

BUREAU OF WATER

Watershed Water Quality Assessment

Savannah and Salkehatchie River Basins



Technical Report No. 003-97
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South Carolina Department of Health
and Environmental Control

WATERSHED WATER QUALITY ASSESSMENT

SAVANNAH AND SALKEHATCHIE RIVER BASINS



TECHNICAL REPORT No. 003-97

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

COLUMBIA SC

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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: Savannah-Salkehatchie 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 Savannah and Salkehatchie River basins were 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. 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 Savannah and Salkehatchie River basins that fully support recreational and aquatic life uses, followed by those waters not supporting uses. More comprehensive information can be found in the individual management unit and 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 Savannah and Salkehatchie River basins to participate in bringing about water quality improvements. We look forward to working with you.

Questions, comments, and suggestions regarding this document, and water quality in the Savannah and Salkehatchie River basins, may be directed to:

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- Appendix A. Public Participation Summary
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Water Quality Assessment Summary
Savannah and Salkehatchie River Basins
(Reference maps follow tables)

Savannah and Salkehatchie River Basins: Waters fully supporting uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	IMPROVING TRENDS	UNDESIRABLE TRENDS
03060101020	SV-337	LAKE JOCASSE	decreasing turbidity, bacteria	increasing pH
03060101030	SV-334	LAKE JOCASSE	increasing DO, decreasing nitrogen and bacteria	
	SV-741	EASTATOE CK		
	SV-676	ROCKY BOTTOM CK		
03060101040	SV-249	SENECA RVR	decreasing BOD, nitrogen, phosphorus	
	SV-360	LAKE ISSAQUEENA		
	SV-106	LAKE HARTWELL	decreasing BOD, phosphorus, bacteria	decreasing DO and pH, increasing turbidity
	SV-236	LAKE HARTWELL	decreasing BOD, phosphorus, bacteria	decreasing DO and pH
03060101050	SV-743	FLAT SHOALS RIVER		
	SV-742	OCONEE CK		
	SV-203	LITTLE RVR	decreasing BOD, phosphorus	
	SV-312	LAKE KEOWEE	decreasing BOD, nitrogen, phosphorus, turbidity, bacteria	
03060101060	SV-282	TWELVE MILE CK	decreasing BOD, nitrogen, phosphorus	
	SV-740	RICES CK		
03060101070	SV-739	TWELVE MILE CK		
	SV-107	TWELVE MILE CK	decreasing BOD, phosphorus	decreasing DO
03060102030	SV-308	E FORK CHATTOOGA RVR	decreasing BOD, phosphorus	increasing pH
	SV-227	CHATTOOGA RVR		increasing pH and turbidity
03060102060	SV-199	CHATTOOGA RVR		increasing pH and phosphorus
	SV-359	TUGALOO LAKE		
	SV-358	LAKE YONAH		
	SV-673	BRASSTOWN CK		
	SV-200	LAKE HARTWELL	decreasing BOD, phosphorus	
03060102120	SV-675	CHAUGA RVR		
	SV-344	CHAUGA RVR		
	SV-225	TOXAWAY CK		
03060103030	SV-100	LAKE RUSSELL	decreasing BOD, nitrogen, phosphorus, bacteria	decreasing DO, increasing pH
	SV-109	LITTLE GENEROSTEE CK		
	SV-357	LAKE RUSSELL		
	SV-098	LAKE RUSSELL	decreasing BOD, nitrogen, phosphorus, turbidity, bacteria	

Waterbody names in *italics* evaluated for aquatic life use support only
 DO=dissolved oxygen, BOD=biochemical oxygen demand

Savannah and Salkehatchie River Basins: Waters fully supporting uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	IMPROVING TRENDS	UNDESIRABLE TRENDS
03060103070	SV-319	BROADWAY LAKE		
	SV-258	BROADWAY LAKE		
	SV-321	BROADWAY LAKE		
	SV-346	ROCKY RVR		
	SV-044	HEN COOP CK		
03060103100	SV-332	LAKE SECESSION		increasing nitrogen
	SV-291	THURMOND RESERVOIR	decreasing BOD, nitrogen, phosphorus	decreasing pH, increasing turbidity
	SV-294	THURMOND RESERVOIR	decreasing BOD, nitrogen, phosphorus	decreasing pH, increasing turbidity
03060103140	SV-733	HOGSKIN CK		
	SV-644	GILL CK		
	SV-171	CALHOUN CK		
	SV-192	LITTLE RVR		
03060103150	SV-732	BIG CURLY TAIL CK		
	SV-731	HARD LABOR CK		
03060107020	SV-729	TURKEY CK		
	SV-728	LOG CK		
	SV-727	ROCKY CK		
	SV-352	TURKEY CK		
	SV-068	BEAVERDAM CK	increasing DO, decreasing BOD and phosphorus	decreasing pH
03060107040	SV-063	STEVENS CK		
	SV-354	STEVENS CK		
	SV-726	HORN CK		
	SV-725	CHEVES CK		
	SV-251	SAVANNAH RVR	decreasing BOD, nitrogen, phosphorus, bacteria	decreasing pH
03060106050	SV-071	HORSE CK	decreasing BOD, nitrogen, phosphorus	decreasing pH, increasing turbidity
	SV-724	LITTLE HORSE CK		
03060106060	SV-073	LITTLE HORSE CK	decreasing phosphorus	decreasing pH, increasing turbidity and bacteria
	SV-250	HORSE CK	increasing DO, decreasing BOD and phosphorus	decreasing pH, increasing turbidity
	SV-323	SAVANNAH RVR	decreasing BOD, nitrogen, phosphorus, suspended solids, bact	decreasing pH
03060106100	SV-350	HOLLOW CK		
	SV-680	UPPER THREE RUNS CK		
	SV-723	CEDAR CK		

Waterbody names in *italics* evaluated for aquatic life use support only
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Savannah and Salkehatchie River Basins: Waters fully supporting uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	IMPROVING TRENDS	UNDESIRABLE TRENDS
03060106110	SV-326	FOUR MILE CK	decreasing BOD, nitrogen	increasing turbidity
03060106130	SV-327	STEEL CK	decreasing BOD, nitrogen, phosphorus, turbidity, bacteria	decreasing pH
03060106140	SV-175	LOWER THREE RUNS CK	decreasing BOD	decreasing pH, increasing turbidity and bacteria
03060109020	SV-745	BRIER CK		
03060109050	SV-355	SAVANNAH RVR		
03060109050	SV-744	CYPRESS BRANCH		
03050207010	CSTL-578	BUCK CK		
03050207020	CSTL-056	TURKEY CK		
03050207030	CL-064	LAKE EDGAR BROWN		increasing pH
03050207030	CSTL-577	TOBY CK		
03050207040	CSTL-579	BIRDS BRANCH		
03050207060	CSTL-053	SAVANNAH CK		
03050207060	CSTL-566	LITTLE SALKEHATCHIE RIVER		
03050207070	CSTL-576	LEMON CK		
03050208010	CSTL-585	SANDY RUN CK		
03050208010	CSTL-583	BLACK CK		
03050208040	CSTL-098	COMBAHEE RVR	decreasing BOD, nitrogen, phosphorus, suspended solids, bact	decreasing pH
03050208040	CSTL-069	ASHEPOO RVR		
03050208050	MD-251	ASHEPOO RVR		
03050208050	CSTL-540	COOSAWHATCHIE RIVER		
03050208050	CSTL-051	JACKSON CK		
03050208080	CSTL-582	CYPRESS CK AT SC 3		
03050208090	CSTL-107	COOSAWHATCHIE RVR	decreasing BOD, nitrogen, phosphorus	decreasing pH, increasing turbidity
03050208100	MD-116	BROAD RVR	decreasing phosphorus, turbidity	decreasing pH, increasing turbidity
03050208100	MD-172	BROAD RVR		decreasing DO, pH
03050208100	MD-117	CHECHESSEE RVR	decreasing phosphorus	decreasing DO, pH
03050208100	MD-176	COLLETON RVR	decreasing bacteria	decreasing pH
03050208100	MD-245	COLLETON RVR	decreasing BOD	increasing phosphorus and nitrogen
03050208100	MD-006	PORT ROYAL SOUND	decreasing phosphorus	increasing bacteria
03050208100	MD-194	WHALE BRANCH		decreasing DO and pH, increasing BOD, turbidity, and bact
03050208110	MD-005	BEAUFORT RVR	decreasing phosphorus	decreasing DO and pH, increasing nitrogen and bacteria
03050208110	MD-016	MAY RVR		decreasing pH
03050208110	MD-175	CALIBOGUE SOUND	decreasing phosphorus	decreasing pH, increasing nitrogen

Waterbody names in *italics* evaluated for aquatic life use support only
 DO=dissolved oxygen, BOD=biochemical oxygen demand

Savannah and Salkehatchie River Basins: Waters not fully supporting evaluated uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	AQUATIC LIFE USES		RECREATIONAL USES		COMMENTS
			Status	Causes	Possible Source	Status	
03060101020	SV-335	LAKE JOCASSEE	N	copper, zinc	Point source		
	SV-336	LAKE JOCASSEE	N	copper	Point source		
	SV-230	BIG EASTATOE CK	N	zinc	Unknown		
03060101030	SV-341	LITTLE EASTATOE CK					
	SV-338	LAKE KEOWEE	N	copper	Point source	P	NPS-agriculture
	SV-205	SIX MILE CK					increasing pH
03060101040	SV-288	LAKE HARTWELL	N	copper	Unknown		decreasing DO
	SV-181	SIX & TWENTY CK					
	SV-339	LAKE HARTWELL	N	copper	Unknown		
03060101050	SV-343	LITTLE CANE CK					collection system
	SV-342	CANE CK					collection system
	SV-311	LAKE KEOWEE	P	zinc	Unknown		decreasing DO
03060101060	SV-206	N FORK TWELVE MILE CK				P	Unknown
03060101070	SV-239	GOLDEN CK					decreasing pH, increasing turbidity & bacteria
	SV-738	GOLDEN CK	P	macroinvertebrates	Point source		decreasing pH, increasing turbidity
	SV-015	TWELVE MILE CK					increasing turbidity & bacteria
03060101080	SV-137	TWELVE MILE CK					
	SV-136	UNNAMED					decreasing DO, increasing bacteria
	SV-333	CONEROSS CK					decreasing pH
03060101090	SV-004	CONEROSS CK					increasing bacteria
	SV-322	CONEROSS CK					increasing bacteria
	SV-017	EIGHTEEN MILE CK					under enforcement
03060101100	SV-241	WOODSIDE BRANCH					under enforcement
	SV-245	EIGHTEEN MILE CK					under enforcement
	SV-135	EIGHTEEN MILE CK					under enforcement
03060101110	SV-268	EIGHTEEN MILE CK					under enforcement
	SV-735	THREE AND TWENTY CK	P	macroinvertebrates	NPS-sedimentation		under enforcement
	SV-111	THREE & TWENTY CK					decreasing pH, increasing bacteria

Recreational use assessment based on fecal coliform bacteria densities.
 Waterbody names in *italics* evaluated for aquatic life use support only.
 N=not supporting, P=partially supporting, *=eutrophication assessment

Savannah and Salkehatchie River Basins: Waters not fully supporting evaluated uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	AQUATIC LIFE USES		RECREATIONAL USES		COMMENTS
			Status	Causes	Status	Possible Source	
03060102130	SV-301	NORRIS CK			N	Point source	decreasing pH
	SV-108	CHOESTOEA CK			N	Point source	
	SV-345	BEAVERDAM CK	P	macroinvertebrates	N	NPS-agriculture	
03060103020	SV-340	LAKE HARTWELL	N	copper			
03060103030	SV-316	BIG GENEROSTEE CK			N	Point source	plant upgrade underway
	SV-101	BIG GENEROSTEE CK	P	macroinvertebrates			plant upgrade underway
03060103070	SV-031	ROCKY RVR	N	copper	N	Point source	increasing turbidity
	SV-041	ROCKY RVR			N	Point source	increasing turbidity, bacteria
03060102150	SV-139	CUPBOARD CK	N	dissolved oxygen	N	Point source	point sources removed
	SV-140	CUPBOARD CK	N	dissolved oxygen	N	Point source	point sources removed
	SV-141	BROADWAY CK	P	macroinvertebrates	N	Point source	point sources removed
	SV-037	BETSY CK	N	copper			under enforcement
	SV-650	ROCKY RVR	P	macroinvertebrates			
	SV-043	CHEROKEE CK			P	Point source	
	SV-331	LAKE SECESSION	*	nutrients	P	Point source	decreasing pH, increasing turbidity & bacteria
03060103080	SV-185	WILSON CK	P	macroinvertebrates			
	SV-347	WILSON CK			P	Unknown	
03060103140	SV-164	LITTLE RVR			P	NPS-agriculture	
	SV-348	LITTLE RVR			P	NPS-agriculture	
03060103150	SV-052	SAWNEY CK			N	Point source	decreasing pH, increasing turbidity & bacteria
	SV-349	LONG CANE CK			N	NPS-agriculture	
	SV-734	JOHNS CK	P	macroinvertebrates			collection system
	SV-053B	BLUE HILL CK			N	Point source	
03060103030	SV-054	DOUBLE BR	P	macroinvertebrates			decreasing pH, increasing turbidity
	SV-318	LONG CANE CK			P	Point source	

Recreational use assessment based on fecal coliform bacteria densities.
 Waterbody names in *italics* evaluated for aquatic life use support only.
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Savannah and Salkehatchie River Basins: Waters not fully supporting evaluated uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	AQUATIC LIFE USES		RECREATIONAL USES		COMMENTS	
			Status	Causes	Possible Source	Status		Possible Source
03060107010	SV-151	HARD LABOR CK	N	macroinvertebrates, copper	Point source	N	Point source	decreasing pH
	SV-351	CUFFYTOWN CK				P	NPS-agriculture	
	SV-730	ROCKY CK	P	macroinvertebrates	Point source			decreasing pH, increasing bacteria
03060107030	SV-330	STEVENS CK				P	Unknown	increasing turbidity
	SV-353	BEAVERDAM CK				P	NPS-agriculture	increasing turbidity
	SV-329	HORSE CK	P	copper	Unknown			decr. pH, incr. nitrogen, turbidity & bacteria
03060106050	SV-069	SAND RVR				P	Point source	decreasing pH, increasing turbidity
	SV-096	HORSE CK	N	copper	Unknown	P	Point source	decreasing pH, increasing turbidity
	SV-072	HORSE CK				P	Point source	decreasing pH, increasing turbidity
03060106060	SV-252	SAVANNAH RVR				P	NPS-land disposal	decreasing pH
	SV-324	TIMS BRANCH				P	Point source, NPS-agriculture	incr. phosphorus, nitrogen, turbidity & increasing turbidity
03060106100	SV-325	UPPER THREE RUNS CK				P	NPS-agriculture	decreasing pH, increasing turbidity
	SV-328	LOWER THREE RUNS CK	P	copper	Unknown			decreasing pH
03060106140	SV-118	SAVANNAH RVR	N	zinc	Unknown			animal carcass disposal
	SV-356	CYPRESS CK	N	dissolved oxygen	NPS-recreational activity			decreasing pH, increasing turbidity
03060109060	SV-191	SAVANNAH RVR						decreasing pH
	CSTL-028	SALKEHATCHIE RVR	N	copper	Unknown	P	Point source	decreasing pH, increasing turbidity
03050207020	CL-064	LAKE EDGAR A. BROWN	N, *	pH, nutrients	Hydromodification			increasing turbidity
	CSTL-001B	TURKEY CK				P	Point source	decreasing pH, increasing turbidity
03050207030	CSTL-003	SALKEHATCHIE RVR	N	copper	Unknown	P	Point source	decreasing pH, increasing turbidity
	CSTL-048	SALKEHATCHIE RVR				N	NPS-agriculture	
03050207040	CSTL-006	SALKEHATCHIE RVR				P	Point source	decreasing pH, increasing turbidity & bacteria
	CSTL-104	SALKEHATCHIE RVR				P	Point source	
03050207050	CSTL-076	WHIPPY SWAMP				N	Unknown	

Recreational use assessment based on fecal coliform bacteria densities.
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Savannah and Salkehatchie River Basins: Waters not fully supporting evaluated uses

WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	AQUATIC LIFE USES		RECREATIONAL USES		COMMENTS
			Status	Causes	Status	Possible Source	
03050207060	CSTL-115	LITTLE SALKEHATCHIE RV				P	NPS-agriculture
03050207070	CSTL-116	LEMON CK				P	NPS-agriculture
03050207080	CSTL-117	LITTLE SALKEHATCHIE RV				N	Unknown
03050207090	CSTL-119	BUCKHEAD CK				N	Unknown
03050207100	CSTL-118	WILLOW SWAMP				N	Unknown
03050207110	CSTL-120	LITTLE SALKEHATCHIE RV				P	Unknown
03050208010	CSTL-111	COMBAHEE RVR	N	dissolved oxygen	Point source		
03050208020	CSTL-584	REMICK SWAMP CK	N	macroinvertebrates	Unknown		
03050208030	CSTL-044	IRELAND CK				P	Unknown
03050208050	CSTL-068	ASHEPOO RVR				P	Point source
03050208060	CSTL-581	FULLER SWAMP CK	P	macroinvertebrates	Unknown		increasing turbidity
03050208070	CSTL-580	CHESSEY CK	N	macroinvertebrates	Unknown		
03050208080	CSTL-071	HORSESHOE CK				P	Unknown
03050208090	CSTL-110	COOSAWHATCHIE RVR	P	dissolved oxygen	Point source		
03050208100	CSTL-121	COOSAWHATCHIE RVR	P	dissolved oxygen	Point source	P	Point source
03050208110	CSTL-075	LAKE WARREN	N	dissolved oxygen	Unknown		increasing turbidity
03050208120	CSTL-108	SANDERS BRANCH				N	Point source
03050208130	CSTL-010	SANDERS BRANCH				P	Point source
03050208140	CSTL-011	SANDERS BRANCH	N	macroinvertebrates, dissolved oxygen	Point source	N	Point source
03050208150	CSTL-109	COOSAWHATCHIE RVR	N	dissolved oxygen	Point source	P	Point source
03050208160	CSTL-122	CYPRESS CK				P	Unknown
03050208170	MD-128	BEES CK	P	dissolved oxygen	Unknown	P	Unknown
03050208180	MD-007	POCOTALIGO RVR				N	Unknown

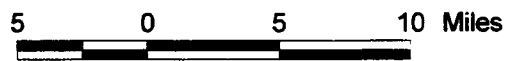
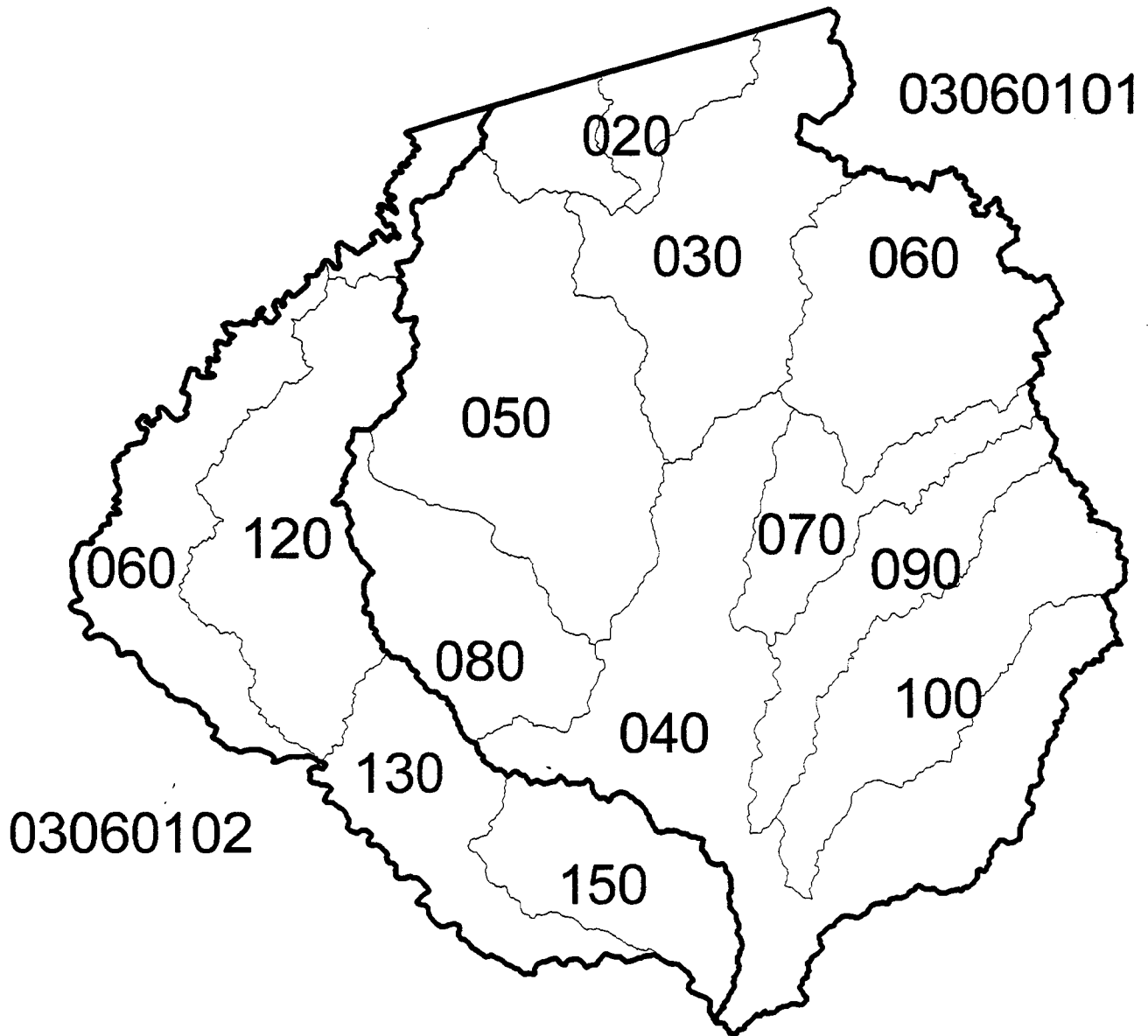
Recreational use assessment based on fecal coliform bacteria densities.
 Waterbody names in *italics* evaluated for aquatic life use support only.
 N=not supporting, P=partially supporting, *=eutrophication assessment

Savannah and Salkehatchie River Basins: Waters not fully supporting evaluated uses

