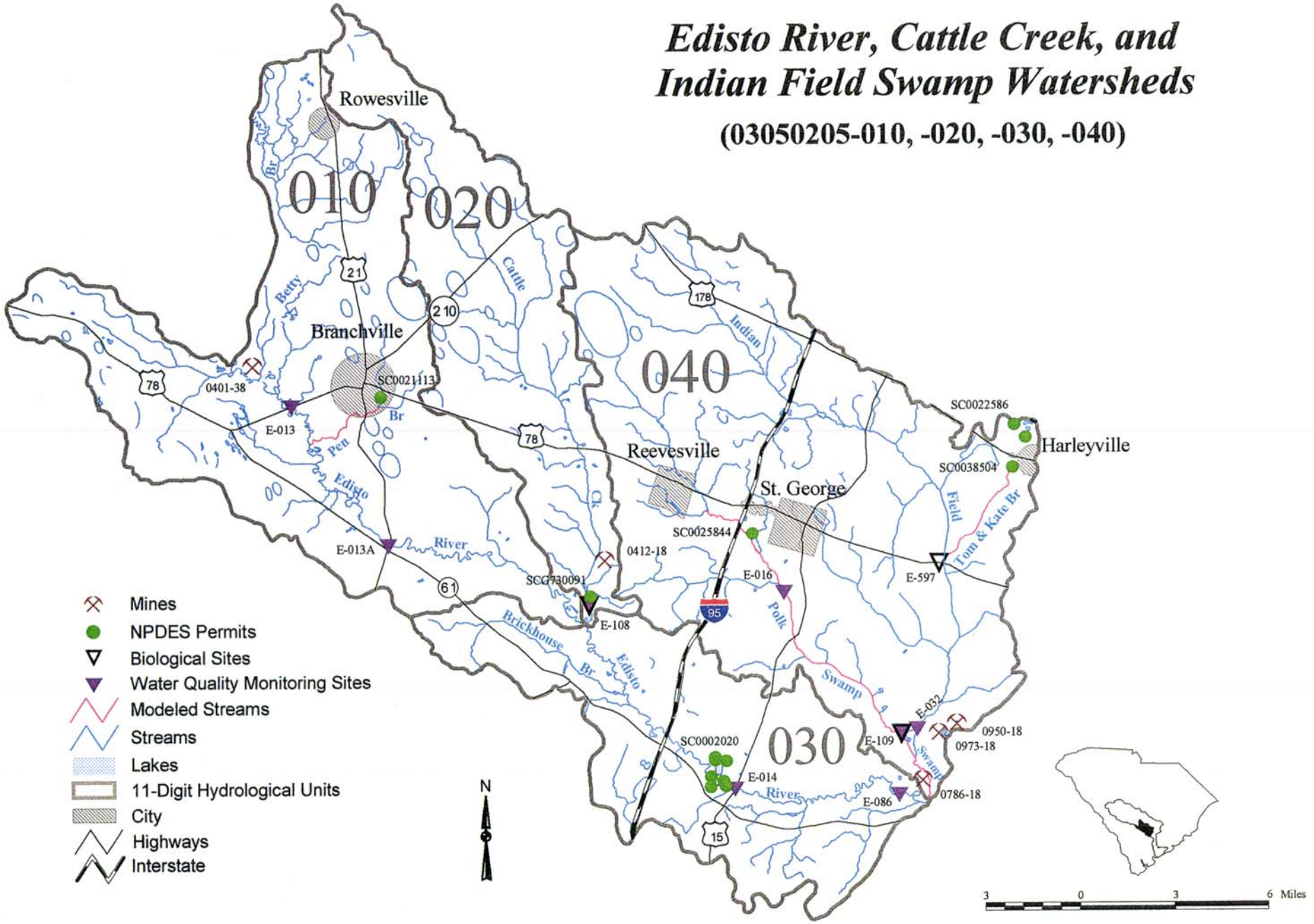
South Fork Edisto River, Goodland Creek , and Roberts Swamp Watersheds