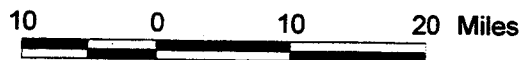
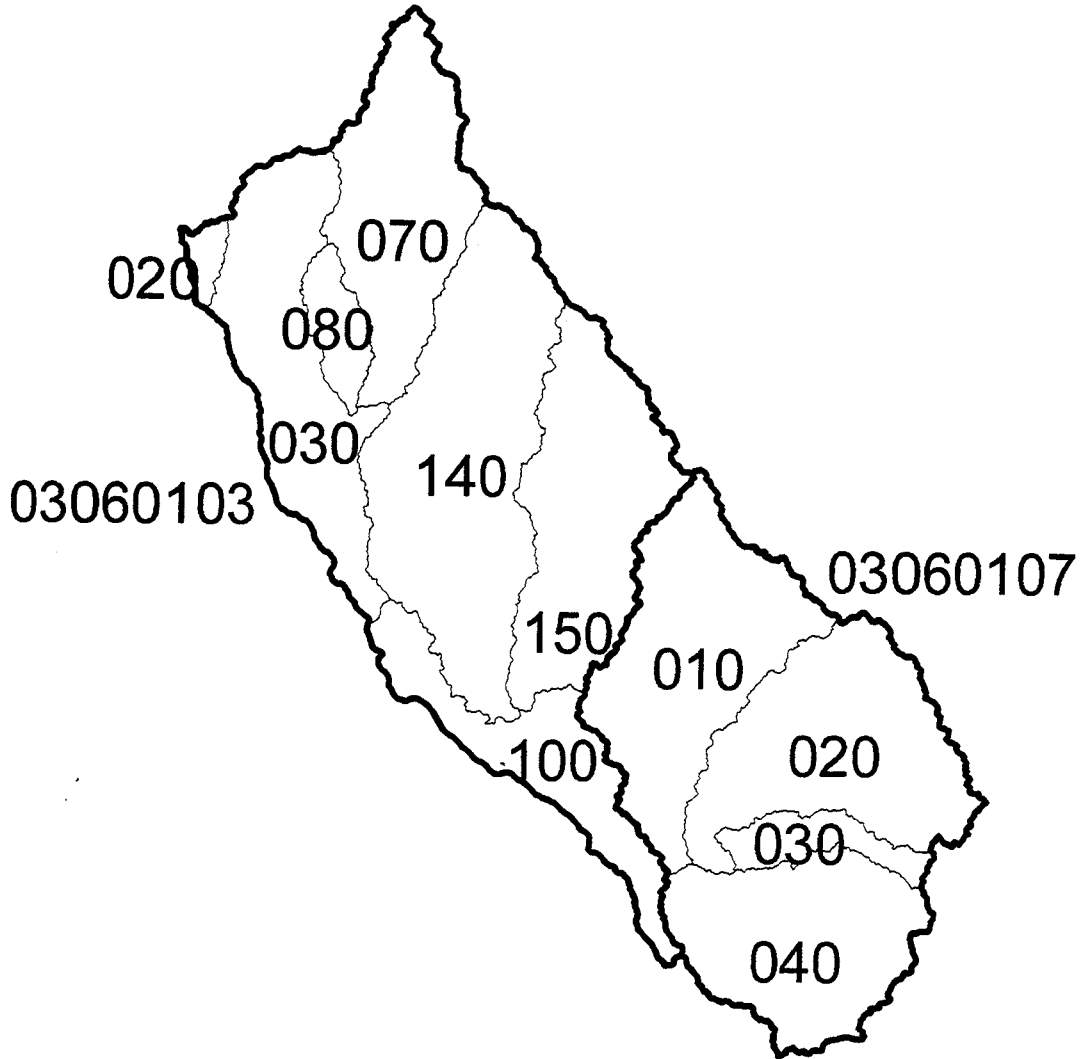
WATERSHED UNIT	STATION NUMBER	WATERBODY NAME	AQUATIC LIFE USES		RECREATIONAL USES		COMMENTS
			Status	Causes	Status	Possible Source	
03050208100	MD-168	COOSAW RVR	N	zinc		NPS-navigation	Intracoastal Waterway
	MD-001	BEAUFORT RVR	N	dissolved oxygen		Point source	decreasing pH & DO, increasing turbidity
	MD-002	BEAUFORT RVR	N	dissolved oxygen		Point source	decr. pH & DO, incr. turbidity & bacteria
	MD-003	BEAUFORT RVR	N	dissolved oxygen, copper		Point source	decr. pH & DO, incr. nitrogen & bacteria
03050208110	MD-004	BEAUFORT RVR	N	dissolved oxygen		Point source	decreasing DO
	MD-013	SKULL CK	P	dissolved oxygen		Unknown	decreasing pH
	MD-174	BROAD CK	P	dissolved oxygen		Unknown	increasing nitrogen & bacteria
03050208120	MD-129	GREAT SWAMP					possible significant wildlife contributions
03050208130	MD-118	NEW RVR					decreasing pH, increasing turbidity & bacteria

Recreational use assessment based on fecal coliform bacteria densities. Waterbody names in *italics* evaluated for aquatic life use support only. N=not supporting, P=partially supporting, *=eutrophication assessment

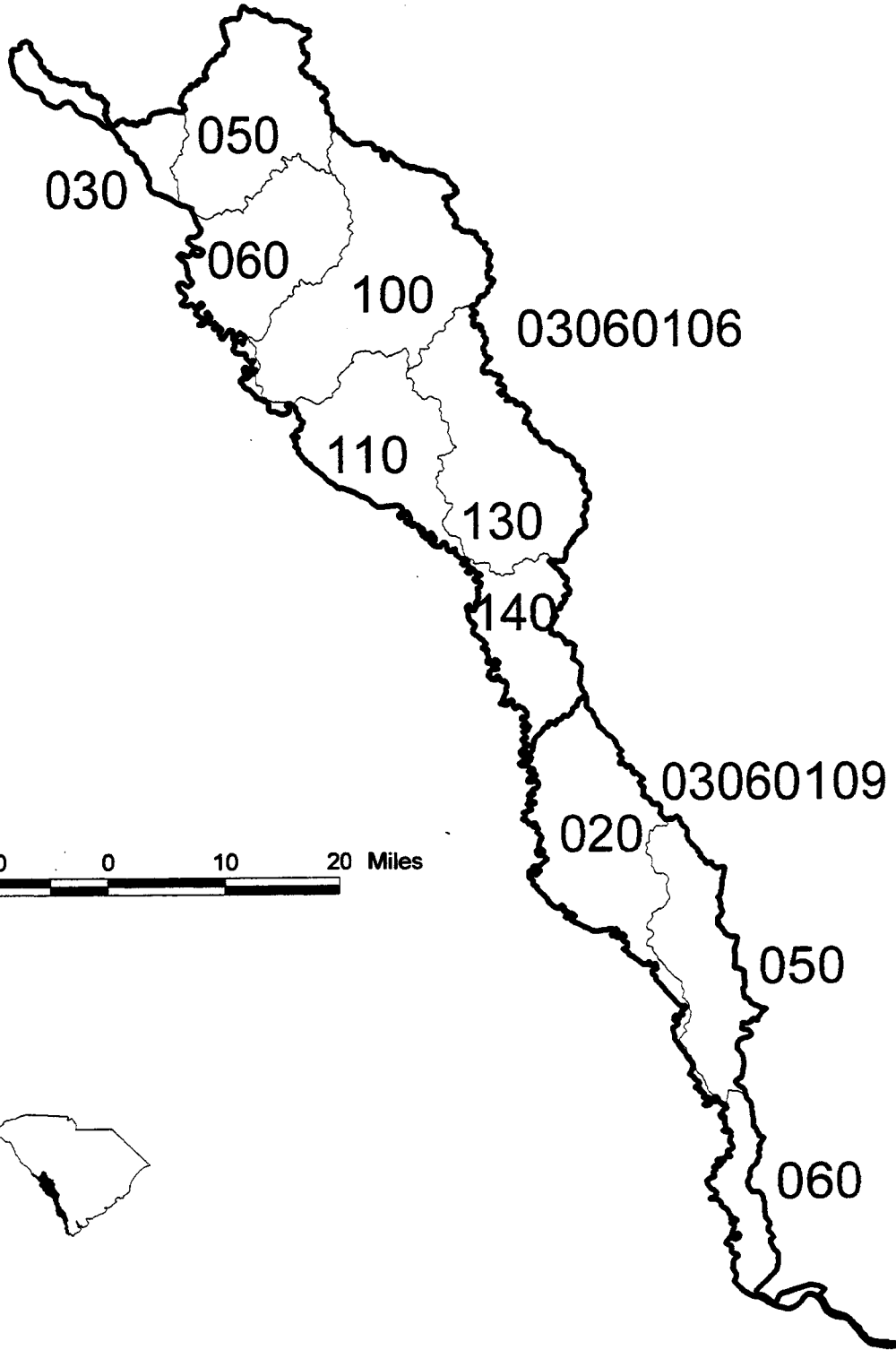
Watershed Units Upper Savannah River Basin



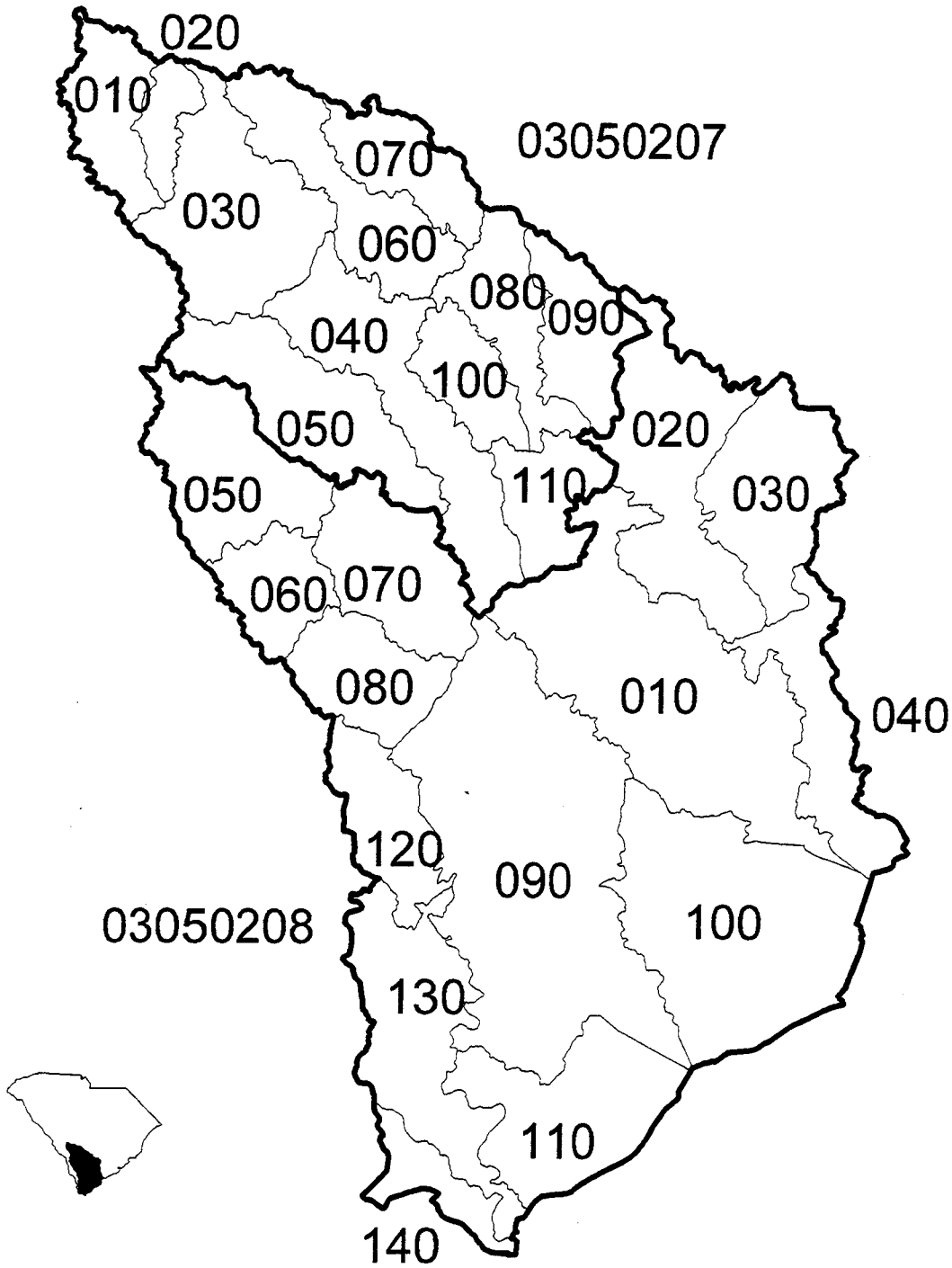
Waterhsed Units Middle Savannah River Basin



Watershed Units Lower Savannah River Basin



Watershed Units Salkehatchie River Basin



INTRODUCTION: WATERSHED PLANNING IN SOUTH CAROLINA

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, SCDHEC published basin planning reports for the four major river 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 water quality management areas of the State and for the nondesignated remainder of the State. These plans and their updated versions continue to serve 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.

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. Through watershed-based water quality management, SCDHEC 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 and implementation strategies that appropriately focus water quality protection efforts. While an important aspect of the strategy is water quality problem identification and solution, the emphasis is on problem prevention.

Five major basin groupings divide the State along hydrologic lines. A Watershed Water Quality Management Strategy (WWQMS) has been created for each of the five basin groupings and will be updated on a five-year rotational basis. This allows for effective allocation and coordination of water quality activities and efficient use of available resources.

Watershed Managers investigate the impaired and threatened streams mentioned in the WWQMS to determine, where possible, the source of the impairment and recommend 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.

The watershed-based strategy partially 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 and indicates where total maximum daily load (TMDL) development is applicable. 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 Strategy also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed may 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.

WATER PROGRAM OVERVIEW

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, that there is plenty of it, 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. Commonly used water quality indicators are described in the next chapter.

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, secondary, and watershed 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 Management Strategies. 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.

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 for this relative index is data 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.

Natural Public Swimming Areas

Natural Public Swimming Areas Regulation 61-50 regulates swimming areas located on lakes, rivers, streams, and ponds. The objective for monitoring these sites is to help offset the potential for parasitic and bacteriological related health outbreaks and to ensure the presence of required safety items. A construction permit is issued for each new facility. All new sites must be inspected and sampled prior to issuance of the final operating permit. During the swimming season, which normally lasts from May through August of each year, the regulated public swimming areas are subject to frequent inspection by the Department.

Standards and Classified Waters

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 follow.

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 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 Trout Waters. The State recognizes three types of trout waters:

Trout natural waters, which are freshwaters suitable for supporting reproducing trout populations and a cold water balanced indigenous aquatic community of fauna and flora,

Trout put, grow and take waters, which are freshwaters suitable for supporting the growth of stocked trout populations and a balanced indigenous aquatic community of fauna and flora,

Trout put and take waters, which are freshwaters protected by the standards of Class FW.

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. SFH waters have the most stringent bacterial standards.

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.

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 (e.g., some swamps, lakes, and tidal creeks) 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 and 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 (Regulation 61-69), not to tributaries or downstream unspecified waters.

In April of 1992, the freshwater designations A and B were eliminated. Class A and B waters were reclassified as Class FW to protect all freshwaters for primary contact recreation. The main difference between Class A and B waters was the fecal coliform standard.

Class A waters were freshwaters which were suitable for primary contact recreation. This class was also suitable for uses listed as Class B. Class A waters were not to exceed a fecal coliform 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 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. Class B waters were not to exceed a fecal coliform 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.

Groundwater

Groundwater is an important resource for drinking water use, as well as 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.

Water Supply

Water treatment facilities are permitted by the Department for municipal and industrial potable water production. According to the 1983 Water Use Reporting and Coordination Act (Act 282), all water users over 100,000 gallons per day must report their usage. This includes industrial, agricultural, mining, golf courses, public supply, commercial, recreational, hydropower, thermo power, and nuclear power activities.

Capacity Use Program

As authorized under the Groundwater Use Act, the Department may declare and delineate capacity use areas after receiving a request and conducting an investigation. Capacity use areas are areas in which the state determines, due to increasing demand and/or potential salt water intrusion, that the use of groundwater requires coordination and regulation for protection of the interests and rights of residents or property owners of these areas or of the public interest.

The Groundwater Use Act requires large groundwater users to obtain a permit to construct a well and to withdraw, utilize, or obtain groundwater in designated capacity use areas if specified threshold limits are exceeded. These threshold limits are one-hundred thousand (100,000) gallons per day on any one day,

one million (1,000,000) gallons during any one month, and ten million (10,000,000) gallons during any one year. In addition to other conditions permit holders are required to report the amount of groundwater pumped.

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 legally protected mitigation 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 addition, wetlands that are not currently classified as ORW, but meet certain criteria (e.g., absence of dischargers, endangered species, federal lands) will be noted as potential ORW candidates. In cooperation with the S.C. Department of Natural Resources's Division of Land Resources and Conservation Districts, Landsat Thematic Mapper (TM) satellite image data will provide an inventory of wetlands in the basin and an image-based geographical information system (GIS) for subsequent monitoring and tracking efforts.

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 area classification shall be determined upon a sanitary survey which includes water samples collected from stations in the designated area adjacent to actual or potential sources of pollution. Growing areas shall be classified "approved" when the sanitary survey concludes that fecal material, pathogenic microorganisms, and poisonous or deleterious substances are not present in concentrations which would render shellfish unsafe for human consumption.

Conditionally approved growing areas are subject to temporary conditions of actual or potential pollution. When such events are predictable as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river, potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be adopted by the Department, prior to classifying an area as "conditionally approved." Shellfish shall not be directly marketed from a "conditionally approved" area until conditions for an "approved" classification have been met for a time that should insure the shellfish are safe for consumption. Shellstock from "conditionally approved" areas which have been subjected to temporary conditions of actual or potential pollution may be relayed to "approved" areas for purification or deperated through controlled purification operations only by special permit issued by the Department.

Restricted growing areas show a limited degree of pollution or the presence of deleterious or poisonous substances to a degree which may cause the water quality to fluctuate unpredictably or at such a frequency that a "conditionally

approved" area classification is not feasible. Shellfish may be harvested from areas classified as "restricted" only for the purposes of relaying or depuration and only by special permit issued by the Department and under Department supervision.

Conditionally restricted growing areas are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be prepared by the Department prior to classifying an area as "conditionally restricted." Shellfish may be harvested from areas classified as "conditionally restricted" only for the purposes of relaying or depuration and only by permit issued by the Department and under Department supervision.

Prohibited growing areas include those for which there is no current sanitary survey, or for which monitoring data show unsafe levels of fecal material, pathogenic microorganisms, or poisonous or deleterious substances in the growing area, or indicate that such substances could potentially reach quantities which could render shellfish unfit or unsafe for human consumption.

Evaluation of growing areas is conducted annually; routine monitoring is conducted monthly. Sampling sites are shown on maps in the Watershed Assessments portion of this report. For current information on growing area classifications, contact DHEC's Shellfish Sanitation Program at 803-740-1590 (Charleston) or 803-734-5232 (Columbia).

Wasteload Allocation

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, the minimum treatment levels required by law are sufficient to maintain instream water quality standards, and 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.

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. A completed draft permit is sent to the permittee, to 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. Major NPDES reissued permits are individually public noticed in a newspaper of general circulation and minor NPDES reissued permits are individually public noticed by posting in accordance with Regulation 61-9. New NPDES permits and modifications of existing NPDES permits are issued as the need arises, and are public noticed by newspaper advertisement and site posting. 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 makes the decision whether to issue the permit as drafted, to issue a modified permit, or to deny the permit. Everyone who participated in the process receives a copy of the final staff decision. 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 Regulation 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.

Stormwater

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 land disturbance pursuant to the State Stormwater Management and Sediment Reduction Act. SCDHEC-OCRM manages sediment and erosion control in the coastal area.

Nonpoint Source Pollution Control

Nonpoint source pollutants are generally introduced to a waterbody during a storm event 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. With the results of the Assessment, 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. 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 may include BMP demonstrations, education, and monitoring.

The conventional §319 NPS Management Program has typically involved SCDHEC program areas or large institutional cooperators such as Clemson Extension Service and the Department of Natural Resources undertaking large scale projects. This effort continues through our annual grant award process. To diversify participation in the program, the Department has allocated a portion of §319 funds to institute a grants program known as Minigrants. In keeping with the Department's vision statement "Local Solutions to Local Problems", this program seeks to gain the involvement of smaller organizations like local governments, nonprofit organizations, and schools in NPS projects that are locally focused and generally smaller in scale.

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 (OCRM) and the Bureau of Water are responsible for development and implementation of the program. The Department submitted a State Nonpoint Source Pollution Management Program to meet the requirements of §6217 and §319, in October 1995.

The purpose of the 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 in §6217 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. The Nonpoint Source Management Program initiates NPS projects during the implementation phase of a targeted basin in accordance with the Watershed Water Quality Management Strategy.

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 803-734-5300.

Implementation Process for Impaired Waters

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. This biennial list, commonly referred to as the "303(d) list", is the basis for targeting waterbodies for watershed-based solutions.

A Total Maximum Daily Load (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. Now, in order to address the combined cumulative impacts of all sources, broad watershed-based TMDLs will be developed. A TMDL may also include an unallocated portion of capacity reserved as a margin of safety.

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.

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.

Macroinvertebrate Community

Macroinvertebrates are aquatic insects and other aquatic invertebrates associated with the substrates of streams, rivers, and lakes. 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 lower during the summer 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 (BOD₅) 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 BOD₅ 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 BOD₅ discharged by point sources is limited through the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The discharge of BOD₅ 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 conditions. 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 game 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 adverse health effects from various recreational or drinking water uses. Proper waste disposal or sewage treatment prior to discharge to surface waters minimizes this type of pollution.

Nutrients

Oxygen demanding materials and plant nutrients are the most common substances discharged to the environment by man's activities, through wastewater facilities and by agricultural, residential, and stormwater runoff. The most important plant nutrients, in terms of water quality, are phosphorus and nitrogen. In general, increasing nutrient concentrations are undesirable due to the potential for accelerated growth of aquatic plants, including algae. Nuisance plant growth can create imbalances in the aquatic community, as well as aesthetic and access issues. High densities of phytoplankton (algae) can cause wide fluctuations in pH and dissolved oxygen. South Carolina has no official standards or criteria for nutrients in water; however, the USEPA has issued recommendations for phosphorus concentrations to prevent over-enrichment.

The forms of nitrogen routinely analyzed at SCDHEC stations are ammonia and ammonium (NH_3/NH_4), total Kjeldahl nitrogen (TKN), and nitrite and nitrate (NO_2/NO_3). Ammonia and ammonium are readily used by plants. TKN is a measure of organic nitrogen and ammonia in a sample. Nitrate is the product of aerobic transformation of ammonia, and is the most common form used by aquatic plants. Nitrite is usually not present in significant amounts.

Total phosphorus (TP) is commonly measured to determine phosphorus concentrations in surface waters. TP includes all of the various forms of phosphorus (organic, inorganic, dissolved, and particulate) present in a sample.

Turbidity

Turbidity is an expression of the scattering and absorption of light through water. The presence of clay, silt, fine organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms increases turbidity. Increasing turbidity can be an indication of increased runoff from land. It is an important consideration for drinking water as finished water has turbidity limits. State water quality standards address turbidity in waters classified for Trout.

Total Suspended Solids

Total Suspended Solids (TSS) are the suspended organic and inorganic particulate matter in water. Although increasing TSS can also be an indication of increased runoff from land, TSS differs from turbidity in that it is a measure of the mass of material in, rather than light transmittance through, a water sample. High TSS can adversely impact fish and fish food populations and damage invertebrate populations. There are no explicit State Standards for TSS.

Heavy Metals

Concentrations of cadmium, chromium, copper, lead, mercury, nickel, and zinc in water are routinely measured by the Department to compare to State standards intended to protect aquatic life and human health. These metals occur naturally in the environment, and many are essential trace elements for plants and animals. Human activities, such as land use changes and industrial and agricultural processes, have resulted in an increased flux of metals from land to water. Atmospheric inputs are recognized as important sources of metals to aquatic systems. Metals are released to the atmosphere from the burning of fossil fuels (coal, oil, gasoline), wastes (medical, industrial, municipal), and organic materials. The metals are then deposited on land and in waterways from the atmosphere via rainfall.

ASSESSMENT METHODOLOGY

The Watershed Water Quality Management Strategy is a geographically-based document that describes, at the watershed level, water quality as well as conditions and activities related to water quality. This section provides an explanation of the information assessment methodology used to generate the watershed-level summaries. Water quality data used in this assessment are presented in Appendix B.

Use Support Determination

At the majority of SCDHEC's surface water monitoring stations, samples for analysis are collected as surface grabs once per month, quarter, or year, depending on the parameter. Grab samples collected at a depth of 0.3 meters are considered surface measurements, and are used to establish representative physical conditions and chemical concentrations in the waterbodies sampled. At most stations sampled by boat, dissolved oxygen and temperature are sampled as a water column profile, with measurements being made at a depth of 0.3 meters below the water surface and at one-meter intervals to the bottom. At stations sampled from bridges, these parameters are measured only at a depth of 0.3 meters. All water and sediment samples are collected and analyzed according to standard procedures. Macroinvertebrate community structure is analyzed routinely at selected stations as a means of detecting adverse biological impacts on the aquatic fauna due to water quality conditions which may not be readily detectable in the water column chemistry.

For the purpose of assessment, only results from surface samples are used in water quality standards comparisons and trend assessments. This information is considered to represent "average" conditions, as opposed to extremes, because of the inability to target individual high or low flow events on a statewide basis. The more extreme instream chemical concentrations resulting from nonpoint source inputs from rain events or point source inputs of a variable nature are frequently missed because routine monthly sampling rarely coincides with the time of release. Results from water quality samples can be compared to State standards and USEPA criteria, with some restrictions due to time of collection and sampling frequency. The monthly sampling frequency employed in the 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.

Aquatic Life Use Support

One important goal of the Clean Water Act and State Standards is to maintain the quality of surface waters 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. A number of waterbodies have been given site specific standards for pH and dissolved oxygen, which reflect natural conditions.

A dissolved oxygen (DO) criterion of 4 mg/l is used for Class SB, 6 mg/l for TN and TPGT, and 5 mg/l 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. 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.

If the acute aquatic life standard is exceeded for any individual toxicant (heavy metals, priority pollutants, chlorine, ammonia) in more than 10 percent of the 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.

Since most toxicants are collected with less frequency than the physical parameters, some judgement must be used in applying this guidance (see also Screening & Additional Considerations for Water Column Metals below). If the sample size is small, as for annual sampling, a single sample above the acute standard constitutes more than 10 percent of the samples. In this instance, it is possible for a single sample to result in a conclusion that aquatic life uses are not supported, despite what other data suggests. 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 sometimes total abundance may be used to help interpret data.

The EPT Index is a tabulation of taxa richness within the generally pollution sensitive groups. 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 are advised to avoid consumption of fish from any waterbody where an advisory has been issued.

SCDHEC continues to issue fish consumption advisories for polychlorinated biphenyls (PCBs) based on the USFDA action level of 2.0 parts per million. The SCDHEC is, however, in the process of developing a risk based method for issuing future advisories.

Human Health Standards

State standards for human health are also evaluated in the preparation of the Watershed Water Quality Management Strategy assessments. For contaminants with human health standards (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 for 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 $\alpha=0.1$ is used to determine statistically significant trends, and the direction of trend. An estimate of the magnitude of any statistically significant trend is also 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. Autocorrelation should 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 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 to construct the percentiles 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 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 (see table next page).

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 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

METAL STANDARDS IN WATER (MG/L)				
Metal	Present Detection Level	Freshwater 1-Hour Ave.	Saltwater 1-Hour 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 .				

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 the table above. 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.

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 has 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 or nonpoint sources. 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.

Groundwater Contamination Inventory

A detailed accounting of groundwater contamination will be addressed in subsequent watershed strategy documents. The groundwater contamination inventory is used to identify groundwater-related problem areas. Sites in the inventory are updated annually.

Land Use/Land Cover Data

General land use/land cover data for South Carolina was derived from SPOT multispectral satellite images using image mapping software to inventory the State's land classifications, which are as follows.

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.

Slope and Erodibility Data

The slope values used in this strategy are approximate slopes derived by NRCS field personnel conducting soil surveys. 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 in this assessment were derived from the Nonpoint Source Pollution Assessment, where 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.

Public Participation

Public participation is an important component of SCDHEC's Watershed Water Quality Management Program. Workshops were held in several locations during strategy development to gain a better understanding of 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. Meetings are summarized in Appendix A.

SAVANNAH AND SALKEHATCHIE RIVER BASINS

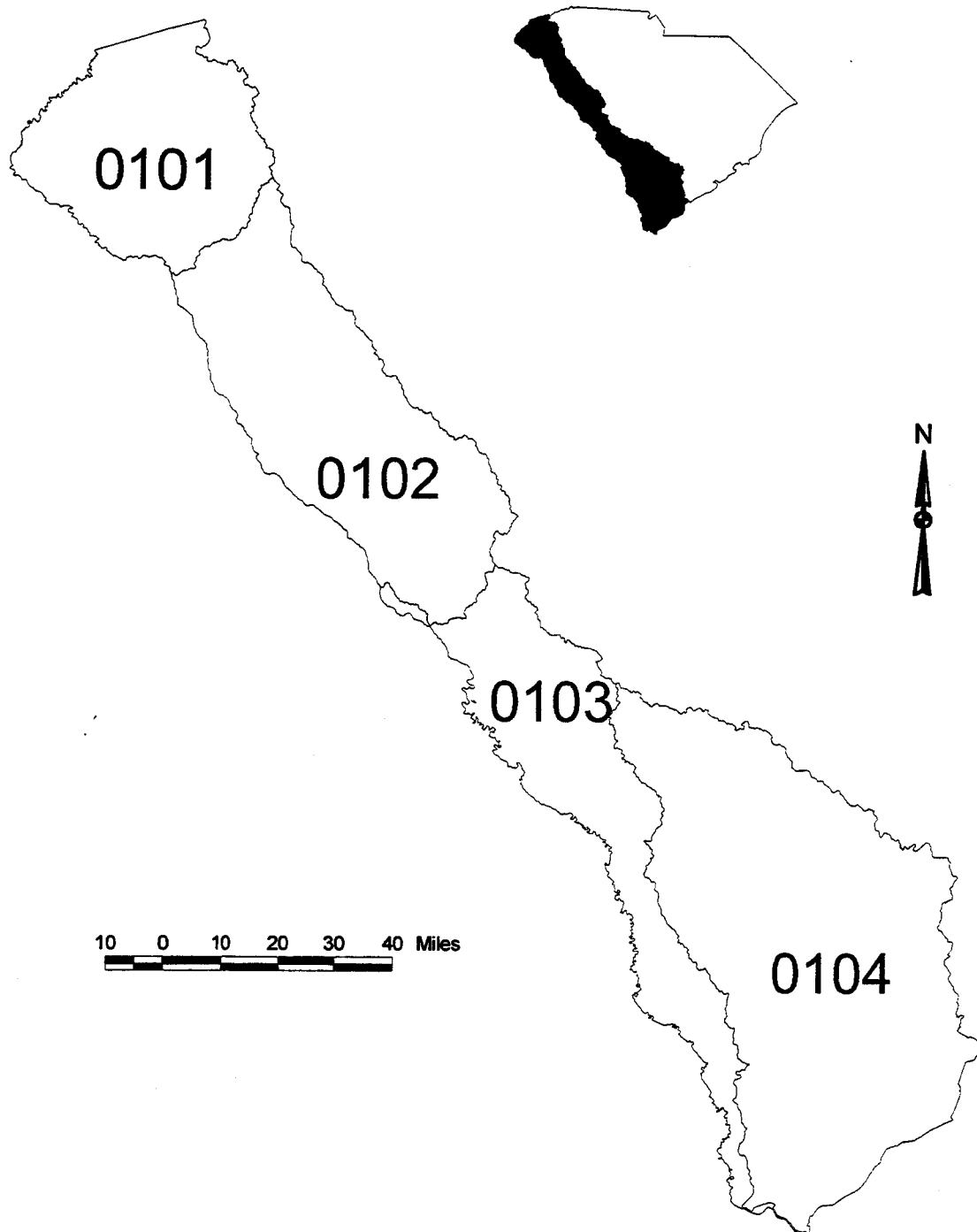
Together, the Savannah and Salkehatchie River basins incorporate some 5 million acres within the State of South Carolina. For this document, the basins are divided hydrologically into 4 watershed management units (WMU) that contain a total of 60 watershed units. The watershed units used are the USDA Natural Resource Conservation Service 11-digit codes for South Carolina. All water quality related evaluations are made at the watershed level. The stream names used are derived from USGS topo maps. Summaries of public workshops held within the Savannah and Salkehatchie River basins are contained in Appendix A.

Land Resources

The portion of the Savannah River basin within South Carolina as described in Watershed Management Units 0101, 0102 and 0103 (see map next page) encompasses 2,983,612 acres. Most (57%) of this area is forested; 15% is agricultural land, 14% is scrub land, 4% is forested wetland, 4% is urban land, 4% is water, 1% is barren land, and 1% is nonforested wetland. Urban land includes the Cities of Anderson, Aiken, and North Augusta.

The entire Salkehatchie River basin, described in Management Unit 0104, encompasses 2,127,766 acres of which 35% is forested land, 16% is forested wetland, 15% is agricultural land, 14% is scrub land, 10% is nonforested wetland, 7% is water, 3% is urban land, and 0.4% is barren land. Urban land includes Hilton Head Island and the Beaufort area.

Watershed Management Units Savannah and Salkehatchie River Basins



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 South Carolina are as follows:

The **Blue Ridge** is an area of dissected (separated by erosion into many closely spaced valleys), rugged mountains with narrow valleys dominated by forests; elevations range from 1,000 to 3,300 feet.

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms and orchards; elevations range from 375 to 1,000 feet.

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.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Savannah and Salkehatchie River basins 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.

Argent soils are poorly drained soils on low, nearly level areas and low ridges.

Ashe soils are shallow to moderately deep, well drained to excessively drained soils in steep areas.

Bladen soils are poorly drained soils on low, nearly level areas and low ridges.

Blanton soils are excessively drained soils that have loamy subsoil or are sandy throughout.

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

Bonneau soils are deep, moderately well drained soils with loamy subsoil on ridges.

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

Cataula soils are deep, gently sloping to strongly sloping, well drained soils with a loamy surface layer and a clayey subsoil.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Chastain soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Chewacla soils are nearly level, somewhat poorly drained and well drained soils.

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.

Coosaw soils are somewhat to poorly drained soils, with a moderately thick sandy surface layer and loamy subsoil, on ridges and in depressions.

Coxville soils are deep, poorly drained soils in thick beds of clayey sediment, nearly level.

Davidson soils are deep, gently sloping to strongly sloping, well drained to somewhat poorly drained soils with a loamy surface layer and a clayey subsoil.

Dothan soils are well drained, sandy soils with loamy subsoil.

Echaw soils are well drained soils, sandy throughout on broad, nearly level to gently sloping ridges.

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

Georgeville soils are gently sloping to sloping, well drained and moderately well drained soils.

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

Goldston soils are dominantly sloping to steep, well drained to excessively drained soils.

Hayesville soils are moderately shallow to deep, well drained soils in gently sloping to steep areas, with red to yellow-brown subsoil.

Helena soils are gently sloping to sloping, moderately well drained to well drained soils.

Herndon soils are gently sloping to sloping, well drained and moderately well drained soils.

Hiwassee soils are well drained, moderately sloping soils with clayey subsoil, moderately deep.

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

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

Lynnhaven soils are poorly drained sandy soils, with sandy subsoil, in low areas, and prone to ponding.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Norfolk soils are deep, well drained soils, with loamy subsoil, nearly level and gently sloping elevated uplands.

Ocilla soils are somewhat poorly to moderately well drained soils with a thick sandy surface layer and a loamy subsoil, or sandy throughout.

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

Okeetee soils are deep, somewhat poorly drained soils, with clayey subsoil, on broad low ridges.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Paxville soils are somewhat to very poorly drained soils, with loamy subsoil, on low ridges and in depressions.

Pelham soils are deep, poorly drained soils with loamy subsoil on broad flats and in depressions.

Pungo soils are very poorly drained soils, mucky throughout or loamy and underlain with clayey layers, rarely or frequently flooded with freshwater.

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

Saluda soils are excessively drained to well drained, strongly sloping to very steep soils.

Santee soils are very poorly drained soils on low nearly level areas.

Tatum soils are dominantly sloping to steep, well drained to excessively drained soils, with a loamy subsoil, moderately deep or shallow to weathered rock.

Tawcaw soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Torhunta soils are poorly drained soils, prone to flooding and ponding, with a loamy surface layer and subsoil, or are sandy throughout, on level areas.

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.

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

Wahee soils are poorly drained soils on low, nearly level areas and low ridges.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Water Resources

The **Savannah** River basin incorporates areas within the States of North Carolina, Georgia, and South Carolina, approximately 10,000 square miles, thus ranking it among the major watersheds of the

Southeast. Geographic regions included in the Savannah River Watershed range from the Blue Ridge (mountain) through the Piedmont, and the Upper and Lower Coastal Plains to the Coastal Zone.

The Tallulah River and Chattooga River, originating in Georgia and North Carolina, respectively, join to form the Tugaloo River on the South Carolina/Georgia State border. The Horsepasture River flows into the Toxaway River which flows over the North Carolina State boundary into South Carolina, where it merges with the Whitewater River and Thompson River to form Lake Jocassee, the Keowee River and eventually Lake Keowee. The Seneca River flows out of Lake Keowee to converge with the Tugaloo River and form the headwaters of the Savannah River, which serves as the physical boundary between the States of South Carolina and Georgia. The Savannah River then flows through Lake Hartwell, Lake Richard B. Russell, and Lake Thurmond and empties into the Atlantic Ocean at the port city of Savannah, Georgia.

The Salkehatchie River basin is contained within South Carolina and is described in Watershed Management Unit 0104. The Salkehatchie River basin originates in the Sandhills region and flows through the Lower Coastal Plain and Coastal Zone regions. The Salkehatchie River joins with the Little Salkehatchie River to form the Combahee River, which empties into St. Helena Sound and the Atlantic Ocean. Also included in this basin grouping are drainages from the Ashepoo River, the Coosawhatchie River, Broad River, and the New River.

Watershed Assessments

Ambient surface water monitoring data from 64 primary stations, 44 secondary stations, 52 watershed stations, and 1 inactive station in the Savannah and Salkehatchie River basins were reviewed for this assessment, along with 72 biological sites to assess macroinvertebrate communities. The time period used to assess standards compliance was 1992 through 1996. Water quality data are summarized in Appendix B. All current NPDES permits in the Savannah and Salkehatchie River basins are to be drafted and issued by September 30, 1998, and will all be reissued together in 2003.

Management Unit WMU-0101

Management Unit WMU-0101 is located in the northwest corner of South Carolina and extends from a common border with North Carolina and Georgia southeast into Anderson County. It contains Oconee County and a portion of Pickens County as well.

Population. The 1990 populations and projections for the year 2010 for counties within WMU-0101 are listed in the table below. Oconee County is expected to experience the greatest population change during this time period, with an increase of 26%.

<i>County</i>	<i>1990 Population</i>	<i>2010 Population</i>	<i>Change (%)</i>
Anderson	145,196	176,000	21
Oconee	57,494	72,300	26
Pickens	93,894	109,500	17

Climate. Normal yearly rainfall in the WMU-0101 area was 60.97 inches, according to the S.C. historic climatological record. Data compiled from National Weather Service stations in Longcreek, Salem, Walhalla, Clemson University and Pickens were used to determine the general climate information for the northwestern corner of the state. Within the four Savannah-Salkehatchie watershed management units, the highest level of rainfall occurred in WMU-0101, which is characteristic of the mountains and upper Piedmont region. The highest seasonal rainfall occurred in the spring with 17.29 inches; 14.88, 12.72 and 16.08 inches of rain fell in the summer, fall and spring, respectively. The average annual daily temperature was 59.7°F, the coolest in the state. Winter temperatures averaged 42.9°F, spring temperatures averaged 59.4°F and summer and fall mean temperatures were 75.6 and 60.8°F, respectively.

Fish Consumption Advisory. A fish consumption advisory has been issued by SCDHEC for LAKE HARTWELL advising people to limit the amount of fish consumed from these waters and their tributaries due to PCB and mercury contamination. In 1976, analysis of fish tissue by the SCDHEC and the USEPA revealed contamination by polychlorinated biphenyls (PCBs) above the USFDA recommended limits in certain areas of Lake Hartwell. As a result of these findings, a fish consumption advisory was issued for portions of Lake Hartwell to reduce human exposure. The SCDHEC and US Army Corps of Engineers have continued to conduct surveys of Lake Hartwell to evaluate PCB levels in fish tissue.

Portions of Lake Hartwell became eligible for Superfund support in 1990. The contamination originated from the historical industrial use of PCBs at the Cornell-Dubilier Marketing site, formerly owned by Sangamo, located on Town Creek. Contaminated sediments from this site have migrated downstream via Twelve Mile Creek to the Twelve Mile Creek Arm of Lake Hartwell which continues to have the highest level of PCBs. The manufacture and use of PCBs was banned in 1979, but PCBs are very resistant to degradation and therefore are very persistent in the environment.

A gradient of decreasing PCB concentration in fish tissue extends from the Twelve Mile Creek region down to the dam. The forage fish in the Twelve Mile Creek arm are highly contaminated with PCBs and play a major role in the accumulation of PCBs in the game fish population through the food chain.

Mercury has also been measured in fish tissue at levels that would warrant an advisory; however, the advisory issued due to PCBs is more restrictive and the original fish consumption advisory remains in effect. All fish taken from the Seneca River arm upstream of Highway 24 should be released and not eaten. All fish greater than three pounds taken from the remainder of Lake Hartwell should be released and not eaten. SCDHEC continues to issue fish consumption advisories for PCBs based on the USFDA action level of 2.0 parts per million. SCDHEC is, however, in the process of developing a risk based method for issuing future advisories.

03060101-020. Watershed 03060101-020 (map page 29) is located in Oconee and Pickens Counties and consists of LAKE JOCASSEE and its tributaries. The watershed includes the Toxaway River, Whitewater River and Thompson River, all which flow across the North Carolina border to form Lake Jocassee; the entire lake to the dam is included in the watershed.

The watershed occupies 39,724 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Ashe-Saluda series. The erodibility of the soil (K) averages 0.23; the slope of the terrain averages 45.2%, with a range of 10-65%. Land use/land cover in the watershed includes: 73% forested land, 22% water, 2% urban land, 2% scrub/shrub land, 1% agricultural land, and <1% barren land. The entire watershed is contained within Sumter National Forest.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0037800	DUKE POWER/BAD CREEK	JOCASSEE LK	IN	0.18
SC0037800	DUKE POWER/BAD CREEK	JOCASSEE LK	IN	0.013
SC0037800	DUKE POWER/BAD CREEK	JOCASSEE LK	IN	2.9
SC0037800	DUKE POWER/BAD CREEK	JOCASSEE LK	IN	----
SC0037800	DUKE POWER/BAD CREEK	JOCASSEE LK	IN	4.3

*IN=industrial †MGD=million gallons per day

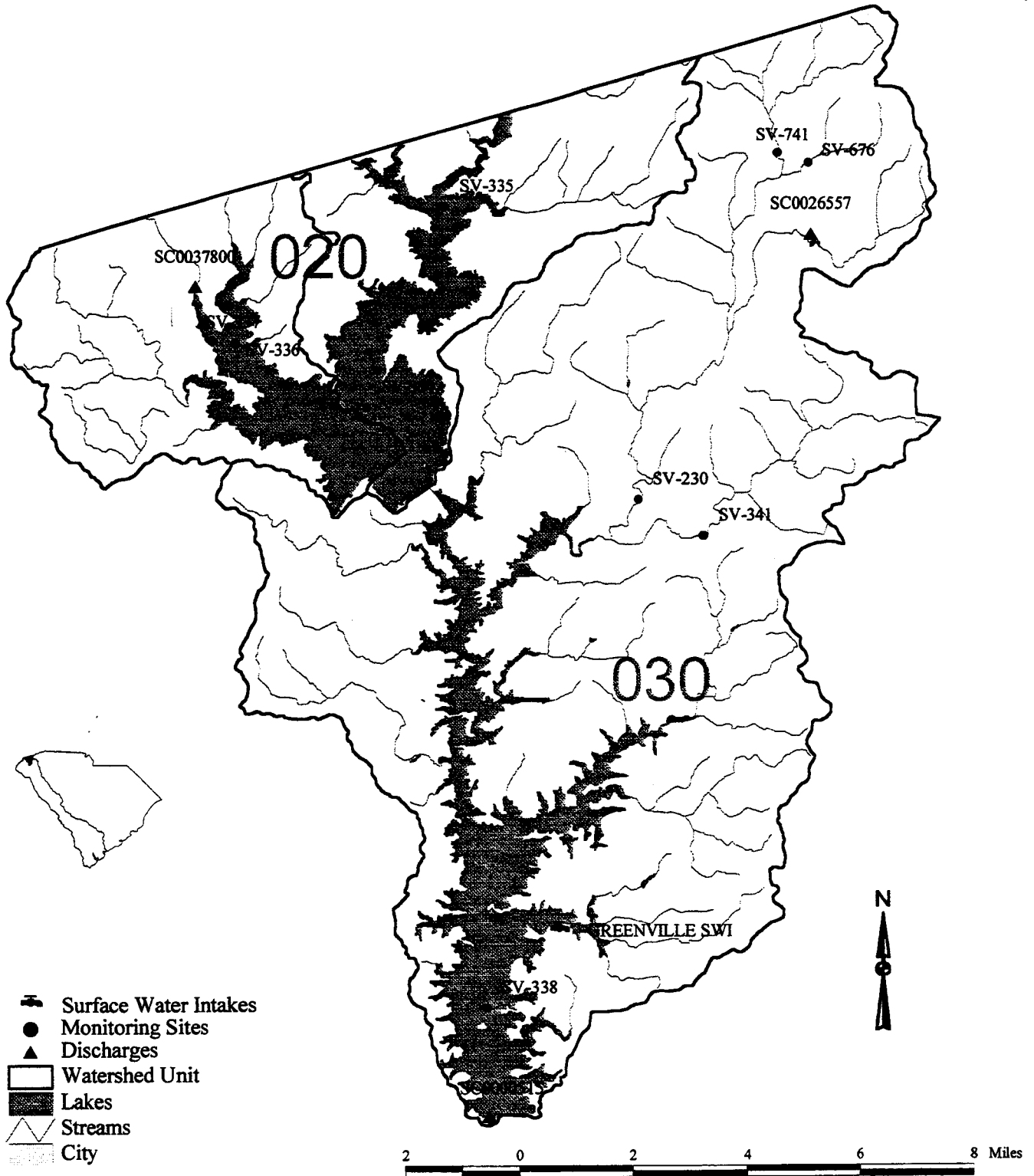
Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-335	P	TPGT	Lake Jocassee at confluence of Toxaway, Horsepasture & Laurel Fork Creeks
SV-337	P	TPGT	Lake Jocassee outside of coffer dam at Bad Creek Project
SV-336	P	TPGT	Lake Jocassee at confluence of Thompson and Whitewater Rivers
SV-334	P	TPGT	Lake Jocassee, main body of lake

* P=primary, S=secondary, SS=watershed
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

LAKE JOCASSEE is a 7565-acre impoundment on the Toxaway, Whitewater, and Thompson Rivers, with a maximum depth of approximately 324 feet (99 meters) and an average depth of approximately 157 feet (48 meters). A portion of the lake's watershed is in North Carolina. There are four monitoring sites on Lake Jocassee.