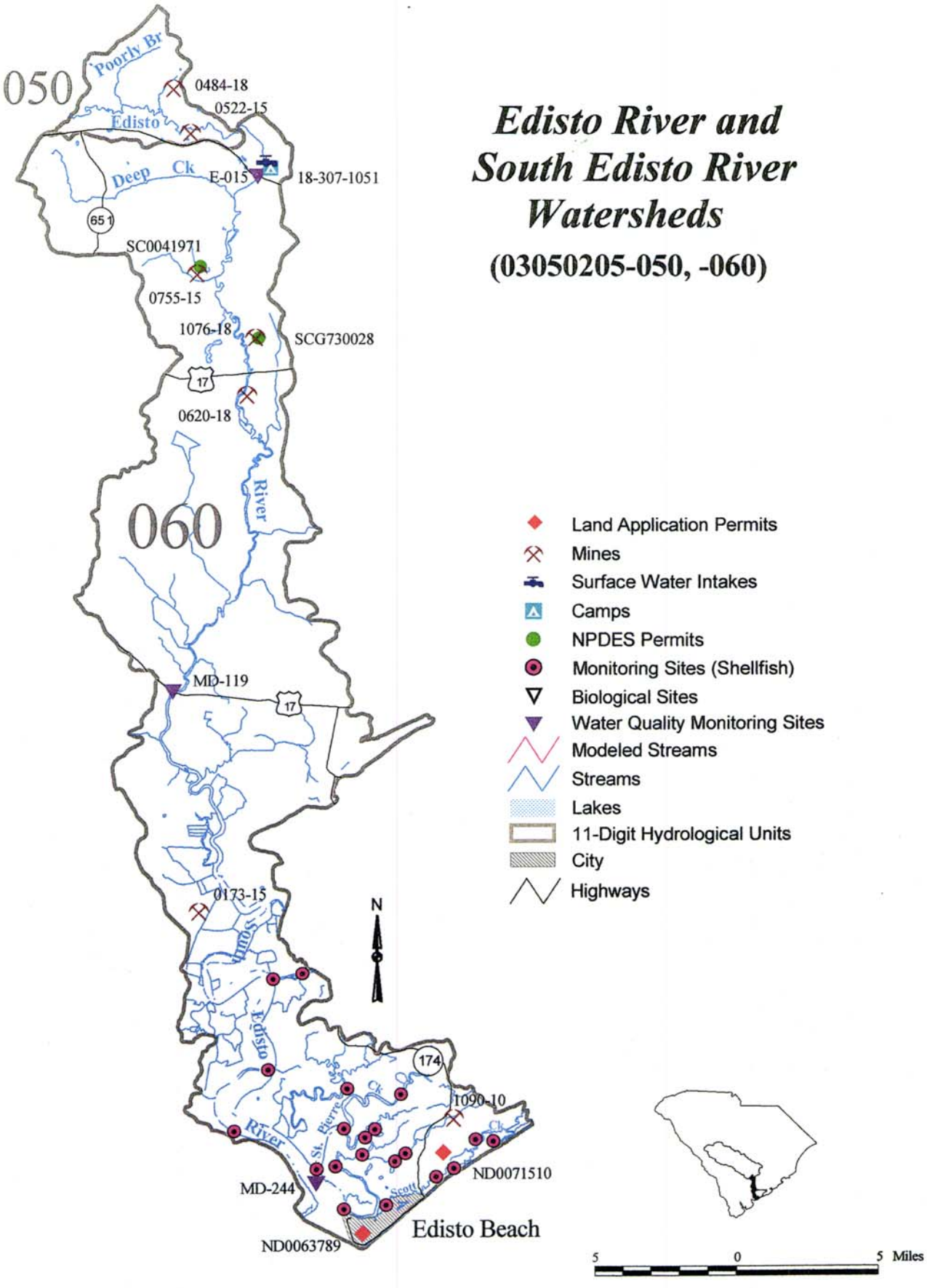
(03050204-050, -060, -070)