At the most uplake site (SV-335) aquatic life uses are not supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, in addition to a high concentration of zinc and a very high concentration of lead measured in 1996. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in total nitrogen concentration suggests improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Watersheds 03060101-020, -030 Savannah and Salkehatchie River Basins



Further down the lake (SV-337), aquatic life uses are fully supported, but may be threatened by a very high concentration of zinc measured in 1993 and a very high concentration of lead measured in 1995, compounded by a significant increasing trend in pH. A significant decreasing trend in turbidity suggest improving conditions for this parameter. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the next site down lake (SV-336), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards. Recreational uses are fully supported at this site.

At the most down lake site (SV-334), aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in total nitrogen concentration suggests improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Eutrophication assessments indicate that Lake Jocassee is one of the least eutrophic large lakes in South Carolina, characterized by very low nutrient concentrations and very clear water. Preservation of this lake's desirable trophic condition is recommended.

Duke Energy operates a hydroelectric facility on Lake Jocassee.

03060101-030. Watershed 03060101-030 (map page 29) is located in Oconee and Pickens Counties and consists of the upper region of LAKE KEOWEE and its tributaries. This watershed contains a total of 34.18 stream miles. EASTATOE CREEK receives drainage from ROCKY BOTTOM CREEK and LITTLE EASTATOE CREEK, and joins with the Keowee River just below the Lake Jocassee dam to form the upper region of Lake Keowee. The watershed includes the headwaters of Lake Keowee extending down to the Keowee dam, one of two dams on this reservoir.

The watershed occupies 75,177 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Pacolet-Ashe-Hayesville series. The erodibility of the soil (K) averages 0.23; the slope of the terrain averages 27.8%, with a range of 2-80%. Land use/land cover in the watershed includes: 78.98% forested land, 10.96% water, 6.38% agricultural land, 3.29% scrub/shrub land, 0.30% urban land, and 0.10% barren land. Keowee Toxaway State Park is located in the upper reaches of the watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000515	DUKE POWER/OCONEE NU		IN	2324.7
SC0000515	DUKE POWER/OCONEE NU		IN	3.7
SC0000515	DUKE POWER/OCONEE NU		IN	0.035
SC0000515	DUKE POWER/OCONEE NU		IN	0.007
SC0000515	DUKE POWER/OCONEE NU		IN	0.18
SC0026557	MCCALL ROYAL	REEDY CV CK	CO	0.012

*IN=industrial, CO=community †MGD=million gallons per day

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-741	BIO	ORW	Eastatoe Creek at S-39-237
SV-676	BIO	ORW	Rocky Bottom Creek at US 178
SV-230	P	ORW	Eastatoe Creek at S-39-143
SV-341	SS/BIO	FW	Little Eastatoe Creek at S-39-49
SV-338	P	FW	Lake Keowee above SC Route 130 and dam
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in **ROCKY BOTTOM CREEK (SV-676)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in upper **EASTATOE CREEK (SV-741)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are not supported at the lower Eastatoe Creek site (SV-230) due to occurrences of zinc in excess of the aquatic life acute standards, including two very high concentrations. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in **LITTLE EASTATOE CREEK (SV-341)**. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

LAKE KEOWEE is a 18,372-acre impoundment on the Keowee River, with a maximum depth of approximately 155 feet (47 meters) and an average depth of approximately 54 feet (17 meters). The lake's watershed comprises 273 square miles (707 km²) in North and South Carolina. Eutrophication assessments indicate that Lake Keowee is the least eutrophic large lake in South Carolina, characterized by very low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended. Aquatic life uses are not supported in Lake Keowee (SV-338) due to occurrences of copper in excess of the aquatic life acute standards, including a high concentration of copper measured in 1995, compounded by a significant increasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Duke Energy operates a hydroelectric facility on Lake Keowee within this watershed.

A nonpoint source (NPS) monitoring project has been implemented in this watershed by the Friends of Lake Keowee Society through SCDHEC. The goal of the project is NPS education in the community. The project involves volunteer monitoring using a periphyton biomass technique to infer possible nutrient increases due to NPS pollution. Sampling stations will be placed near potential NPS input locations such as marinas and golf courses as well as at control stations. Area high school students will become involved in sampling and analysis in the final stages of the project. Project grant period: 2/01/97-1/31/98.

03060101-040. Watershed 03060101-040 (map page 33) is located in Pickens, Oconee and Anderson Counties and consists of the **SENECA RIVER**, which together with its tributaries form the upper region of **LAKE HARTWELL**. The Seneca River flows out of the Keowee dam to form the headwaters of the Seneca River region of Lake Hartwell, which extends down to its confluence with the Tugaloo River region of the lake. This watershed accepts the drainage of **SIX MILE CREEK**, which flows into the Seneca River just below the Little River dam, and from **SIX AND TWENTY CREEK**, which enters the watershed just above the confluence with the Tugaloo River. Town Creek flows into Six and Twenty Creek. There are a total of 29.93 stream miles in this watershed. Watershed 03060101-040 also accepts the drainage from Twelve Mile Creek (03060101-060,-070), Eighteen Mile Creek (03060101-090), Coneross Creek (03060101-080) and Lake Keowee (03060101-050) watersheds.

The watershed occupies 137,014 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 10.7%, with a range of 2-25%. Land use/cover in the watershed includes: 44% forested, 19% agricultural, 15% water, 13% scrub/shrub, 8% urban land, and 1% barren land.

Permitted Discharges

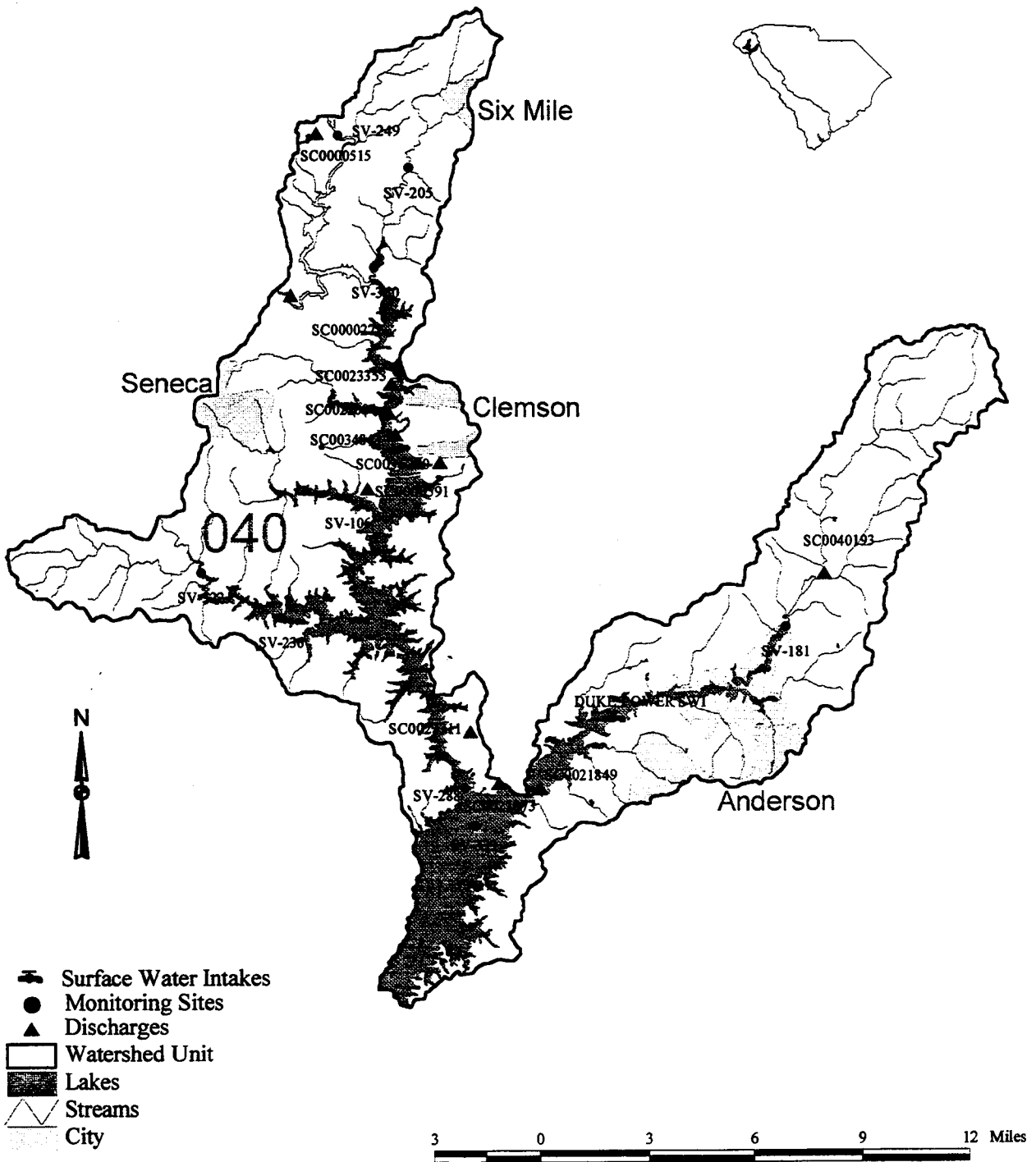
Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000132	AMERICAN HOUSE	PIKE CREEK	IN	0.033
SC0000272	COURTENAY UTIL INC/W	LITTLE RV	CO	0.0495
SC0000591	J P STEVENS/CLEMSON		IN	2.16
SC0020010	CLEMSON/MAIN PLANT	HARTWELL LK	MU	1
SC0021849	HARBOR GATE CONDOMIN	HARTWELL LK	CO	0.0375
SC0021873	SHOALS SEWER COMPANY	HARTWELL LK	CO	0.019
SC0022004	CLEMSON UNIVER/CENTR	HARTWELL LK	IN	14.11
SC0023141	ISSAQUEENA MOBILE HOM	HARTWELL LK	CO	0.024
SC0023311	DAYS INN/I-85 & SC H	HARTWELL LK	CO	0.025
SC0023353	MILLIKEN & CO/DEFORE	HARTWELL LK	IN	0.014
SC0023353	MILLIKEN & CO/DEFORE	HARTWELL LK	IN	MR
SC0034843	CLEMSON UNIVER/PHYSI	HARTWELL LK	CO	1.8
SC0036200	CLEMSON UNIVER/COOPE	HARTWELL LK	IN	0.003
SC0038652	DANIEL HIGH SCH/PICK	HARTWELL LK	CO	0.02
SC0040193	ANDERSON CO SWR AUTH	SIX & TWENTY	MU	0.5

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Watershed 03060101-040

Savannah and Salkehatchie River Basins



Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-249	P	FW	Seneca River at SC 183, 3.8 miles WSW of Six Mile
SV-205	SS/BIO	FW	Six Mile Creek at S-39-160
SV-360	SS	FW	Lake Issaqueena forebay equidistant from dam and shorelines
SV-106	S	FW	Martin Creek arm of Lake Hartwell at S-37-65, N of Clemson
SV-236	P	FW	Lake Hartwell at S-37-184, 6.5 miles SSE of Seneca
SV-288	P	FW	L. Hartwell, Seneca R. Arm at USACE buoy betw. markers S-28A & S-29
SV-181	S	FW	6 & 20 Creek at S-04-29, 8.2 miles SE of Pendleton
SV-339	P	FW	L. Hartwell, Seneca R. Arm at USACE buoy betw. markers S-14 and S-15
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for PCBs and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0101).

Aquatic life uses are fully supported in the **SENECA RIVER (SV-249)**, but may be threatened by a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in **SIX MILE CREEK (SV-205)** based on macroinvertebrate community, physical and chemical data. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

LAKE ISSAQUEENA (SV-360) is an 85-acre impoundment on Six Mile Creek, with a maximum depth of approximately 26 feet (8.0 meters) and an average depth of approximately nine feet (2.7 meters). Eutrophication assessments indicate that Lake Issaqueena is one of the least eutrophic small lakes in South Carolina, characterized by low nutrient concentrations and clear water. Preservation of this lake's desirable trophic condition is recommended. Aquatic life uses are fully supported in Lake Issaqueena (SV-360), but may be threatened by a very high concentration of zinc measured in 1996. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in SIX AND TWENTY CREEK (SV-181). A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

LAKE HARTWELL is a 56,000-acre impoundment on the Savannah River, with a maximum depth of approximately 175 feet (53 meters) and an average depth of approximately 46 feet (14 meters). The lake's watershed comprises 2090 square miles (5400 km²) in Georgia and South Carolina. There are four monitoring sites on Lake Hartwell in this watershed unit.

At the most uplake site (SV-106), aquatic life uses are fully supported, but may be threatened by significant decreasing trends in dissolved oxygen concentration and 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 fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the next site down the lake (SV-236), aquatic life uses are fully supported, but may be threatened by significant decreasing trends in dissolved oxygen concentration and pH. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Further down the lake (SV-288) aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, including a high concentration of copper in water measured in 1995. This is compounded by a significant decreasing trend in dissolved oxygen concentration and the measurement in sediment of four very high concentrations of chromium, one very high concentration of lead, one high and one very high concentration of nickel, and two high and two very high concentrations of zinc. Also in sediment P,P' DDE, a metabolite of DDT, was measured once, toxaphene was measured once, PCB-1242 was measured once, PCB-1248 was measured twice, and PCB-1254 was measured three times. Although the use of DDT was banned in 1973, and the manufacture and use of PCBs was banned in 1979, both are very resistant to degradation and therefore are 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 fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the most down lake site (SV-339), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by a very high concentration of lead measured in 1994. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Eutrophication assessments indicate that Lake Hartwell is one of the least eutrophic large lakes in South Carolina, characterized by low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended.

A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to demonstrate best management practices (BMPs) for logging site preparation for re-planting trees. Before and after runoff samples are collected to show effectiveness of the BMPs. A program to educate loggers about these BMPs is part of the project. The project period is May 1995 through April 1998.

03060101-050. Watershed 03060101-050 (map page 37) is located in Oconee County and consists primarily of the LITTLE RIVER and its tributaries, which form an arm of LAKE KEOWEE. In this watershed, Oconee Creek and North Fork Creek join to form the Little River. A large portion of Lake Keowee, from the Keowee dam to the Little River dam, is contained in this watershed. Cane Creek and Little Cane Creek, together with Crooked Creek, form arms of Lake Keowee. The tributaries of Lake Keowee extend for a total of 59.59 stream miles.

The watershed occupies 104,698 acres of the Blue Ridge and Piedmont regions of South Carolina. The predominant soil types consist of an association of the Pacolet-Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.24; the slope of the terrain averages 19.3%, with a range of 2-80%. Land use/land cover in the watershed includes: 68% forested land, 12% agricultural land, 12% water, 4% urban land, 3% scrub/shrub land, and <1% barren land.

Permitted Discharges

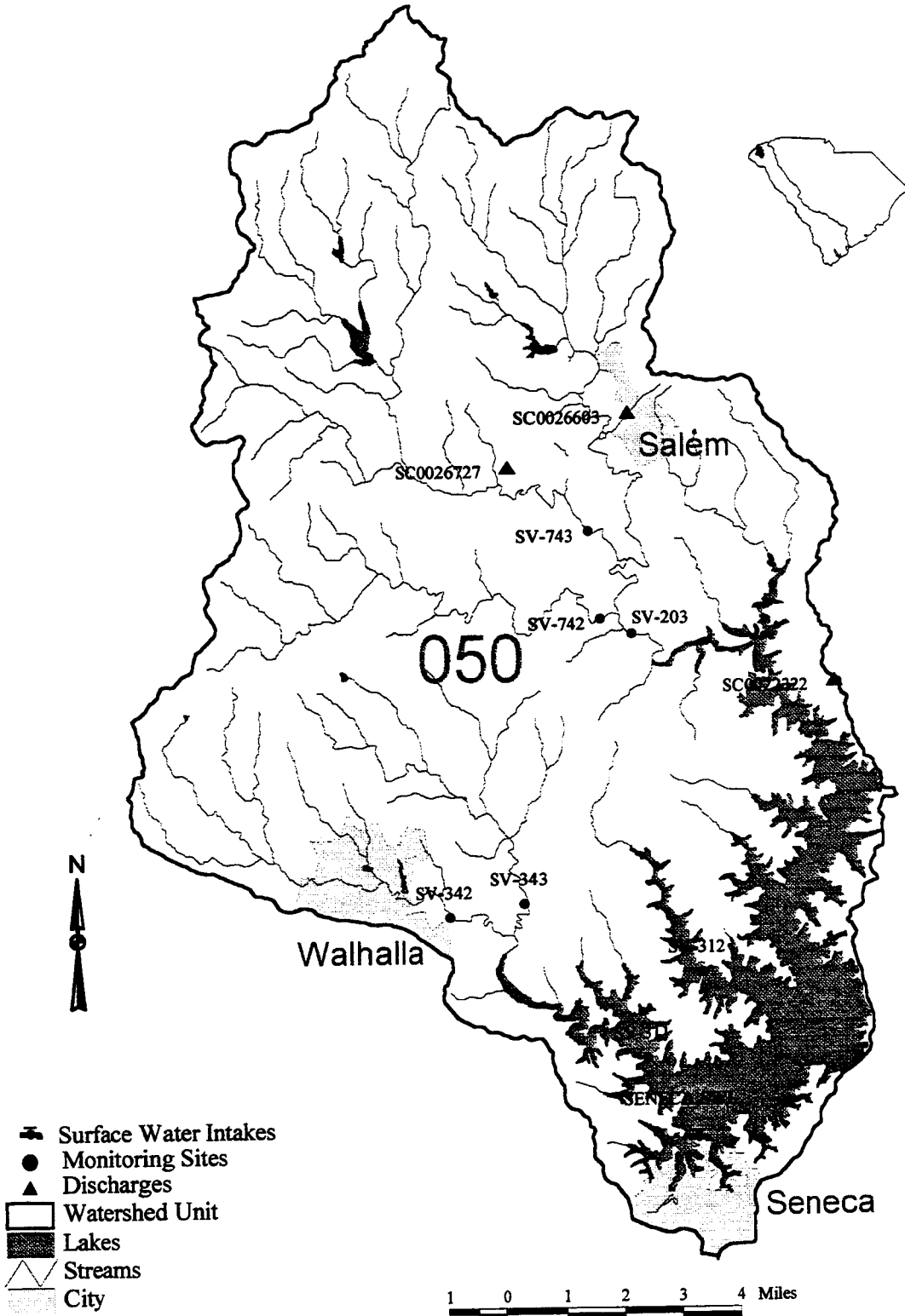
Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0022322	LAKE KEOWEE DEVELOPM	KEOWEE LK	CO	0.9
SC0026603	SALEM HI&ELEM SCH	N FORK	CO	0.011
SC0026727	TAMASSEE DAR SCHOOL	DAVEY BR	CO	0.031

*IN=industrial, CO=community †MGD=million gallons per day

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-743	BIO	FW	Flat Shoals River at S-37-129
SV-742	BIO	FW	Oconee Creek at S-37-129
SV-203	S	FW	Little River at S-37-24, 7.1 miles NE of Walhalla
SV-312	P	FW	Lake Keowee at SC 188, Crooked Creek arm, 4.5 miles N of Seneca
SV-343	SS/BIO	FW	Little Cane Creek at S-37-133
SV-342	SS/BIO	FW	Cane Creek at S-37-133
SV-311	P	FW	Lake Keowee at SC 188, Cane Creek arm, 3.5 miles NW of Seneca

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watershed 03060101-050 Savannah and Salkehatchie River Basins



Aquatic life uses are fully supported in **FLAT SHOALS RIVER (SV-743)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **OCONEE CREEK (SV-742)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life and recreational uses are fully supported in **LITTLE RIVER (SV-203)**. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters.

Aquatic life uses are fully supported in **LITTLE CANE CREEK (SV-343)** based on macroinvertebrate community, physical and chemical data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are fully supported in **CANE CREEK (SV-342)** based on macroinvertebrate community, physical and chemical data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

LAKE KEOWEE is a 18,372-acre impoundment on the Keowee River, with a maximum depth of approximately 155 feet (47 meters) and an average depth of approximately 54 feet (17 meters). The lake's watershed comprises 273 square miles (707 km²) in North and South Carolina. There are two monitoring sites on Lake Keowee in this watershed unit.

At the uplake site (SV-312), aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the down lake site (SV-311), aquatic life uses are only partially supported due to occurrences of zinc in excess of the aquatic life acute standards, including two very high concentrations, compounded by a very high concentration of copper measured in 1996 and a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Eutrophication assessments indicate that Lake Keowee is the least eutrophic large lake in South Carolina, characterized by very low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended.

Duke Energy operates a hydroelectric facility on Lake Keowee within this watershed.

A nonpoint source (NPS) monitoring project has been implemented in this watershed by the Friends of Lake Keowee Society through SCDHEC. The goal of the project is NPS education in the community. The project involves volunteer monitoring using a periphyton biomass technique to infer possible nutrient increases due to NPS pollution. Sampling stations will be placed near potential NPS input locations such

as marinas and golf courses as well as at control stations. Area high school students will become involved in sampling and analysis in the final stages of the project. Project grant period: 2/01/97-1/31/98.

03060101-060. Watershed 03060101-060 (map page 40) is located in Pickens County and consists of the upper reach of **TWELVE MILE CREEK** and its tributaries. Middle Fork Twelve Mile Creek and **NORTH FORK TWELVE MILE CREEK** join to form Twelve Mile Creek, which flows through the watershed and is joined, along the way, by Town Creek, Wolf Creek and Rices Creek; the drainage from all these streams flows into the lower reaches of Twelve Mile Creek (03060101-070), and into Lake Hartwell. There are a total of 51.64 stream miles in this watershed.

The watershed occupies 74,972 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee-Pacolet series. The erodibility of the soil (K-factor) averages 0.25; the slope of the terrain averages 13.7%, with a range of 2-80%. Land use/land cover in the watershed includes: 64% forested land, 24% agricultural land, 6% urban land, 5% scrub/shrub land, <1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000370	ALICE MFG/ELLJEAN	RICES CK	IN	0.04
SC0000370	ALICE MFG/ELLJEAN	RICES CK	IN	0.022
SC0000370	ALICE MFG/ELLJEAN	RICES CK	IN	0.032
SC0000434	SPANGLERS GROCERY	PRATERS CK	IN	0.009
SC0021661	PICKENS/TOWN CREEK	TOWN CK	MU	0.6
SC0021679	PICKENS/WOLF CREEK	WOLF CK	MU	0.5
SC0026492	RYOBI MOTOR PRODUCTS	TOWN CK	IN	MR
SC0047716	PICKENS/12 MILE CK (proposed)	12 MILE CK	MU	1

*IN=industrial, CO=community, MU=municipal

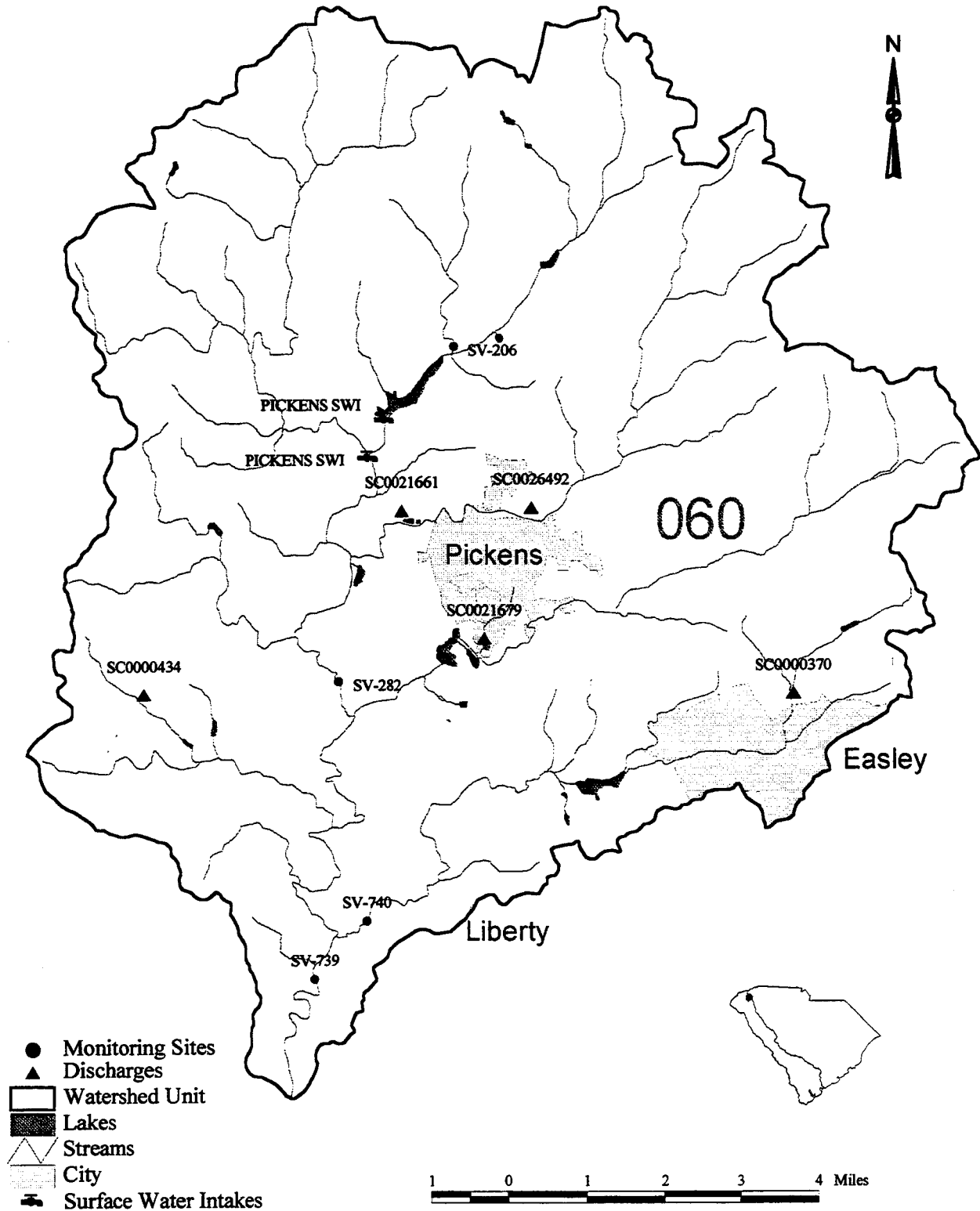
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-206	S/BIO	FW	North Fork Twelve Mile Creek at US 178, 2.9 miles N of Pickens
SV-282	S	FW	Twelve Mile Creek at S-39-273, 2.8 miles SSW of Pickens
SV-740	BIO	FW	Rices Creek at S-39-158
SV-739	BIO	FW	Twelve Mile Creek at S-39-137

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watershed 03060101-060

Savannah and Salkehatchie River Basins



A fish consumption advisory has been issued by the Department for PCBs and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0101).

Aquatic life uses are fully supported in **NORTH FORK TWELVE MILE CREEK (SV-206)** based on macroinvertebrate community data, but may be threatened by 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 only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life and recreational uses are fully supported in **TWELVE MILE CREEK (SV-282)**. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. In sediment, PCB-1254 is routinely detected. The manufacture and use of PCBs was banned in 1979, but it is very resistant to degradation and therefore very persistent in the environment.

Aquatic life uses are fully supported in **RICES CREEK (SV-740)** based on macroinvertebrate community data. Recreational use support was not assessed.

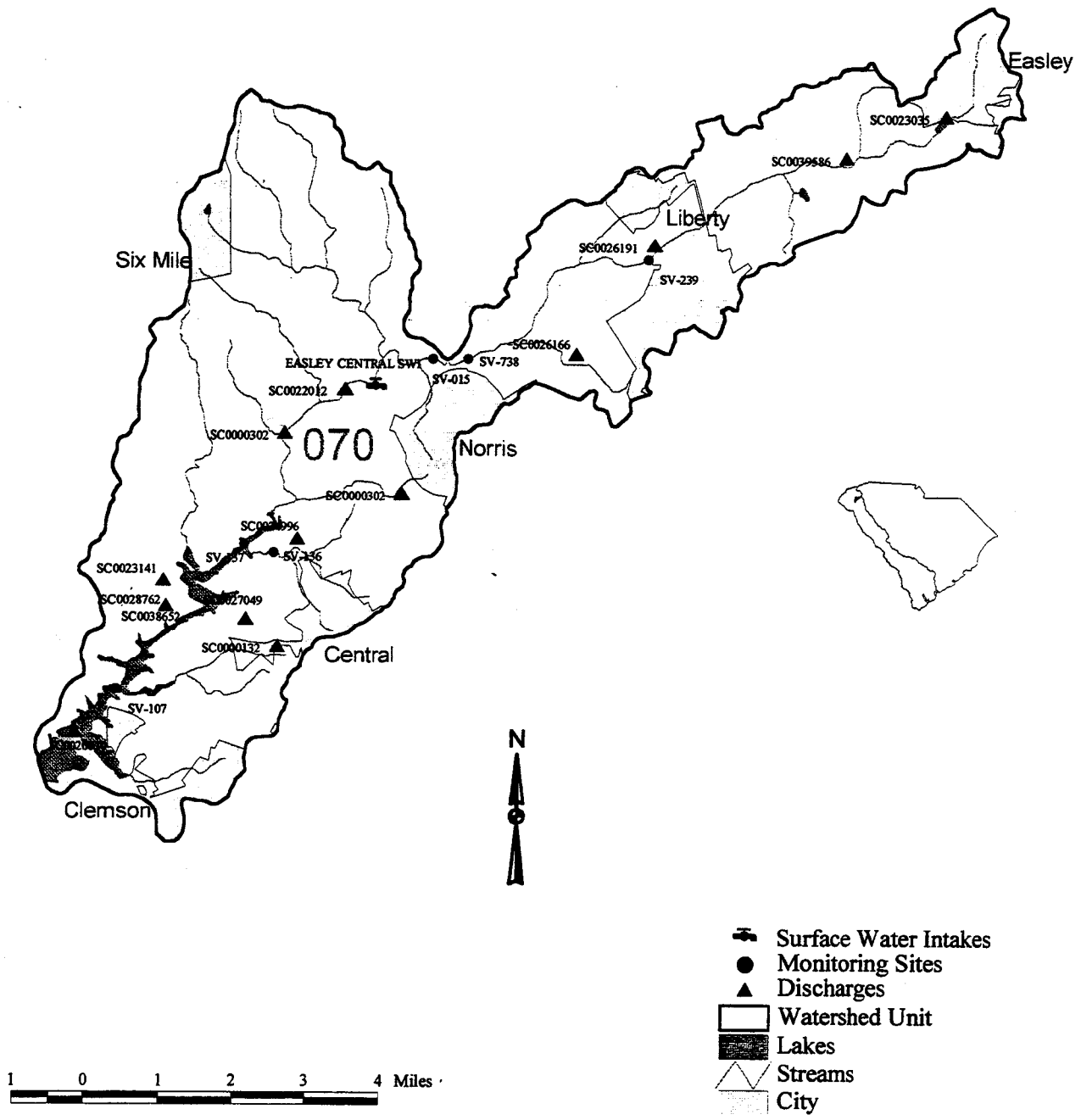


03060101-070. Watershed 03060101-070 (map page 42) is located in Pickens County and consists of the lower reach of **TWELVE MILE CREEK** and its tributaries. The lower reach of Twelve Mile Creek flows into and forms an arm of Lake Hartwell. **GOLDEN CREEK** flows into this segment of Twelve Mile Creek near the Towns of Liberty and Easley. This watershed contains a total of 18.97 stream miles, and accepts the drainage of the upper Twelve Mile Creek watershed (03060101-060).

The watershed occupies 30,279 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.6%, with a range of 2-25%. Land use/land cover in the watershed includes: 57% forested land, 20% urban land, 12% agricultural land, 8% scrub/shrub land, 2% water, and <1% barren land.

Watershed 03060101-070

Savannah and Salkehatchie River Basins



Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000302	BASF CORPORATION	HUGGINS CK	IN	0.427
SC0000302	BASF CORPORATION	TWELVE MILE	IN	0.1415
SC0022012	CATEECHEE VILLAGE	12 MILE CK	CO	0.02
SC0023035	EASLEY/GOLDEN CREEK	GOLDEN CK	MU	0.58
SC0024996	CENTRAL/NORTH PLANT	12 MILE CK	MU	0.15
SC0026166	LIBERTY/CRAMER	MURPHEE BR	MU	0.157
SC0026191	LIBERTY/ROPER LAGOON	GOLDEN CK	MU	0.5
SC0027049	MASSINGILL TRAILER	12 MI CK TR	CO	0.0024
SC0028762	R C EDWARDS JR HS	HARTWELL LK	CO	0.015
SC0039586	IMPERIAL DIE CASTING	GOLDEN CK	IN	0.002

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-239	S	FW	Golden Creek at S-39-222, 1.2 miles NW of Liberty
SV-738	BIO	FW	Golden Creek at Golden Creek Rd
SV-015	S	FW	Twelve Mile Creek at S-39-51, N of Norris
SV-137	S	FW	Twelve Mile Creek at S-39-337
SV-136	S	FW	First creek after leaving Central at culvert on Maw Bridge Road
SV-107	S	FW	Twelve Mile Creek at SC 133

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for PCBs and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0101).

Aquatic life uses are fully supported in GOLDEN CREEK (SV-239), but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and

due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Further downstream (SV-738), aquatic life uses are only partially supported based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in an unnamed creek outside of Central (SV-136), but may be threatened by a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

There are four monitoring sites on **TWELVE MILE CREEK** in this watershed unit. At the upstream site (SV-739) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

Further downstream (SV-015), aquatic life uses are fully supported, but may be threatened by a significant increasing trend in turbidity. In sediment, a very high concentration of cadmium was measured in 1994, and PCB-1254 was measured in 1992 and 1995. The manufacture and use of PCBs was banned in 1979, but it is very resistant to degradation and therefore 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 at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the next site downstream (SV-137), aquatic life uses are fully supported. In sediment, very high concentrations of cadmium were measured in 1992 and 1993, PCB-1248 was measured in 1995, and PCB-1254 was measured in 1992, 1993 and 1994. The manufacture and use of PCBs was banned in 1979, but it is very resistant to degradation and therefore 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 at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the most downstream site (SV-107), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in dissolved oxygen concentration. In sediment, high concentrations of chromium and nickel were measured in 1993, P,P' DDD and P,P' DDE, metabolites of DDT, were each measured once, ethion was measured in 1993, PCB-1242 was measured in 1994, PCB-1016 was measured in 1993, and PCB-1254 has been measured in every sample analyzed. Although the use of DDT was banned in 1973, and the manufacture and use of PCBs was banned in 1979, both are very resistant to degradation and therefore are 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 fully supported at this site.

Consolidated Hydro operates two hydroelectric facilities on Twelve Mile Creek.

03060101-080. Watershed 03060101-080 (map page 46) is located in Oconee County and consists of CONEROSS CREEK and its tributaries, which form an arm of Lake Hartwell. There are a total of 38.72 stream miles in this watershed. Richmond Creek, East Fork Creek, Colonels Fork Creek and Millers Branch drain into Coneross Creek, which flows past the Town of Walhalla and into Lake Hartwell.

The watershed occupies 61,871 acres of the Blue Ridge and Piedmont regions of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 11.1%, with a range of 2-25%. Land use/land cover in the watershed includes: 46% forested land, 26% agricultural land, 14% scrub/shrub land, 13% urban land, 1% water, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type* (MGD)†
SC0033553	OCONEE COUNTY SEWER	CONEROSS CK	MU 5

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

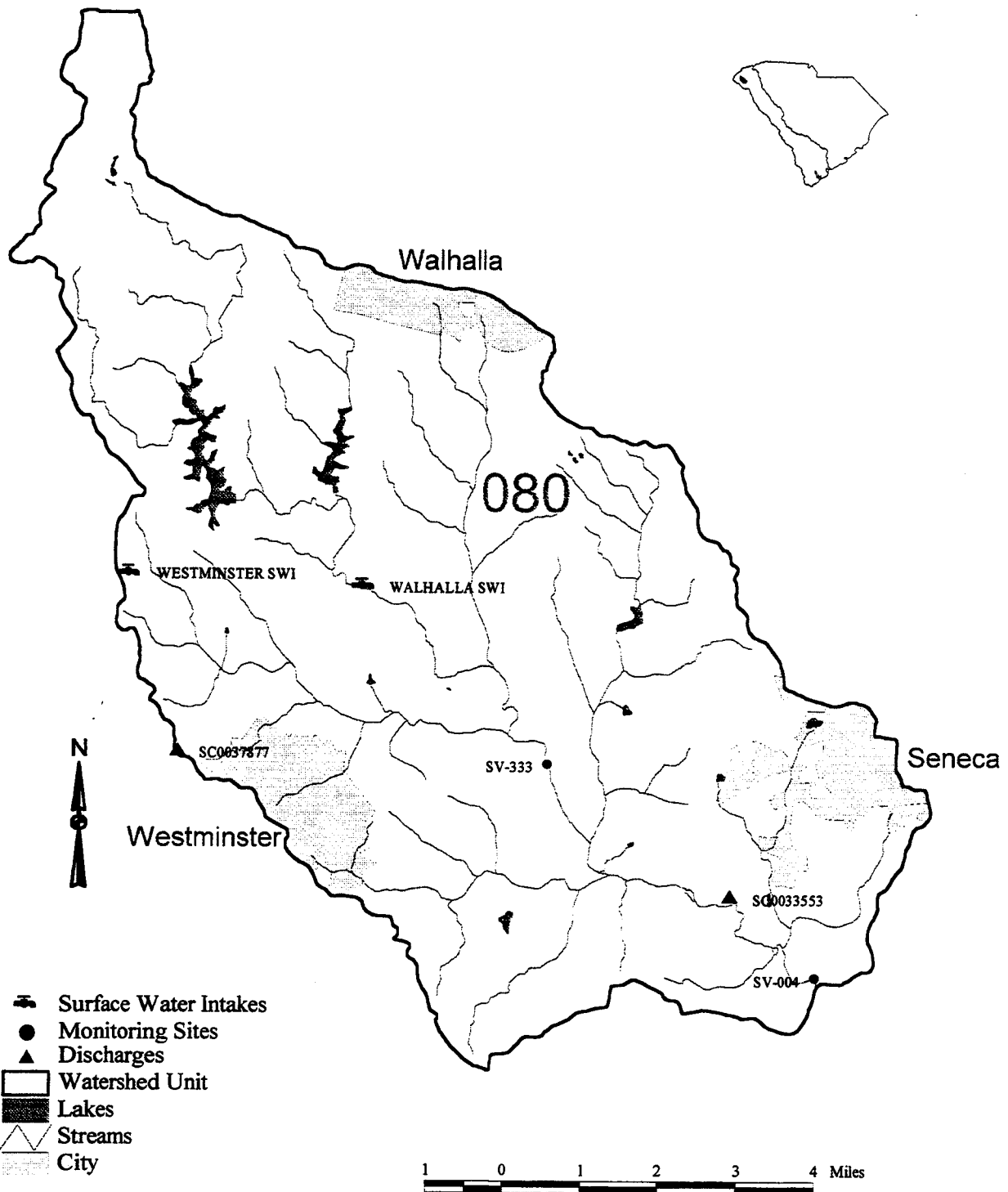
Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-333	P	FW	Coneross Creek at S-37-13
SV-004	P	FW	Coneross Creek at SC 59
SV-322	I	FW	Coneross Creek arm of Lake Hartwell at S-37-54

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate, I=inactive
 † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are three monitoring sites on CONEROSS CREEK. At the upstream site (SV-333), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

Further downstream (SV-004) aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions

Watershed 03060101-080 Savannah and Salkehatchie River Basins



for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the most downstream site (SV-322, see map for watershed 03060101-040) aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Potential nonpoint source problems in the watershed include runoff from steep-sloped orchards and pastures without adequate vegetation, improper disposal of dead poultry, and over application of manure to farmland. A nonpoint source pollution reduction project has been implemented by SC Department of Natural Resources through SCDHEC. The goal of the project is to reduce sediment, nutrients, and chemical runoff from cropland, orchards, pastures and poultry operations in the watershed. Programs and practices to be implemented include education, demonstration, training and technical assistance about sustainable agriculture, vegetated field borders, filter strips, riparian zones, conservation tillage, and composting. SCDHEC is providing monitoring. The project period extends through May 1998.

03060101-090. Watershed 03060101-090 (map page 49) is located in Pickens and Anderson Counties and consists of **EIGHTEEN MILE CREEK** and its tributaries, which form an arm of Lake Hartwell. There are a total of 26.59 stream miles in the watershed. Fifteen Mile Creek, Brushy Creek, and **WOODSIDE BRANCH** flow into Eighteen Mile Creek near the Towns of Central and Norris; and Eighteen Mile Creek flows past the Town of Pendleton en route to Lake Hartwell.

The watershed occupies 42,802 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.2%, with a range of 2-25%. Land use/land cover in the watershed includes: 50% forested land, 21% agricultural land, 19% scrub/shrub land, 9% urban land, 1% barren land, and <1% water.

Permitted Discharges

<u>Permit #</u>	<u>Facility</u>	<u>Receiving Water</u>	<u>Flow Type*</u>	<u>(MGD)†</u>
SC0000264	GREENWOOD MILLS	18 MILE CK	IN	0.387
SC0000477	MILLIKEN & CO	18 MILE CK	IN	3
SC0025003	CENTRAL/SOUTH PLANT	18 MILE CK	MU	0.35
SC0026174	LIBERTY/LUSK	WOODSIDE BR	MU	0.281
SC0026182	LIBERTY/OWENS LAGOON	MOHASCO BR	MU	0.072
SC0026387	CENTRAL WESLEYAN COL	18 MILE CK	CO	0.03
SC0028703	WHISPERING PINES SD	18 MI CK TR	CO	0.12
SC0029548	HEATHERWOOD SD	18 MILE CK	CO	0.072
SC0035700	PENDLETON-CLEMSON RE	18 MILE CK	MU	1.725

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-017	S	FW	Eighteen Mile Creek at unnumbered Co Rd, 2.25 miles SSW of Easley
SV-241	S	FW	Woodside Branch at US 123, 1.5 miles E of Liberty
SV-245	S	FW	Eighteen Mile Creek at S-39-27, 3.3 miles S of Liberty
SV-135	P/BIO	FW	Eighteen Mile Creek at S-39-93, SW of Central
SV-268	P	FW	Eighteen Mile Creek at 2-04-1098
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

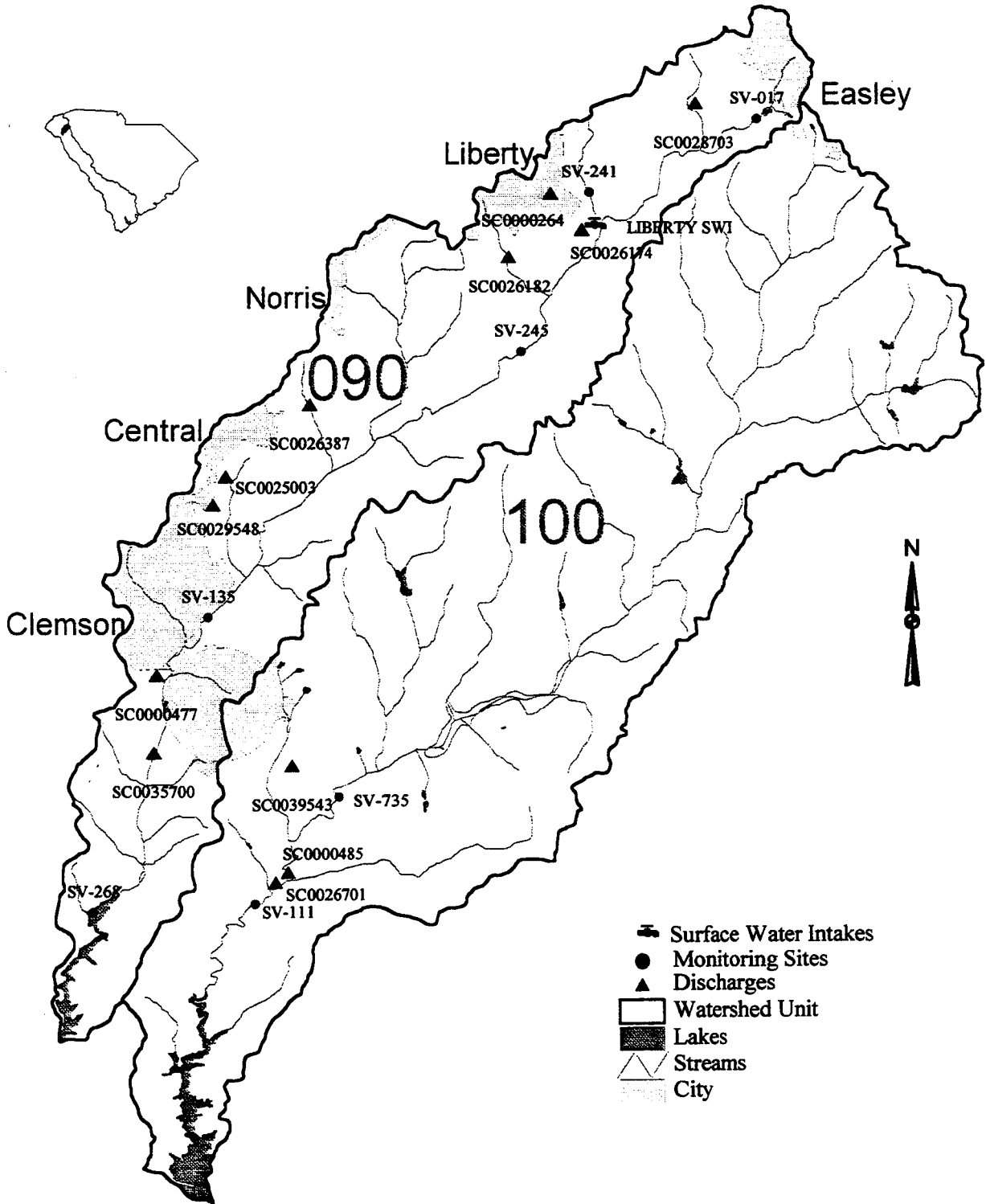
Aquatic life uses are fully supported in **WOODSIDE BRANCH (SV-241)**. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site, however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

There are four monitoring sites on **EIGHTEEN MILE CREEK**. At the most upstream site (SV-017), aquatic life uses are fully supported. 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 not supported at this site, however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the next site downstream (SV-245), aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site, however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Further downstream (SV-135), aquatic life uses are fully supported based on macroinvertebrate community data, but may be threatened due to occurrences of zinc in excess of the aquatic life acute standards, including a high concentration measured in 1994, compounded by a significant decreasing trend in pH, a significant increasing trend in turbidity, and a very high concentration of chromium measured in 1996. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus

Watersheds 03060101-090, -100 Savannah and Salkehatchie River Basins



concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the most downstream site (SV-268), aquatic life uses are fully supported, but may be threatened by significant increasing trends in total nitrogen concentration and turbidity. In sediment, a very high concentration of zinc was measured in 1993 and a high concentration was measured in 1996. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Phased TMDLs have been developed for biochemical oxygen demand and phosphorus in Eighteen Mile Creek to address dissolved oxygen and eutrophication concerns.