Edisto River, Cattle Creek, and Indian Field Swamp Watersheds

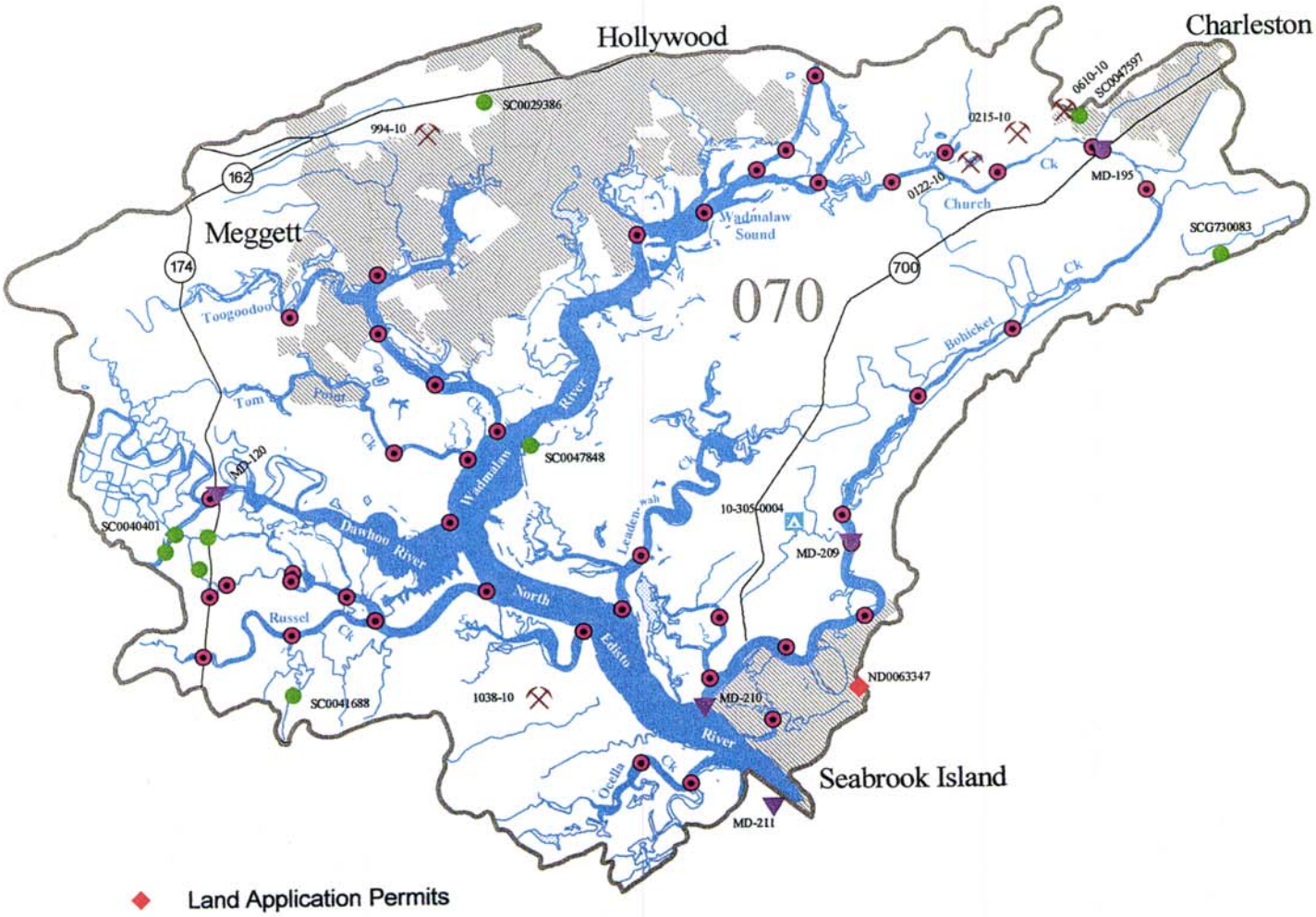
(03050205-010, -020, -030, -040)




Edisto River and South Edisto River Watersheds
(03050205-050, -060)
050
060
Poorly Br
Edisto
Deep Ck
0484-18
0522-15
E-015
18-307-1051
651
SC0041971
0755-15
1076-18
SCG730028
17
0620-18
River
MD-119
17
0173-15
South
Edisto
River
N
174
1090-10
St. Pierre Ck
Scott Ck
ND0071510
MD-244
ND0063789
Edisto Beach
Land Application Permits
Mines
Surface Water Intakes
Camps
NPDES Permits
Monitoring Sites (Shellfish)
Biological Sites
Water Quality Monitoring Sites
Modeled Streams
Streams
Lakes
11-Digit Hydrological Units
City
Highways
5 0 5 Miles