03060101-100. Watershed 03060101-100 (map page 49) is located in Pickens and Anderson Counties and consists primarily of **THREE AND TWENTY CREEK** and its tributaries, which form an arm of Lake Hartwell. There are a total of 44.89 stream miles in the watershed. Pickens Creek, Double Branch, Cuffle Creek, Little Garvins Creek, Big Garvins Creek, Shanklin Creek and Milwee Creek all drain into Three and Twenty Creek, which flows through the Town of LaFrance before entering the lake.

The watershed occupies 49,913 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.5%, with a range of 2-25%. Land use/land cover in the watershed includes: 39% forested land, 36% agricultural land, 22% scrub/shrub land, 1% urban land, 1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)[†]
SC0000485	LAFRANCE MILLS (proposed)	3 & 20 CK	IN	1.4
SC0000485	LA FRANCE IND	3 & 20 CK	IN	0.49
SC0000485	LAFRANCE MILLS (proposed)	3 & 20 CK	IN	1.5
SC0000485	LAFRANCE MILLS (proposed)	3 & 20 CK	IN	1.6
SC0026701	MICHELIN TIRE	3 & 20 CK	IN	0.48
SC0039543	YODER BROTHERS ,INC	SHANKLIN CK	IN	MR

*IN=industrial, CO=community, MU=municipal
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-735	BIO	FW	Three and Twenty Creek at S-04-29
SV-111	S	FW	Three & Twenty Creek at S-04-280
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

There are two monitoring sites on **THREE AND TWENTY CREEK**. At the upstream site (SV-735), aquatic life uses are only partially supported based on macroinvertebrate community data. Recreational use support was not assessed.

Further downstream (SV-111), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03060102-030. This watershed (map page 53) is located in Oconee County and consists primarily of the **CHATTOOGA RIVER** and its tributaries. There are a total of 11.62 stream miles contained in this watershed. A segment of the Chattooga River, which is a National Wild and Scenic River, crosses the North Carolina border and flows through this watershed. The **EAST FORK CHATTOOGA RIVER** also crosses the North Carolina State line and joins the Chattooga. Streams draining into the East Fork Chattooga River include Slatten Branch, Bad Creek, Dark Creek, and Jack Creek. Ira Branch enters the Chattooga River, as does King Creek. Pig Pen Branch flows into Lick Log Creek.

The watershed occupies 15,258 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Saluda-Ashe-Hayesville series. The erodibility of the soil (K) averages 0.21; the slope of the terrain averages 43.0%, with a range of 10-80%. Land use/land cover in the watershed includes: 92% forested land, 6% agricultural land, 1% scrub/shrub land, <1% water, and <1% urban land. Sumter National Forest extends across the entire watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0000451	US WILDLIFE SERV.	E FORK CHAT.	IN	NO FLOW
SC0000451	US WILDLIFE SERV.	E FORK CHAT.	IN	3
*IN=industrial, CO=community, MU=municipal				
†MGD=million gallons per day, MR=monitor and report				

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-308	S/BIO	ORW	East Fork of Chattooga River at SC 107, 2 miles S of state line
SV-227	P/BIO	ORW	Chattooga River at SC 28, 3.5 miles NW of Mountain Rest
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in **EAST FORK OF THE CHATTOOGA RIVER (SV-308)** based on macroinvertebrate community data, but may be threatened by a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in **CHATTOOGA RIVER (SV-227)** based on macroinvertebrate community data, but may be threatened due to occurrences of copper and zinc in excess of the aquatic life acute standards, including a high concentration of zinc measured in 1993, a very high concentration of chromium measured in 1993, compounded by significant increasing trends in pH and turbidity and a very high concentration of cadmium measured in sediment in 1993. Recreational uses are fully supported at this site.

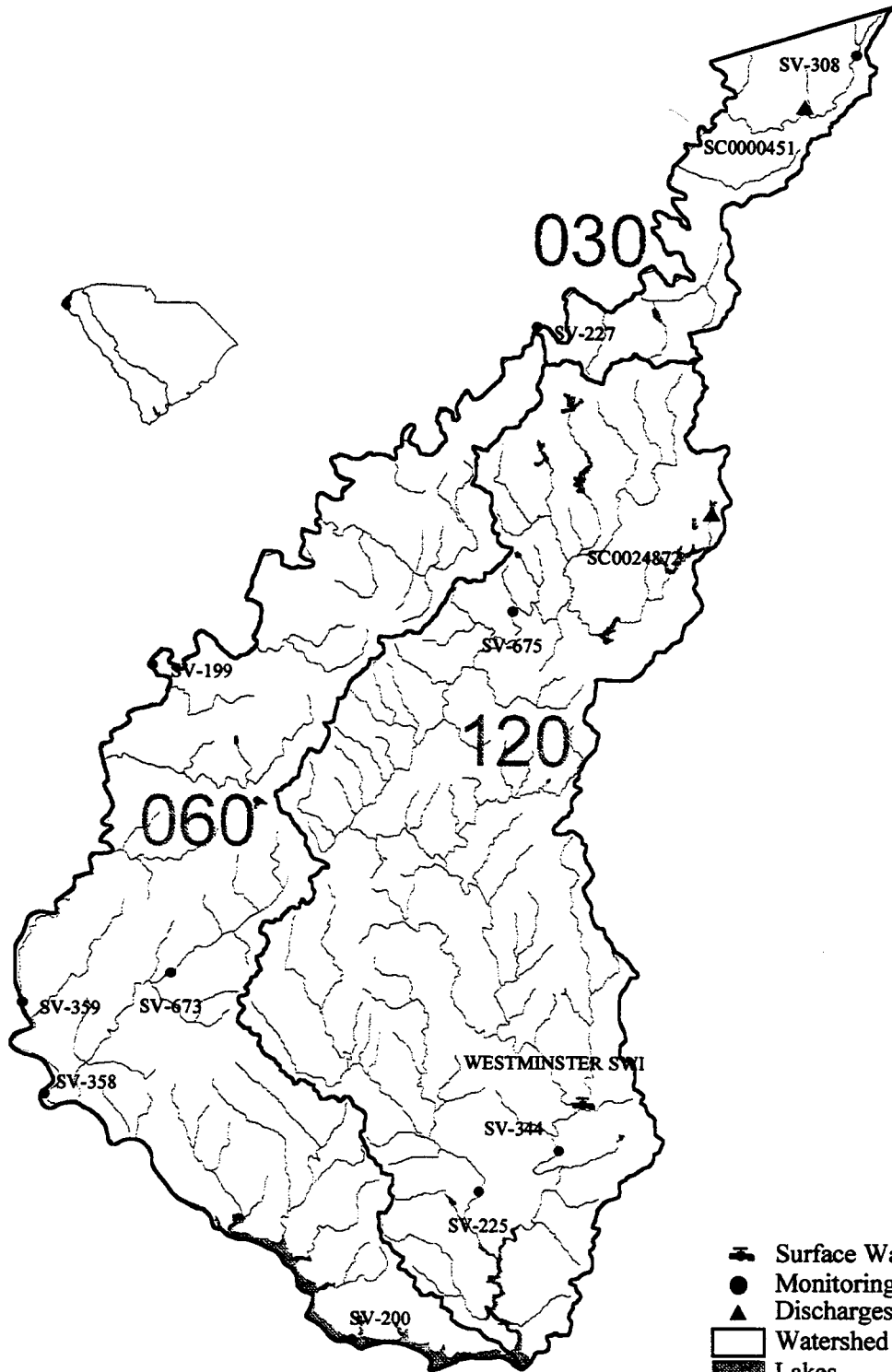
This watershed contains an abundance of confined poultry operations. A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to demonstrate best management practices related to proper disposal and utilization of poultry litter. Monitoring of soils for nutrient content and recommendations to farmers for application are components of the project. The project period was November 1993 through August 1997.

03060102-060. Watershed 03060102-060 (map page 53) is located in Oconee County and consists primarily of the **CHATTOOGA RIVER** and its tributaries. This section of the Chattooga River flows through **TUGALOO LAKE** and dam, and then through **LAKE YONAH** to the Tugaloo River and headwaters of **LAKE HARTWELL**. The watershed contains a total of 48 stream miles. Moss Mill Creek enters the Chattooga River upstream of Brasstown Creek. Brasstown Creek flows into the Tugaloo River just below the Lake Yonah dam.

The watershed occupies 60,892 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Hayesville-Saluda-Pacolet series. The erodibility of the soil (K) averages 0.22; the slope of the terrain averages 27.7%, with a range of 10-80%. Land use/land cover in the watershed includes: 78% forested land, 11% scrub/shrub land, 8% agricultural land, 2% water, <1% urban land, and <1% barren land. Sumter National Forest extends across all but the lowest end of the watershed.

There are no permitted discharges in this watershed in South Carolina.

Watersheds 03060102-030, -060, -120 Savannah and Salkehatchie River Basins



- Surface Water Intakes
- Monitoring Sites
- Discharges
- Watershed Unit
- Lakes
- Streams
- City

2 0 2 4 6 8 Miles

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-199	P	ORW	Chattooga River at US Route 76
SV-359	SS	FW	Tugaloo Lake, forebay equidistant from spillway and shorelines
SV-358	SS	FW	Lake Yonah, 50% between center of spillway and opposite shore
SV-673	BIO	FW	Brasstown Creek at S-37-48
SV-200	S	FW	Tugaloo River Arm of Lake Hartwell at US 123
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for PCBs and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0101).

Aquatic life uses are fully supported in the **CHATTOOGA RIVER (SV-199)**, but may be threatened by significant increasing trends in pH and total phosphorus. Recreational uses are fully supported at this site.

TUGALOO LAKE (SV-359) is a 300-acre impoundment on the Chattooga River, with an average depth of approximately 60 feet (18.3 meters). Eutrophication assessments indicate that Tugaloo Lake is one of the least eutrophic small lakes in South Carolina, characterized by very low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended. Aquatic life and recreational uses are fully supported in Tugaloo Lake. North Georgia Hydro Project operates a hydroelectric facility on Tugaloo Lake.

LAKE YONAH (SV-258) is a 200-acre impoundment on the Tugaloo River, with a maximum depth of approximately 67 feet (20.4 meters) and an average depth of approximately 32 feet (9.8 meters). Eutrophication assessments indicate that Lake Yonah is the least eutrophic small lake in South Carolina, characterized by very clear water, very low nutrient concentrations, and high dissolved oxygen levels. Preservation of this lake's desirable trophic condition is recommended. Aquatic life and recreational uses are fully supported in Lake Yonah. North Georgia Hydro Project operates a hydroelectric facility on Lake Yonah.

Aquatic life uses are fully supported in **BRASSTOWN CREEK (SV-673)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life and recreational uses are fully supported in **LAKE HARTWELL (SV-200)**. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters.

This watershed contains an abundance of confined poultry operations. A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to demonstrate best management practices related to proper disposal and utilization of poultry litter. Monitoring of soils for nutrient content and recommendations to farmers for application are components of the project. The project period was November 1993 through August 1997.

03060102-120. Watershed 03060102-120 (map page 53) is located in Oconee County and consists primarily of the **CHAUGA RIVER** and its tributaries. There are a total of 53.92 stream miles in the watershed. The Chauga River flows into the Tugaloo River at the headwaters of Lake Hartwell. Jerry Creek flows into the Chauga River, as does Toxaway Creek just prior to the confluence of the Chauga and Tugaloo Rivers.

The watershed occupies 70,539 acres of the Blue Ridge region of South Carolina. The predominant soil types consist of an association of the Pacolet-Hayesville-Madison series. The erodibility of the soil (K) averages 0.23; the slope of the terrain averages 22.3%, with a range of 6-80%. Land use/land cover in the watershed includes: 77% forested land, 14% scrub/shrub land, 7% agricultural land, 1% urban land, <1% water, and <1% barren land. Sumter National Forest extends across all but the lowest end of the watershed. Oconee State Park lies within the Sumter National Forest in the upper region of the watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type* (MGD) [†]
SC0024872	SC DEPT PRT/OCONEE S	JERRY CK	CO 0.06

*IN=industrial, CO=community, MU=municipal
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
SV-675	BIO	ORW	Chauga River at S-37-193
SV-344	SS	FW	Chauga River at S-37-34
SV-225	BIO	FW	Toxaway Creek at S-37-34

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on the **CHAUGA RIVER**. At the upstream site (SV-675), aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed. Further downstream (SV-344), aquatic life and recreational uses are fully supported.

Aquatic life uses are fully supported in **TOXAWAY CREEK** (SV-225) based on macroinvertebrate community data. Recreational use support was not assessed.

This watershed contains an abundance of confined poultry operations. A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to demonstrate best management practices related to proper disposal and utilization of poultry litter. Monitoring of soils for nutrient content and recommendations to farmers for application are components of the project. The project period was November 1993 through August 1997.

03060102-130. Watershed 03060102-130 (map page 57) is located in Oconee and Anderson Counties and consists primarily of the Tugaloo River and its tributaries. The Tugaloo River flows through the watershed and combines with the Seneca River (03060101-040) to form the headwaters of the Savannah River, which creates the headwaters of Lake Hartwell. **NORRIS CREEK** flows into **CHOESTOEAE CREEK** near the Town of Westminster; Choestoea Creek and Little Choestoea Creek flow into the Tugaloo River and the headwaters of Lake Hartwell. There are a total of 13.87 stream miles in this watershed. This watershed also accepts the drainage from watersheds 03060102-060, -120 and -150.

The watershed occupies 53,600 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Hiwassee series. The erodibility of the soil (K) averages 0.25; the slope of the terrain averages 13.2%, with a range of 2-25%. Land use/land cover in the watershed includes: 29% forested land, 21% scrub/shrub land, 21% agricultural land, 17% water, 7% barren land, and 5% urban land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0022063	NACO CAROLINA	HARTWELL LK	CO	0.02
SC0022357	FOXWOOD HILLS	HARTWELL LK	CO	0.1
SC0026638	SC HWY DEPT	HARTWELL LK	CO	0.018
SC0033944	OAKWAY ELEM & MDL	Little Choestoea	CO	0.015
SC0037877	WESTMINSTER/WATER	CHOESTOEAE CK	IN	MR
SC0038644	WEST-OAK HS	HARBIN CK	CO	0.032

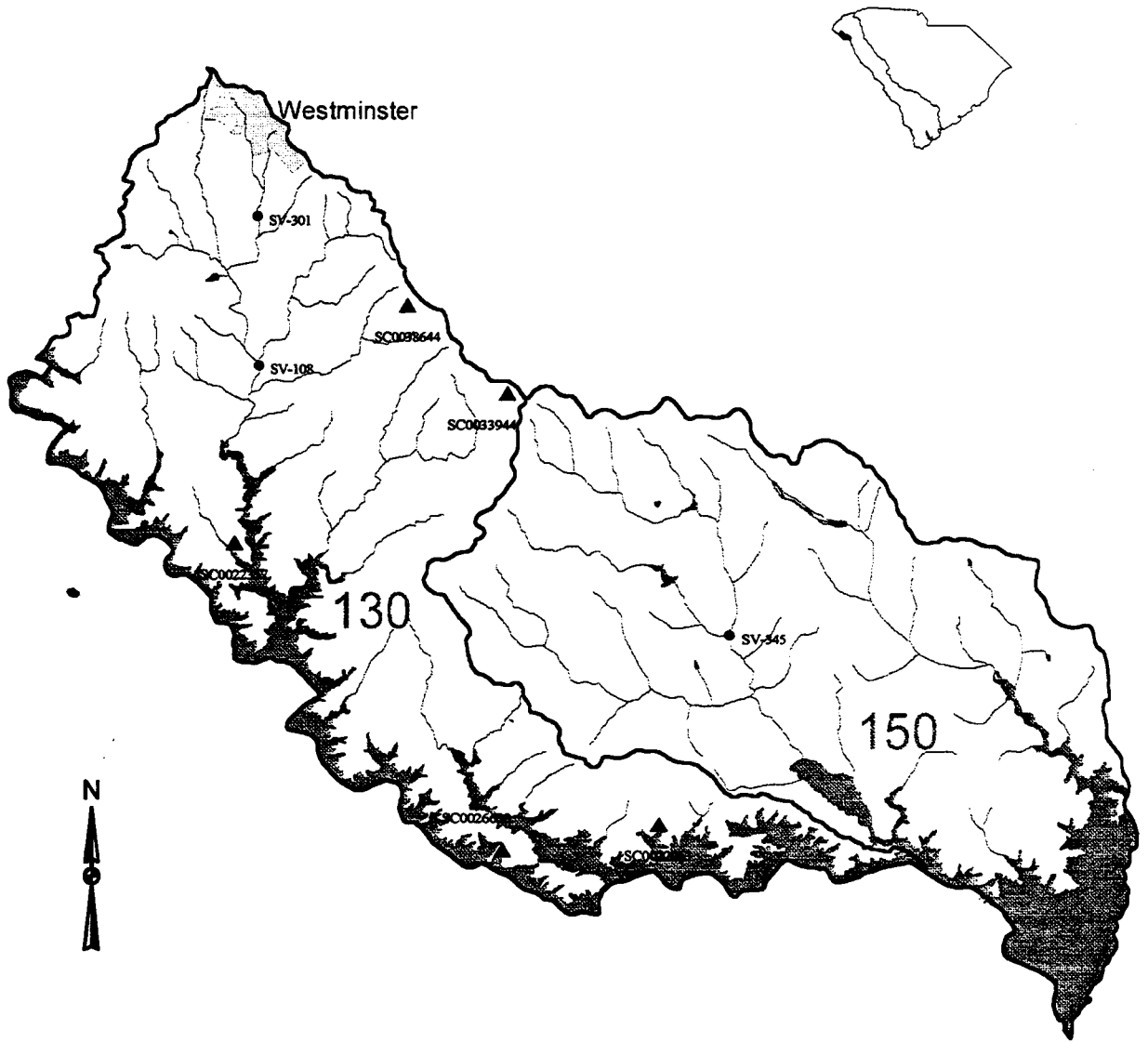
*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-301	S	FW	Norris Creek at S-37-435, 1 mile S of Westminster
SV-108	SS/BIO	FW	Choestoea Creek at S-37-49

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watersheds 03060102-130, -150 Savannah and Salkehatchie River Basins



- Monitoring Sites
- ▲ Discharges
- Watershed Unit
- Lakes
- △ Streams
- City



Aquatic life uses are fully supported in **NORRIS CREEK (SV-301)**, but may be threatened by a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are fully supported in **CHOESTOEA CREEK (SV-108)** based on macroinvertebrate community, physical and chemical data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

This watershed contains an abundance of confined poultry operations. A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to demonstrate best management practices related to proper disposal and utilization of poultry litter. Monitoring of soils for nutrient content and recommendations to farmers for application are components of the project. The project period was November 1993 through August 1997.

03060102-150. Watershed 03060102-150 (map page 57) is located in Oconee and Anderson Counties and consists primarily of **BEAVERDAM CREEK** and its tributaries. The Beaverdam Creek watershed consists of Beaverdam Creek and Little Beaverdam Creek, which form arms of Lake Hartwell. There are a total of 19.39 stream miles in this watershed.

The watershed occupies 36,687 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. Soil erodibility (K) averages 0.26; the slope of the terrain averages 9.8%, with a range of 2-25%. Land use/land cover in the watershed includes: 46% agricultural land, 20% scrub/shrub land, 20% forested land, 7% water, 4% barren land, and 3% urban land.

There are no permitted discharges in this watershed in South Carolina.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-345	SS/BIO	FW	Beaverdam Creek at S-37-66
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are only partially supported in **BEAVERDAM CREEK (SV-345)** based on macroinvertebrate data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

This watershed contains an abundance of confined poultry operations. A nonpoint source demonstration project has been implemented in this watershed by Clemson University through SCDHEC.

The goal of the project is to demonstrate best management practices related to proper disposal and utilization of poultry litter. Monitoring of soils for nutrient content and recommendations to farmers for application are components of the project. The project period was November 1993 through August 1997.

Management Unit WMU-0102

Management Unit WMU-0102 is located in the western portion of South Carolina and extends along a common border with Georgia from Anderson County into Edgefield County. It contains McCormick County and portions of Abbeville, Greenwood, and Saluda Counties as well.

Population. The 1990 populations and projections for the year 2010 for counties within WMU-0102 are listed in the table below. Edgefield County is expected to experience the greatest population change during this time period, with an increase of 34%. A decrease of 12% is expected in McCormick County.

<i>County</i>	<i>1990 Population</i>	<i>2010 Population</i>	<i>Change (%)</i>
Abbeville	23,862	28,100	18
Anderson	145,196	176,000	21
Edgefield	18,375	24,600	34
Greenwood	59,567	69,200	16
McCormick	8,868	7,800	-12
Saluda	16,357	18,800	15

Climate. Data from National Weather Service stations in Anderson, Anderson FAA Airport, West Pelzer, Calhoun Falls, Greenwood, Lake Thurmond dam, Edgefield and McCormick were compiled to determine seasonal climatic information for the WMU-0102 area. Historical climatological records were compiled to provide the normal values. The normal annual rainfall in the WMU-0102 region was 48.18 inches. The highest seasonal rainfall occurred in the spring with 13.68 inches; the average summer, fall and winter rainfalls were 11.95, 9.80 and 12.75 inches, respectively. The mean annual daily temperature was 61.1°F. On a seasonal basis, spring temperatures averaged 60.8°F and summer, fall and winter temperatures averaged 77.9, 62.2 and 43.6°F, respectively.

Fish Consumption Advisory. A fish consumption advisory has been issued by SCDHEC for LAKE HARTWELL advising people to limit the amount of fish consumed from these waters and their tributaries due to PCB and mercury contamination. In 1976, analysis of fish tissue by the SCDHEC and the USEPA revealed contamination by polychlorinated biphenyls (PCBs) above the USFDA recommended limits in certain areas of Lake Hartwell. As a result of these findings, a fish consumption advisory was issued for

portions of Lake Hartwell to reduce human exposure. The SCDHEC and US Army Corps of Engineers have continued to conduct surveys of Lake Hartwell to evaluate PCB levels in fish tissue.