North Edisto River Watershed

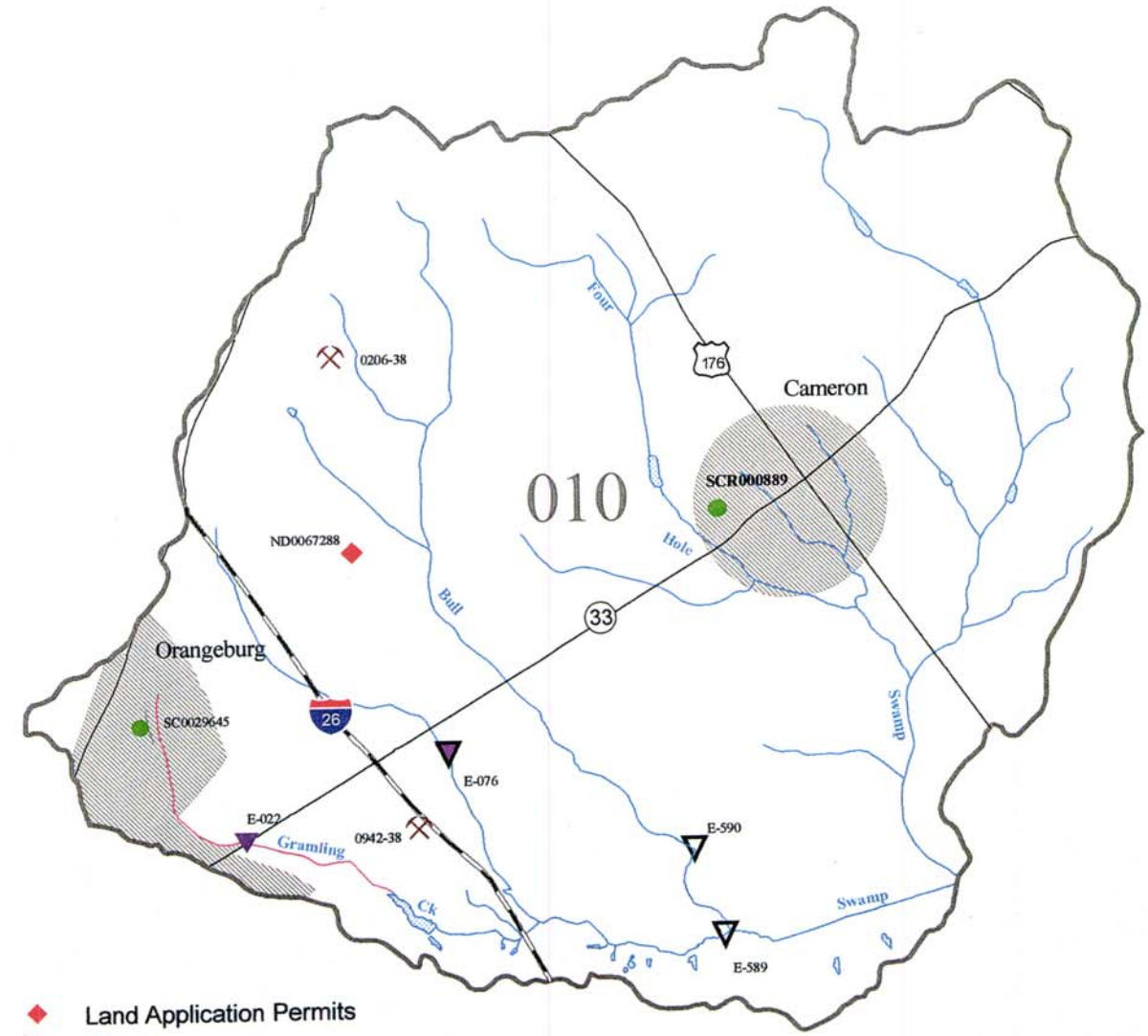
(03050205-070)



- Land Application Permits
- Mines
- Camps
- NPDES Permits
- Monitoring Sites (Shellfish)
- Biological Sites
- Water Quality Monitoring Sites
- Modeled Streams
- Streams
- Lakes
- 11-Digit Hydrological Units
- City
- Highways

Four Hole Swamp Watershed

(03050206-010)



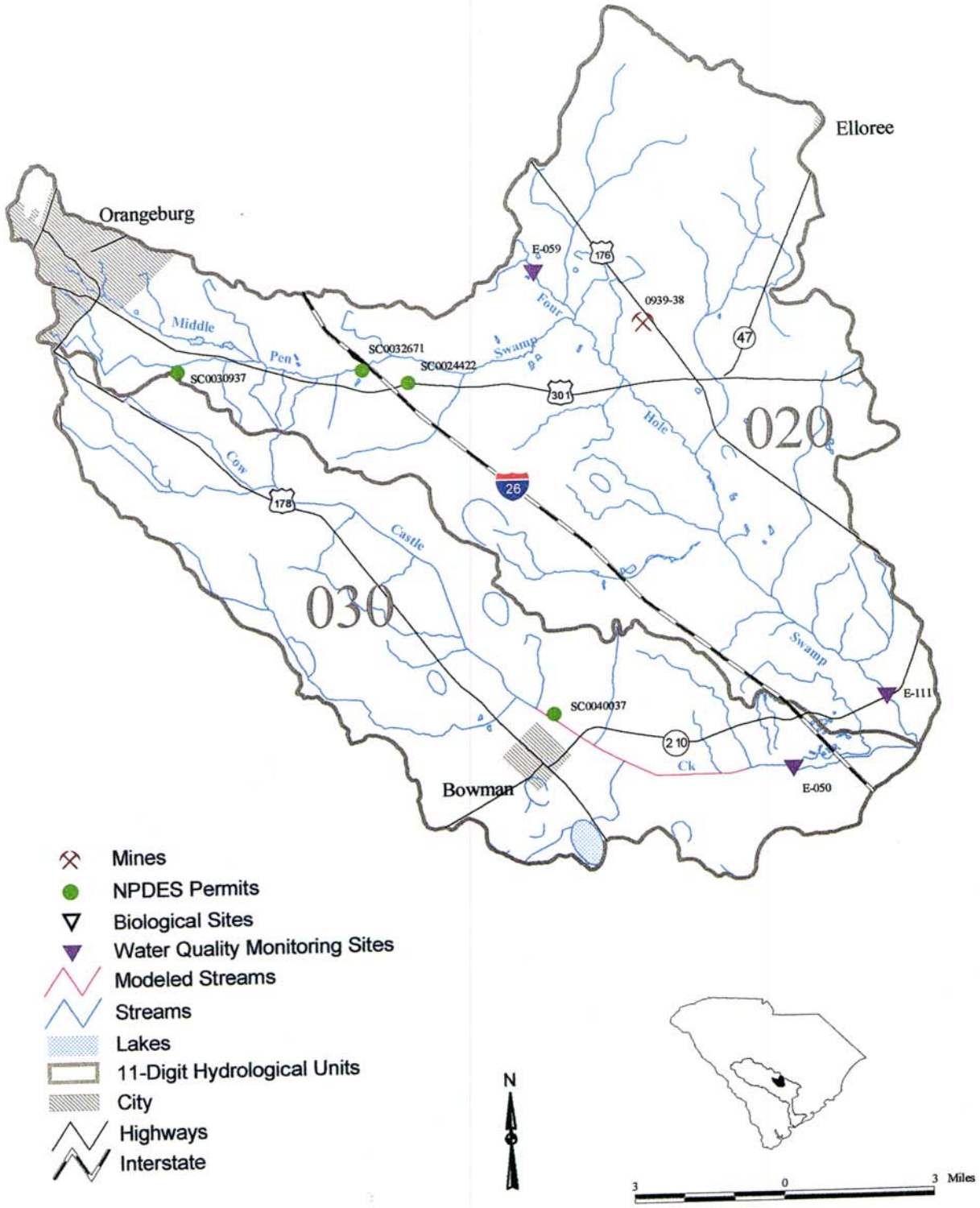
- Land Application Permits
- Mines
- NPDES Permits
- Biological Sites
- Water Quality Monitoring Sites
- Modeled Streams
- Streams
- Lakes
- 11-Digit Hydrological Units
- City
- Highways
- Interstate