Portions of Lake Hartwell became eligible for Superfund support in 1990. The contamination originated from the historical industrial use of PCBs at the Cornell-Dubilier Marketing site, formerly owned by Sangamo, located on Town Creek. Contaminated sediments from this site have migrated downstream via Twelve Mile Creek to the Twelve Mile Creek embayment, which continues to have the highest level of PCBs in Lake Hartwell. The manufacture and use of PCBs was banned in 1979, but PCBs are very resistant to degradation and therefore are very persistent in the environment.

A gradient of decreasing PCB concentration in fish tissue extends from the Twelve Mile Creek region down to the dam. The forage fish in the Twelve Mile Creek arm are highly contaminated with PCBs and play a major role in the accumulation of PCBs in the game fish population through the food chain.

Mercury has also been measured in fish tissue at levels that would warrant an advisory, however the advisory issued due to PCBs is more restrictive and the original fish consumption advisory remains in effect. All fish taken from the Seneca River arm upstream of Highway 24 should be released and not eaten. All fish greater than three pounds taken from the remainder of Lake Hartwell should be released and not eaten. The SCDHEC continues to issue fish consumption advisories for PCBs based on the USFDA action level of 2.0 parts per million. The SCDHEC is, however, in the process of developing a risk based method for issuing future advisories.

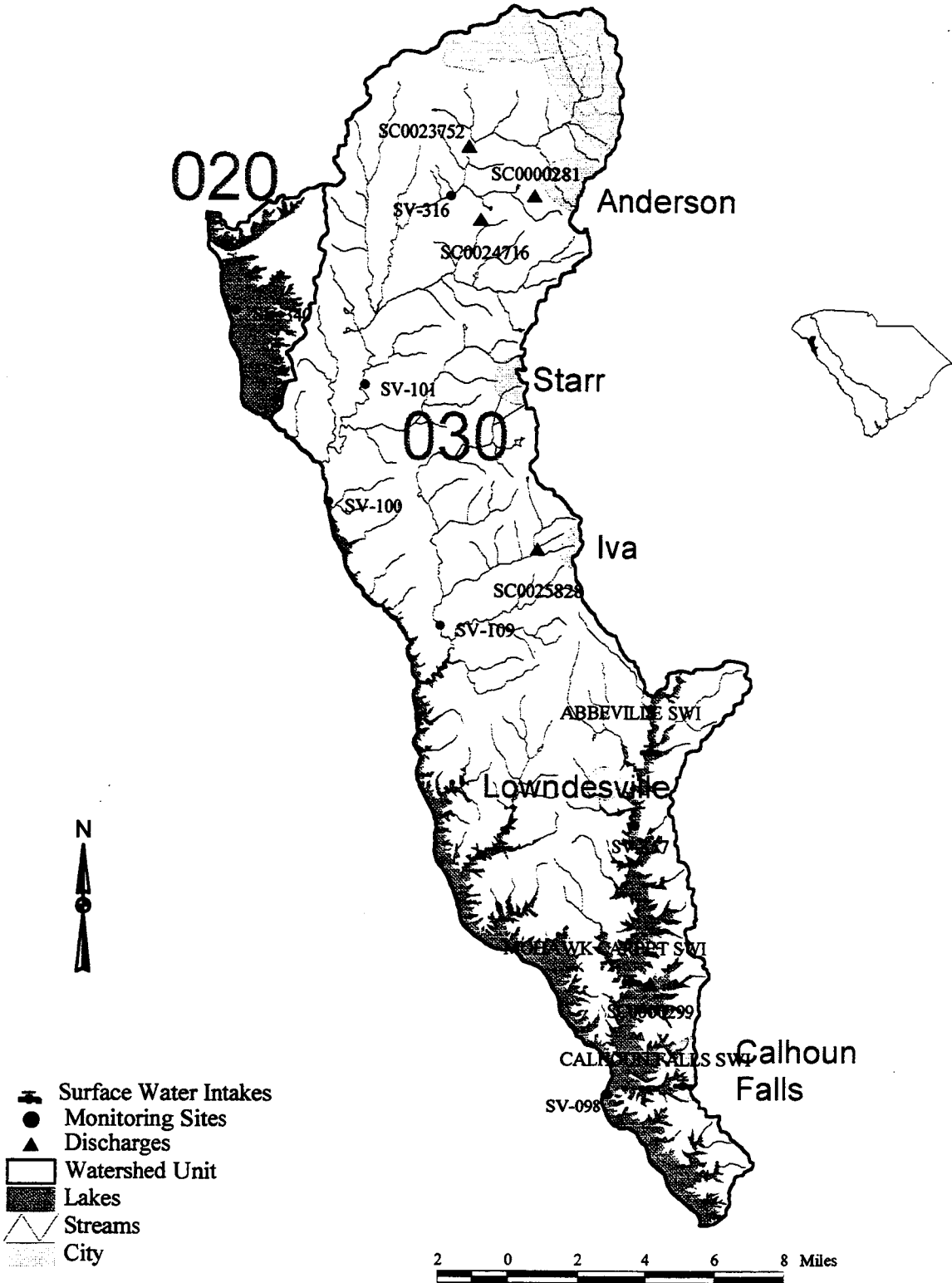
03060103-020. Watershed 03060103-020 (map page 61) is located in Anderson County and consists primarily of the lower end of LAKE HARTWELL on the South Carolina side of the state boundary, which includes the Hartwell dam; no major streams flow through the watershed. Sadlers Creek State Park on Lake Hartwell is near the dam.

The watershed occupies 12,528 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Pacolet series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 11.5%, with a range of 2-40%. Land use/land cover in the watershed includes: 31% water, 27% agricultural land, 26% forested land, 14% scrub/shrub land, 2% urban land, and <1% barren land.

There are no permitted discharges in this watershed in South Carolina.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-340	P	FW	Lake Hartwell, main body at USACE buoy between markers 11 & 12
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Watersheds 03060103-020, -030 Savannah and Salkehatchie River Basins



A fish consumption advisory has been issued by the Department for PCBs and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0102).

LAKE HARTWELL is a 56,000-acre impoundment on the Savannah River, with a maximum depth of approximately 175 feet (53 meters) and an average depth of approximately 46 feet (14 meters). The lake's watershed comprises 2090 square miles (5400 km²) in Georgia and South Carolina. Eutrophication assessments indicate that Lake Hartwell is one of the least eutrophic large lakes in South Carolina, characterized by low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended. Aquatic life uses are not supported in Lake Hartwell (SV-340) due to occurrences of copper in excess of the aquatic life acute standard. Recreational uses are fully supported at this site.

The U.S. Army Corps of Engineers operates a hydroelectric facility on Lake Hartwell.

03060103-030. Watershed 03060103-030 (map page 61) is located in Anderson and Abbeville Counties and consists primarily of **LAKE RICHARD B. RUSSELL** and its tributaries. The Savannah River flows out of Lake Hartwell dam and through Lake Richard B. Russell. Flowing into the Savannah River below Hartwell dam, and prior to Lake Russell, is the **BIG GENEROSTEE CREEK** drainage (Devil's Fork Creek, Richland Creek and Mountain Creek), and farther downstream at the headwaters of Lake Russell, the Little Generostee Creek drainage (Canoe Creek, East Prong Creek, and Crooked Creek) enters. The watershed includes all of Lake Russell on the South Carolina side to the Richard B. Russell dam, including the Rocky River arm of the lake which extends up to, but does not include, Lake Secession. There are a total of 157.1 stream miles in the watershed.

The watershed occupies 138,716 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee-Davidson series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.9%, with a range of 2-15%. Land use/land cover in the watershed includes: 41% forested land, 23% scrub/shrub land, 20% agricultural land, 8% urban land, 8% water, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000281	BASF CORP/ANDERSON	GENEROSTEE C	IN	MR
SC0000281	BASF CORP/ANDERSON	GENEROSTEE C	IN	0.66
SC0000281	BASF CORP/ANDERSON	GENEROSTEE C	IN	MR
SC0000299	FIELDCREST CANNON	R. B. RUSSELL	IN	0.7
SC0000299	FIELDCREST CANNON		IN	----
SC0023752	ANDERSON/GENEROSTEE	GENEROSTEE	MU	6.2
SC0024716	CHAMBERT FOREST SD	MOUNTAIN CK	CO	0.03
SC0024716	CHAMBERT FOREST SD	MOUNTAIN CK	CO	0.04
SC0025828	IVA	E PRONG CK	MU	0.378
SC0044881	AMERADA HESS #40233	WHITNER CK	IN	0.007

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-316	S	FW	Big Generostee Creek at S-04-104
SV-101	BIO	FW	Big Generostee Creek at SC 187
SV-100	P	FW	Lake Russell at SC 181, 6.5 miles SW of Starr
SV-109	BIO	FW	Little Generostee Creek at SC 184
SV-357	SS	FW	L. Russell, Rocky R. arm between markers 48 & 49, downstream of Felkel
SV-098	P	FW	Lake Russell at SC 72, 3.1 miles SW of Calhoun Falls
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

There are two monitoring sites on **BIG GENEROSTEE CREEK**. At the upstream site (SV-316), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggests improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the downstream site (SV-101), aquatic life uses are only partially supported based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **LITTLE GENEROSTEE CREEK** (SV-109) based on macroinvertebrate community data. Recreational use support was not assessed.

LAKE RICHARD B. RUSSELL is a 26,650-acre impoundment on the Savannah River, with a maximum depth of approximately 147 feet (45 meters) and an average depth of approximately 39 feet (12 meters). The lake's watershed comprises 2900 square miles (7500 km²) in Georgia and South Carolina. There are three monitoring sites on Lake Russell.

At the most uplake site (SV-100), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Further down the lake (SV-357), aquatic life uses are fully supported, but may be threatened by a high concentration of zinc measured in 1996. Recreational uses are fully supported at this site.

At the most down-lake site (SV-098), aquatic life uses are fully supported. In sediment, the pesticides endosulfan sulfate, malathion, and diazinon were measured in the 1994 sample. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen

concentrations, as well as turbidity, suggests improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Eutrophication assessments indicate that Lake Russell is one of the least eutrophic large lakes in South Carolina, characterized by low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended.

The U.S. Army Corps of Engineers operates a hydroelectric facility on Lake Russell.

03060103-070. Watershed 03060103-070 (map page 68) is located in Anderson and Abbeville Counties and consists primarily of the **ROCKY RIVER** and its tributaries. The Rocky River watershed includes **BROADWAY LAKE**, and farther downstream, **LAKE SECESSION**. The river flows past the Town of Anderson and eventually forms an arm of Lake Richard B. Russell. The watershed contains a total of 97.7 stream miles. At the top of the watershed, Beaverdam Creek flows through the Anderson Reservoir and joins the Rocky River, as does Little Beaverdam Creek in a separate drainage.

The **BROADWAY CREEK** drainage includes **CUPBOARD CREEK**, Pea Creek and Neals Creek and forms Broadway Lake, which flows into and joins with the Rocky River to form Lake Secession. Also draining into the Rocky River prior to the headwaters of Lake Secession is the Hen Coop Creek drainage (**CHEROKEE CREEK**) and the Bear Creek and Beaver Creek (**BETSY CREEK**) drainages. Governors Creek and First Creek enter into Lake Secession; all of Lake Secession is included in the watershed.

The watershed occupies 128,810 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 8.8%, with a range of 2-15%. Land use/land cover in the watershed includes: 41% forested land, 28% agricultural land, 22% scrub/shrub land, 6% urban land, 2% water, and 1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)*
SC0000400	OWENS-CORNING	BETSY CREEK	IN	0.15
SC0000400	OWENS-CORNING	BETSY CREEK	IN	0.15
SC0000400	OWENS-CORNING	BETSY CREEK	IN	0.15
SC0000400	OWENS-CORNING	BETSY CREEK	IN	0.15
SC0023744	ANDERSON/ROCKY RIVER	ROCKY RV	MU	6.1
SC0037362	DAVIDSON MINERAL	NESBIT CK-	IN	----
SC0044300	PIONEER CONCRETE SC	PEA CREEK	IN	
SC0044300	PIONEER CONCRETE SC	PEA CREEK	IN	

*IN=industrial, CO=community, MU=municipal
 †MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-031	P	FW	Rocky R. at S-04-263, 2.7 mi SE of Anderson at the sewage treatment plant
SV-041	S	FW	Rocky River at S-04-152, below the Rocky River sewage treatment plant
SV-139	S	FW	Cupboard Ck at S-04-733
SV-140	S	FW	Cupboard Creek at S-04-209
SV-141	S/BIO	FW	Broadway Creek at US 76, between Anderson and Belton
SV-319	SS	FW	Broadway Lake, Broadway Creek arm upstream of public access
SV-258	SS	FW	Broadway Lake, Neals Creek arm, 50% between banks at golf course
SV-321	SS	FW	Broadway Lake forebay, 50% between spillway and opposite land
SV-346	SS	FW	Rocky River at S-04-244
SV-037	S	FW	Betsy Creek at S-04-259, below Owens-Corning fiberglass outfall
SV-650	BIO	FW	Rocky River at SC 413
SV-043	S	FW	Cherokee Creek at S-04-318, 4 miles S of Belton
SV-044	BIO	FW	Hen Coop Creek at S-04-244
SV-331	P	FW	Lake Secession, 1 1/4 miles below SC Route 28
SV-332	P	FW	Lake Secession, approximately 400 yards above dam
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

There are four monitoring sites on **ROCKY RIVER**. At the most upstream site (SV-031), aquatic life uses are not supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, including a high concentration of zinc measured in 1995, compounded by a significant increasing trend in turbidity and a very high concentration of chromium measured in 1993. In sediment, di-n-butylphthalate was detected in 1996. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Further downstream (SV-041), aquatic life uses are fully supported, but may be threatened by a significant increasing trend in turbidity. In sediment, di-n-butylphthalate was detected in 1996. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters.

Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (SV-346), below Broadway Lake, aquatic life and recreational uses are fully supported. In sediment, di-n-butylphthalate was detected in 1996.

At the most downstream site (SV-650), aquatic life uses are only partially supported based on macroinvertebrate community data. Recreational use support was not assessed.

There are two monitoring sites on **CUPBOARD CREEK**. At the upstream site (SV-139), aquatic life uses are not supported due to dissolved oxygen and pH excursions, compounded by significant decreasing trends in dissolved oxygen and pH, and a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is purposely 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 at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the downstream site (SV-140), aquatic life uses are not supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in pH and a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are only partially supported in **BROADWAY CREEK** (SV-141) based on macroinvertebrate community data, and may be further threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

BROADWAY LAKE (SV-319, SV-321, SV-258) is a 300-acre impoundment on Broadway and Neals Creeks, with a maximum depth of approximately 22 feet (6.7 meters) and an average depth of approximately six feet (1.8 meters). The lake's watershed comprises 29 square miles (75.8 km²). SCDHEC is conducting a study of Broadway Lake to determine the longevity and effectiveness of dredging and watershed management practices implemented in the 1980's. The most recent eutrophication assessments indicate that Broadway Lake is one of the least eutrophic small lakes in South Carolina, characterized by very low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended. Aquatic life and recreational uses are fully supported at all three monitoring sites on Broadway Lake.

Aquatic life uses are not supported in **BETSY CREEK** (SV-037) due to occurrences of copper in excess of the aquatic life acute standards compounded by a very high concentration of chromium measured in 1992. 1,1-Dichloroethene is consistently measured above drinking water standards. 1,4-Dioxane, a

potential carcinogen, is consistently detected, although there are no numeric standards. In sediment, diethyl phthalate and di-n-butylphthalate were measured in 1996, toluene and P,P' DDT were measured in 1995, PCB-1260 was measured in 1994, P-cresol was measured in 1993, and PCB-1248 was measured in all samples. Although the use of DDT was banned in 1973, and the manufacture and use of PCBs was banned in 1979, both are very resistant to degradation and therefore are very persistent in the environment. Recreational uses are fully supported, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are fully supported in **CHEROKEE CREEK (SV-043)**. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

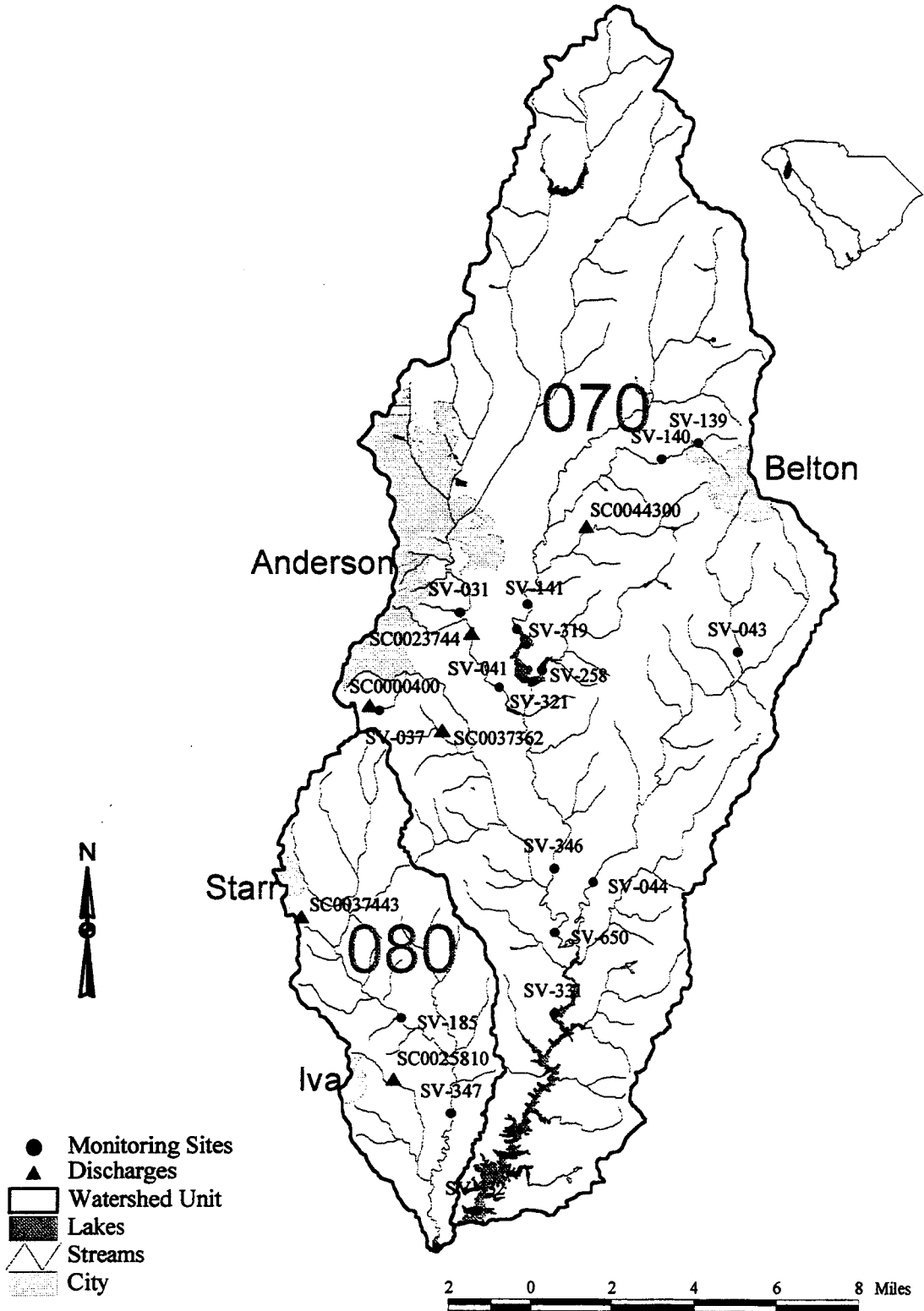
Aquatic life uses are fully supported in **HEN COOP CREEK (SV-044)** based on macroinvertebrate community data. Recreational use support was not assessed.

LAKE SECESSION is an 880-acre impoundment on the Rocky River, with a maximum depth of approximately 92 feet (28 meters) and an average depth of approximately 22 feet (6.7 meters). There are two monitoring sites on the lake.

At the uplake site (SV-331), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. In sediment, a very high concentration of cadmium was measured in 1993, a very high concentration of zinc was measured in 1992, high concentrations of zinc were measured in 1993, 1994 and 1996. Also in sediment, bis(2-ethylhexyl)phthalate was measured in 1992 and 1993, di-n-butylphthalate was measured in 1996, P,P' DDT was measured in 1994 and 1995, P,P' DDD was measured in 1994 and 1996, O,P' DDD was measured in 1994, P,P' DDE was measured in 1994, 1995 and 1996, and butylbenzyl phthalate was measured in 1995. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the down-lake site (SV-332), aquatic life uses are fully supported, but may be threatened by a significant increasing trend in total nitrogen concentrations, a very high concentration of copper measured in 1992, a very high concentration of lead measured in 1994, and the herbicide 2,4-D measured in 1995 and 1996. In sediment, a very high concentration of chromium was measured in 1994, high concentrations of chromium were measured in 1992, 1993, 1995 and 1996, high concentrations of copper were measured in 1994 and 1996, a very high concentration of lead was measured in 1996, very high concentrations of nickel were measured in 1993 and 1994, a high concentration of nickel was measured in 1996, a very high concentration of zinc was measured in 1994, and high concentrations of zinc were measured in 1993 and 1996. Also in sediment, di-n-butylphthalate was measured in 1996, O,P' DDT was measured in 1994, and P,P' DDE was measured in 1995 and 1996. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported at this site.

Watersheds 03060103-070, -080 Savannah and Salkehatchie River Basins



Eutrophication assessments indicate that Lake Secession is one of the most eutrophic large lakes in South Carolina, characterized by high densities of algae. An action plan for reducing nutrient inputs to the lake will be developed and implemented over the next several years.

The City of Abbeville operates a hydroelectric facility on Lake Secession.

A nonpoint source pollution education project has been implemented in this watershed by Clemson University through SCDHEC. The goal of the project is to educate watershed residents and water users in responsible practices to protect water quality and reduce nonpoint source inputs from urban activities. Professionals and volunteers are trained to work one-on-one with watershed residents, especially lakeshore residents, to assess nonpoint source problems around the house and show them how to prevent or reduce them. A "Home*A*Syst" information packet will be developed and distributed. Effectiveness of the program will be evaluated through surveys and on-site inspections. This is a three-year project ending in 1998.

03060103-080. Watershed 03060103-080 (map page 68) is located in Anderson and Abbeville Counties and consists primarily of **WILSON CREEK** and its tributaries. The Wilson Creek watershed incorporates Jordans Creek, East Beards Creek and Long Branch before joining the Rocky River downstream of Lake Secession. The watershed contains a total of 13.9 stream miles.

The watershed occupies 28,792 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.5%, with a range of 2-15%. Land use/land cover in the watershed includes: 42% forested land, 32% scrub/shrub land, 24% agricultural land, <1% urban land, <1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0025810	IVA	E BEARD CK	MU	0.245
SC0037443	MAYFAIR MILLS	WILSON CK	IN	0.0128

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-185	BIO	FW	Wilson Creek at SC 413
SV-347	SS	FW	Wilson Creek at S-04-294

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
 † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on **WILSON CREEK**. At the upstream site (SV-185), aquatic life uses are only partially supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (SV-347), aquatic life uses are fully supported, but may be threatened due to a very high concentration of chromium measured in 1996. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.