N

1 0 1 2 3 Miles

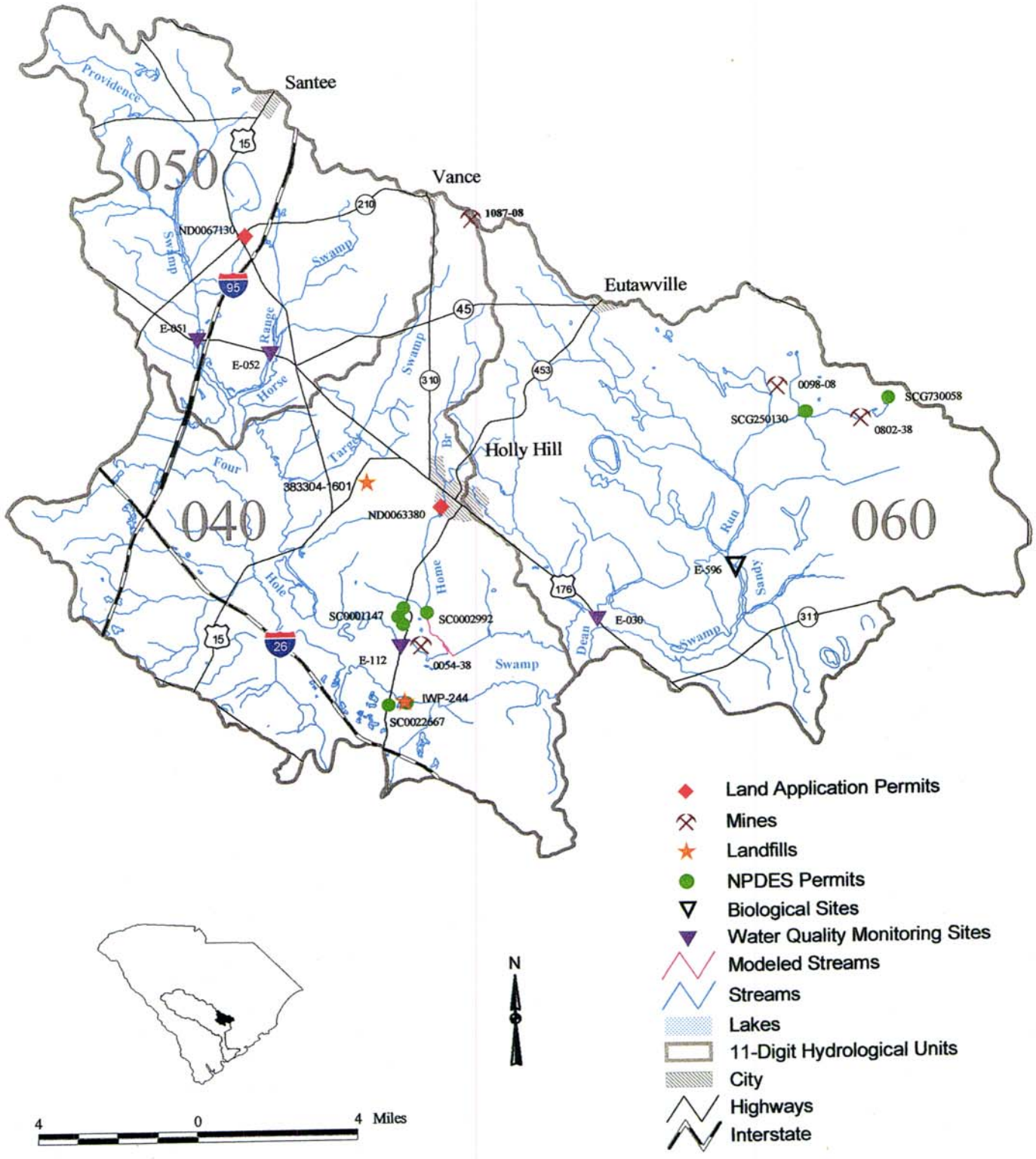
Four Hole Swamp and Cow Castle Creek Watersheds

(03050206-020, -030)



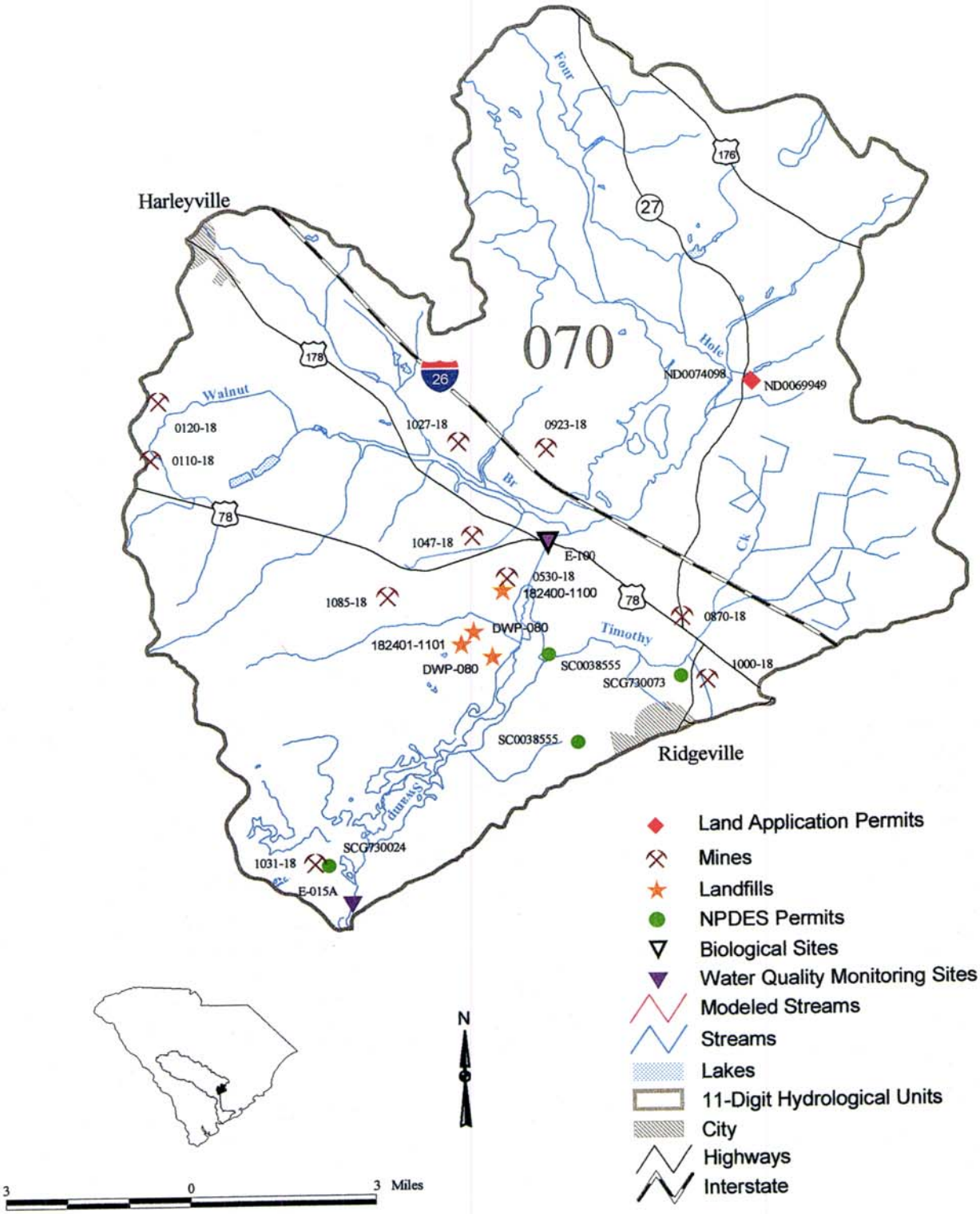
Four Hole Swamp, Providence Swamp, and Dean Swamp Watersheds

(03050206-040, -050, -060)



Four Hole Swamp Watershed

(03050206-070)



APPENDIX C.

Shellfish Monitoring Stations

WATERSHED	STATION	DESCRIPTION
03050205-060	13-18	Confluence of Russell Ck and Watts Cut
	13-17	Confluence of Watts Cut and South Edisto River
	13-20	Northern confluence of Alligator Ck and S. Edisto River
	13-06	Confluence of Shingle Creek and Bailey Creek
	13-07	Store Creek opposite house with docks on right
	13-04	St. Pierre Creek at Peters Pt.
	13-05A	Upper reaches of Sandy Creek
	13-08	Edisto River at Ashepoo River
	13-05	Fishing Creek at Sandy Creek
	13-24	Frampton Inlet at north end of Jeremy Cay
	13-25	Frampton Inlet at Atlantic Ocean
	13-12	Headwaters of Fishing Creek past Oyster Plant
	13-10	Fishing Creek at Pollution Line
	13-09	Fishing Creek at Oyster Plant
	13-21	Big Bay Creek headwaters at first bend to right past the Neck
	13-23	Jeremy Inlet at Atlantic Ocean
	13-03	Mouth of St. Pierre Creek
	13-11	House w/hog pen on Fishing Creek betw Sta 9&10
	13-22	Headwaters of Scott Creek at Jeremy Inlet at the boat landing
	13-01	Scott Creek at The Mound
	13-02	Mouth of Big Bay Creek
03050205-070	11-15	Stono River (AIWW) at Marker #63
	12-02	Goshen Point, Marker #69
	12-39	Confluence of Church Ck and small tidal ck ~ 350 yds west S.C. Hwy.700 bridge, north side of Church Ck.
	12-14	S.C. Highway 700 bridge over Bohicket Creek
	12-40	Pine Creek at first fork
	12-01	Mouth of Church Creek, Marker #77
	12-38	Drainage discharge 1/8 mile east of power lines, north bank of Church Creek
	12-41	Confluence of Church Creek and New Cut
	12-29	Raven Point Creek at confluence with Church Creek
	12-20	Bohicket Creek opposite Hoopstick Island
	12-51	Wadmalaw Sound at day beacon #80
	12-03	Yonges Island Creek, at center of Metal Trades Dock

WATERSHED	STATION	DESCRIPTION
	12-35	Public Boat Ramp, Lower Toogoodoo Creek
	12-45	Toogoodoo Creek at the second bend past the confluence with Lower Toogoodoo Creek
	12-34	Toogoodoo Creek SSG at last creek before fork
	12-21	Opposite old dam behind Rast House Restaurant
	12-44	Toogoodoo Creek midway between Stations 4 and 34
	12-46	Bohicket Creek midway between Stations 21 and 22 at small unnamed tributary on west bank
	12-04	Toogoodoo Creek at confluence with AIWW, Marker #102
	12-30	Tom Point Creek at Park Island
	12-36	Confluence of Tom Point Creek and North Edisto River
	13-16	Highway 174 bridge over North creek (1993-98)
	12-53	Dawho River, Marker #126
	12-22	Opposite Boy Scout Camp
	12-05	Dawho Creek, Marker #110
	12-13	Bohicket Creek at Fickling Creek
	12-12	Leadenwah Creek 1 mile from confluence of North Edisto River
	12-52	Confluence of Whooping Island Creek and Steamboat Creek
	12-49	Dock midway Stations 48&50 (1996-96)
	12-48	First stormwater outfall in htwtrs of Sand Cr (1998-98)
	12-50	Sand Creek at intake to Westendorf Clam Farm
	12-06	Steamboat Creek, Marker #2
	12-47	Sand Creek bridge at Highway 174
	12-08	Leadenwah Creek at North Edisto River
	12-37	Confluence of Steamboat Creek and Russell Creek
	12-11	Adams Creek between Adams Creek Marina and Shrimp Dock
	12-31	Bohicket Marina
	12-43	Russell Creek at estuary entering Sunbelt Clam Farms
	12-07	Westbank Creek at North Edisto River, opposite Leadenwah Creek
	12-10	Rockville Boat Landing
	13-19	Russell Creek at Area 12/13 boundary (1993-98)
	12-09	Adams Creek at Bohicket Creek
	12-32	Privateer Creek up half mile at fork
	12-42	Headwaters of Ocella Creek
	12-33	Confluence of Ocella Creek and South Creek

Waterbody Index

Facility Index

Printed February, 1999

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Total Number of Documents Printed - 300
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