03060103-100. Watershed 03060103-100 (map page 71) is located in Abbeville and McCormick Counties and consists primarily of **J. STROM THURMOND RESERVOIR** and the tributaries forming the lake. This watershed contains a segment of the Savannah River, which flows into and through Thurmond (Clarks Hill) Reservoir to the dam. There are a total of 61.05 stream miles in this watershed. The Richard B. Russell Lake watershed (03060103-030) flows into the headwaters of Thurmond Reservoir, and the Little River (03060103-140) and Long Cane Creek (03060103-150) watersheds flow into the Little River embayment midlake.

The watershed occupies 101,298 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cataula-Wilkes-Goldston-Cecil series. The erodibility of the soil (K-factor) averages 0.30; the slope of the terrain averages 10.7%, with a range of 2-45%. Land use/land cover in the watershed includes: 61% forested land, 17% water, 13% scrub/shrub land, 6% agricultural land, 2% barren land, and 1% urban land. Hickory Knob State Park is near the headwaters of Lake Thurmond, Baker Creek State Park is on the Long Cane Creek embayment, and Hamilton Branch State Park is near the dam. The Sumter National Forest encompasses the majority of the watershed and all of the State Parks.

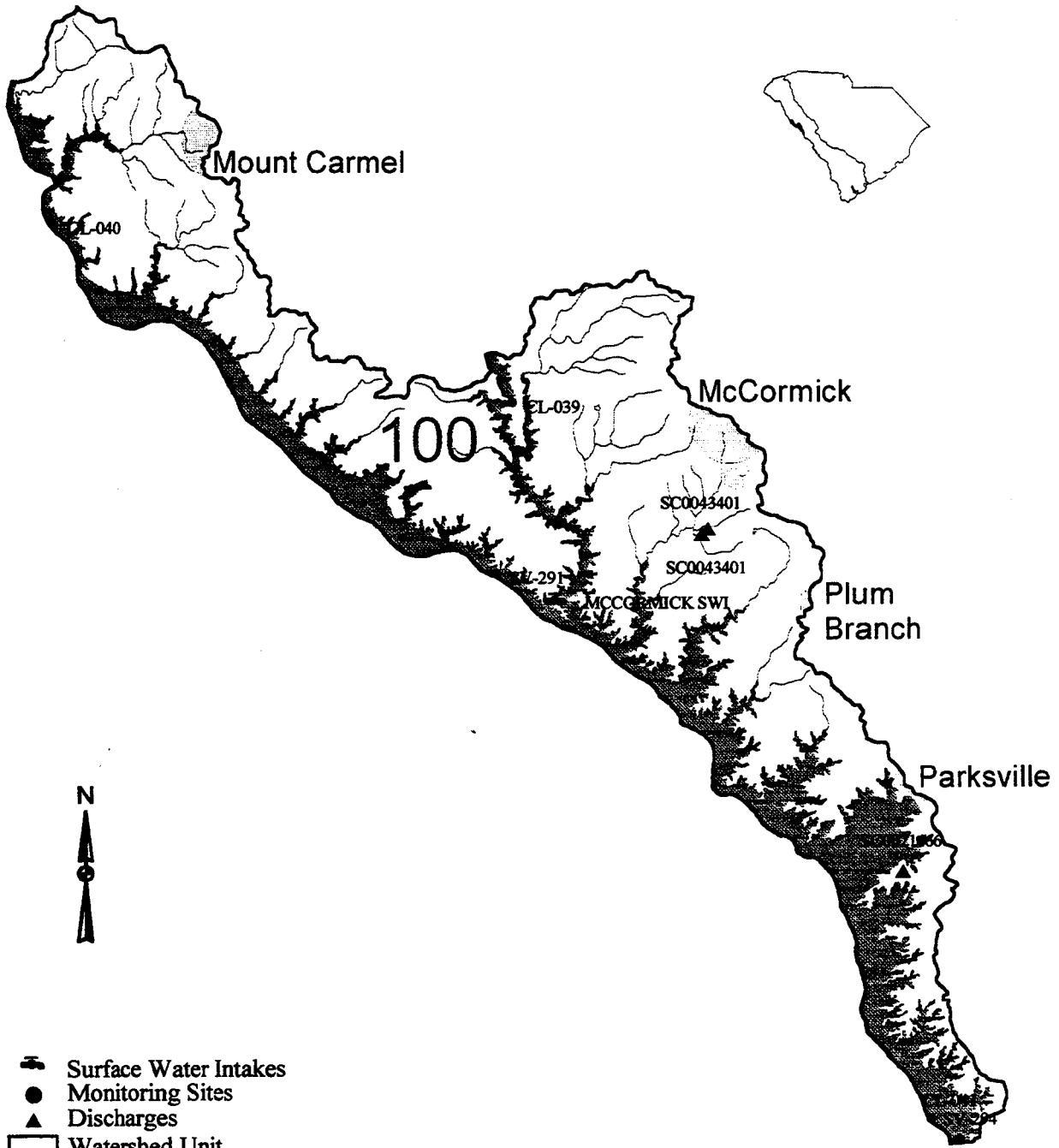
Permitted Discharges








Permit #	Facility	Receiving Water	Flow Type*	(MGD)[†]
SC0021466	SC DEPT PRT	CLARK HILL	CO	0.009
SC0043401	BARITE HILL	HAVE CREEK	IN	----
SC0043401	BARITE HILL	HAVE CREEK	IN	MR
SC0043401	BARITE HILL	HAVE CREEK	IN	MR

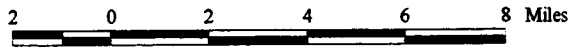
*IN=industrial, CO=community, MU=municipal

[†]MGD=million gallons per day, MR=monitor and report

Watershed 03060103-100 Savannah and Salkehatchie River Basins



-  Surface Water Intakes
-  Monitoring Sites
-  Discharges
-  Watershed Unit
-  Lakes
-  Streams
-  City



Monitoring Locations			
Station Number	Type*	Class†	Station Description
CL-040	SS	FW	Thurmond Reservoir headwaters
SV-291	P	FW	Thurmond Reservoir at US 378, 7 miles SW of McCormick
CL-039	SS	FW	Thurmond Reservoir, Little River embayment
CL-041	SS	FW	Thurmond Reservoir forebay
SV-294	P	FW	Thurmond Reservoir at dam at US 221, SW of Clarks Hill
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

J. STROM THURMOND RESERVOIR is a 70,000-acre impoundment on the Savannah River, with a maximum depth of approximately 141 feet (43 meters) and an average depth of approximately 37 feet (11 meters). The lake's watershed comprises 6150 square miles (15,900 km²) in Georgia and South Carolina. There are five monitoring sites on Thurmond Reservoir.

At the mid-lake site (SV-291), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH, a significant increasing trend in turbidity, and a high concentration of zinc measured in 1995. In sediment, a very high concentration of chromium was measured in 1992, a very high concentration of lead was measured in 1993, and di-n-butylphthalate was measured in 1995. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

At the down-lake site (SV-294), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. In sediment, P,P' DDT and P,P' DDE were detected in the 1992 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, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Eutrophication assessments using data from all five monitoring sites indicate that Thurmond Reservoir is one of the least eutrophic large lakes in South Carolina, characterized by very low nutrient concentrations. Preservation of this lake's desirable trophic condition is recommended.

The U.S. Army Corps of Engineers operates a hydroelectric facility on Thurmond Reservoir.

03060103-140. Watershed 03060103-140 (map page 74) is located in Anderson, Abbeville and McCormick Counties and consists primarily of the **LITTLE RIVER** and its tributaries. There are a total of 179.83 stream miles contained in this watershed. The Little River originates near the Town of Honea Path. Barkers Creek and Corners Creek join to form Little River and are joined downstream with the drainage from

Long Branch, Hogskin Creek and Little Hogskin Creek. The Little River then receives drainages from Johnson Creek, Park Creek, Penny Creek and Shanklin Creek. Below these drainages, McKenley Creek (incorporating Clear Creek, Gill Creek and Morrow Creek) enters the river, and further downriver, SAWNEY CREEK enters.

Calhoun Creek is a very large drainage entering the Little River. Calhoun Creek originates near the Town of Abbeville and is joined by Flagreed Creek, White Creek and Hilburn Creek before entering the Little River. Several other smaller creeks enter Little River at the base of the watershed. The Little River watershed merges with the Long Cane Creek watershed (03060103-150) to form an arm of Lake Thurmond.

The watershed occupies 216,162 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.3%, with a range of 2-15%. Land use/land cover in the watershed includes: 65% forested land, 20% agricultural land, 11% scrub/shrub land, 3% urban land, <1% barren land, and <1% water. The Sumter National Forest covers a portion of the lower end of the watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0022403	DUE WEST/TOWN OF	PARK CK	MU	0.3
SC0023477	MILLIKEN & CO	CALHOUN CK	IN	MR
SC0025721	CALHOUN FALLS	LITTLE RIVER	MU	1
SC0035149	HUGGINS GARMET CO	HOGSKIN CK	IN	MR

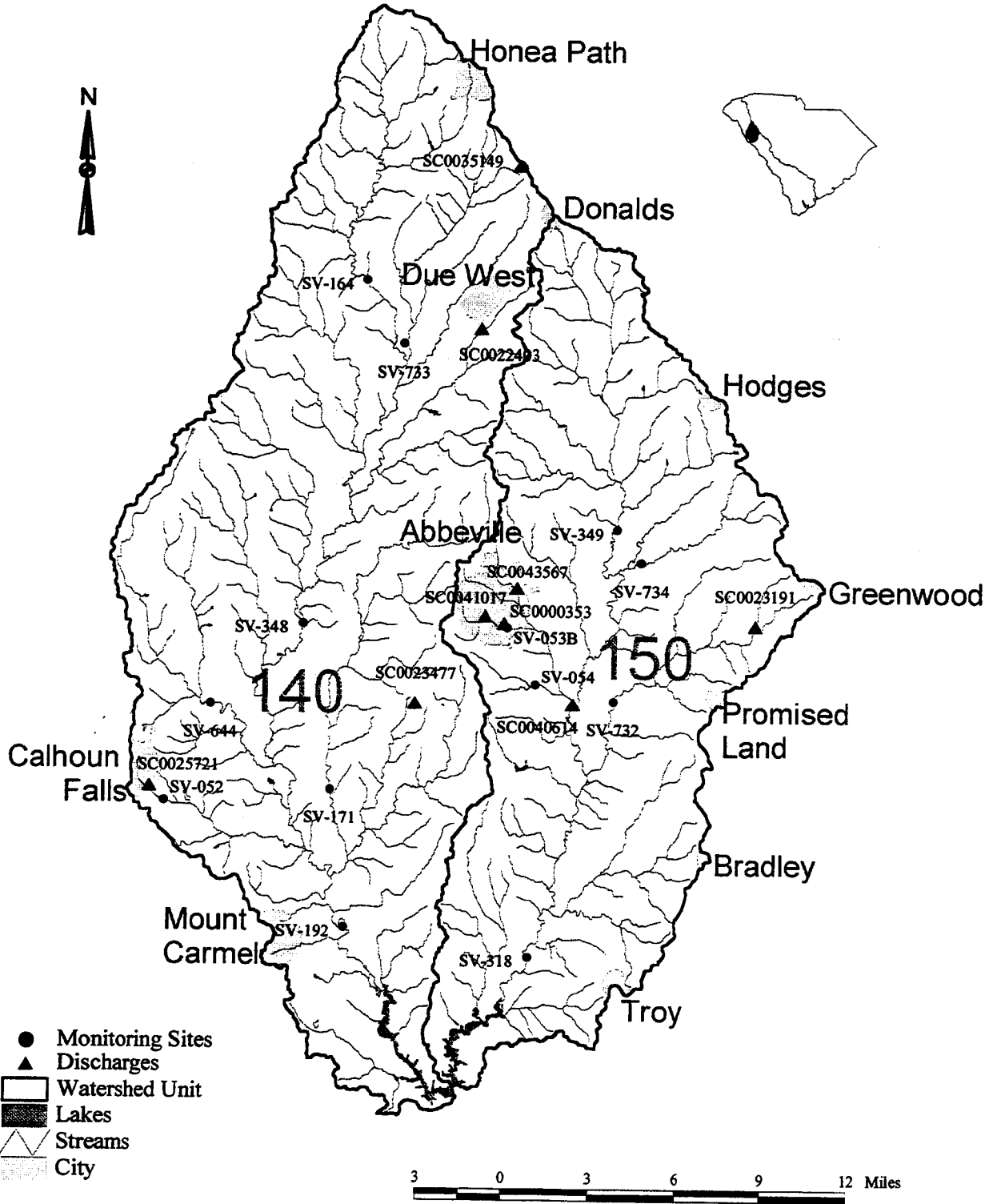
*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-164	SS/BIO	FW	Little River at S-01-24
SV-733	BIO	FW	Hogskin Creek at SC 184
SV-348	SS/BIO	FW	Little River at S-01-32
SV-644	BIO	FW	Gill Creek at S-01-32
SV-052	P	FW	Sawney Creek at county road, 1.5 miles SE of Calhoun Falls
SV-171	BIO	FW	Calhoun Creek at S-01-40
SV-192	SS	FW	Little River at S-33-19

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watersheds 03060103-140, -150 Savannah and Salkehatchie River Basins



Aquatic life uses are fully supported in **HOGSKIN CREEK (SV-733)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **GILL CREEK (SV-644)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **SAWNEY CREEK (SV-052)**, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are fully supported in **CALHOUN CREEK (SV-171)** based on macroinvertebrate community data.

There are three monitoring sites on **LITTLE RIVER**. At the most upstream site (SV-164), aquatic life uses are fully supported based on macroinvertebrate community data, but may be threatened by a high concentration of zinc measured in 1996. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

At the next site downstream (SV-348), aquatic life uses are fully supported, but may be threatened by a high concentration of zinc measured in 1995. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

At the most downstream site (SV-192), aquatic life and recreational uses are fully supported.

03060103-150. Watershed 03060103-150 (map page 74) is located in Abbeville, Greenwood and McCormick Counties and consists primarily of **LONG CANE CREEK** and its tributaries. The Long Cane Creek watershed is a large drainage area that joins with the Little River watershed (03060103-140) to form an arm of Lake Thurmond. There are a total of 86.21 stream miles contained within this watershed. Many smaller creeks flow into Long Cane Creek including: Norris Creek, Miller Branch, Grays Creek, Bailey Creek, Dry Creek, Johns Creek, McCord Creek, **BLUE HILL CREEK** and Double Branch. A larger drainage entering Long Cane Creek is the Big Curtail Creek and Little Curtail Creek drainage; additional drainages include the Reedy Branch and South Fork Creek drainage and Linkay Creek. The Bold Branch (incorporating Persimman Branch, Rock Branch and Welch Creek) drainage enters Long Cane Creek at the headwaters of the lake.

The watershed occupies 137,544 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K-factor) averages 0.26; the slope of the terrain averages 9.2%, with a range of 2-15%. Land use/land cover in the

watershed includes: 73% forested land, 13% agricultural land, 11% scrub/shrub land, 2% urban land, <1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000353	MILLIKEN (proposed)	BLUE HILL CK	IN	MR
SC0000353	MILLIKEN (proposed)	BLUE HILL CK	IN	MR
SC0000353	MILLIKEN/ABBEVILLE	BLUE HILL CK	IN	MR
SC0000353	MILLIKEN/ABBEVILLE	BLUE HILL CK	IN	MR
SC0000353	MILLIKEN (proposed)	LONG CANE CK	IN	MR
SC0000353	MILLIKEN/ABBEVILLE	LONG CANE CK	MU	MR
SC0023191	GATEWOOD SD	BIG CURLYTAIL CO		0.08
SC0040614	CITY OF ABBEVILLE	LONG CANE CK	MU	1.7
SC0040614	CITY OF ABBEVILLE (proposed)	LONG CANE CK	MU	2.5
SC0041017	ABBEVILLE/WATER	BLUE HILL CK	IN	MR
SC0043567	ABBEVILLE CITY BARN	NORRIS CREEK	IN	MR

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-349	SS/BIO	FW	Long Cane Creek at S-01-159
SV-734	BIO	FW	Johns Creek at S-01-159
SV-053B	S	FW	Blue Hill Creek on South Main Street, Abbeville
SV-054	BIO	FW	Double Branch at S-01-33
SV-732	BIO	FW	Big Curly Tail Creek at US Forest Service Rd 509
SV-318	P/BIO	FW	Long Cane Creek at S-33-117, 7.0 miles NW of McCormick

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are only partially supported in **JOHNS CREEK (SV-734)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **BLUE HILL CREEK (SV-053B)**, but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for these

parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Aquatic life uses are only partially supported in **DOUBLE BRANCH (SV-054)** based on macroinvertebrate community data.

Aquatic life uses are fully supported in **BIG CURLY TAIL CREEK (SV-732)** based on macroinvertebrate community data.

There are two monitoring sites on **LONG CANE CREEK**. At the upstream site (SV-349), aquatic life uses are fully supported based on macroinvertebrate community, physical and chemical data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

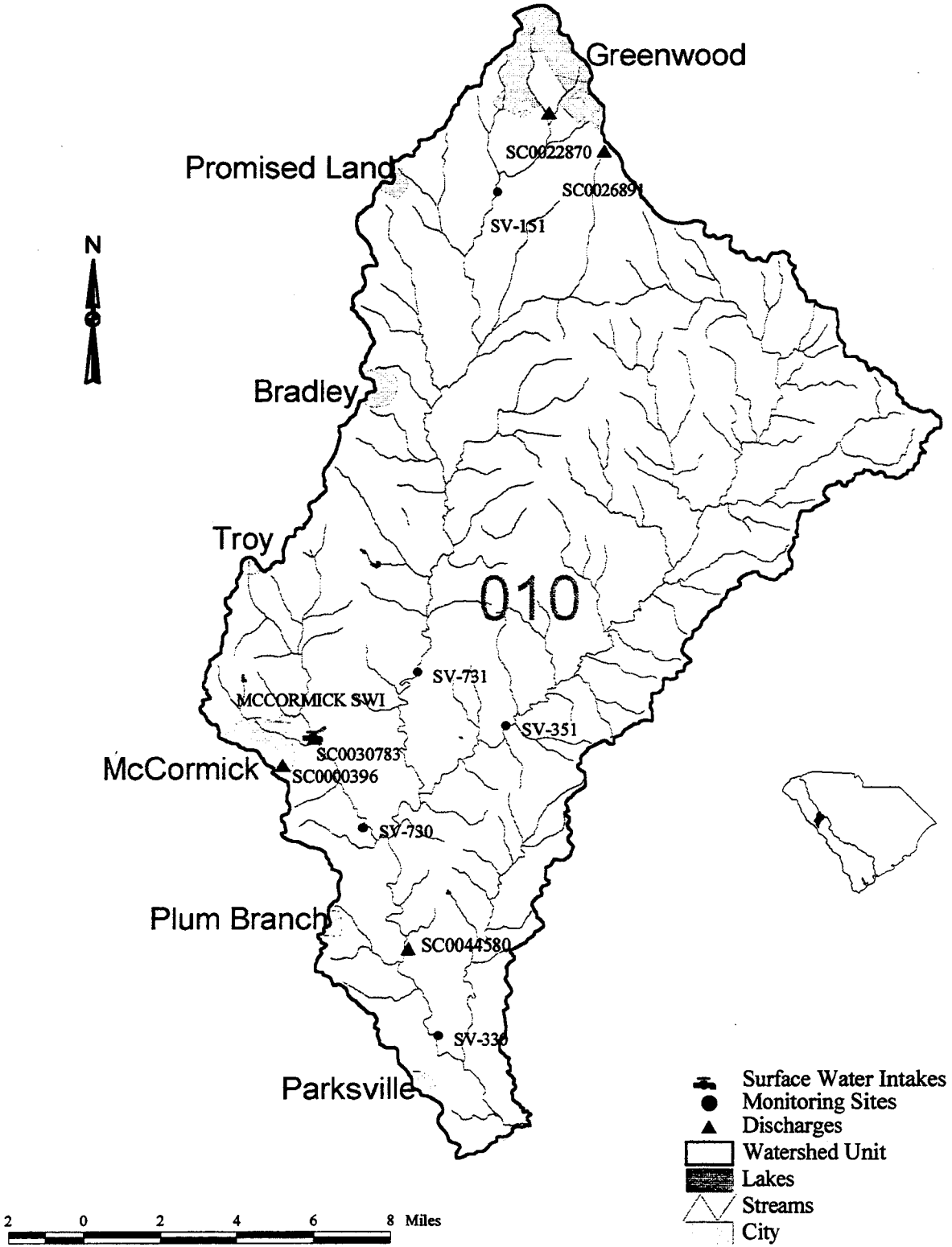
At the downstream site (SV-318), aquatic life uses are fully supported based on macroinvertebrate community data, but may be threatened by a significant decreasing trend in pH, a significant increasing trend in turbidity, and a very high concentration of lead measured in 1993. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are only 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. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03060107-010. Watershed 03060107-010 (map page 78) is located in Greenwood and McCormick Counties and consists primarily of **STEVENS CREEK** and its tributaries. The Stevens Creek watershed contains a total of 128.44 stream miles. Stevens Creek is formed by the confluence of **HARD LABOR CREEK** (incorporating Armstrong Branch, Cowhead Creek and Little Cowhead Creek, Beaverdam Branch, Cunning Ford Creek, Calabash Branch and Big Branch), Rocky Creek and **CUFFYTOWN CREEK** (incorporating Horsepen Creek, Beaverdam Creek, Reedy Creek, Little Creek and Cow Branch). Byrd Branch enters Stevens Creek at the base of the watershed prior to the Stevens Creek and Turkey Creek confluence.

The watershed occupies 160,984 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Tatum-Herndon-Georgeville-Helena series. The erodibility of the soil (K-factor) averages 0.33; the slope of the terrain averages 7.4%, with a range of 2-25%. Land use/land cover in the watershed includes: 77% forested land, 11% scrub/shrub land, 9% agricultural land, 2% urban land, <1% barren land, and <1% water. The Sumter National Forest covers the central portion of the watershed.

Watersheds 03060107-010

Savannah and Salkehatchie River Basins



Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD) [†]
SC0000396	MILLIKEN & CO	PERSIMMON TR	IN	
SC0000396	MILLIKEN & CO	PERSIMMON TR	IN	
SC0022870	GREENWOOD	HARD LABOR	MU	2.2
SC0026891	AUGUSTA FIELDS SD	COWHEAD CK	CO	0.04
SC0030783	MCCORMICK/ROCKY CK	ROCKY CK	MU	0.85
SC0044580	MCCORMICK COUNTY	STEVENS CK	MU	3.25

*IN=industrial, CO=community, MU=municipal

[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
SV-151	P/BIO	FW	Hard Labor Creek at S-24-164 bridge
SV-731	BIO	FW	Hard Labor Creek at S-33-23
SV-351	SS/BIO	FW	Cuffytown Creek at S-33-138
SV-730	BIO	FW	Rocky Creek at S-33-87
SV-330	P	FW	Stevens Creek at S-33-21

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on **HARD LABOR CREEK**. At the upstream site (SV-151), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards and impacts to the macroinvertebrate community, compounded by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration and turbidity suggests improving conditions for these parameters. Recreational uses are not 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. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the downstream site (SV-731), aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **CUFFYTOWN CREEK** (SV-351) based on macroinvertebrate, physical and chemical data. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are only partially supported in **ROCKY CREEK (SV-730)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **STEVENS CREEK (SV-330)** but may be threatened by a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03060107-020. Watershed 03060107-020 (map page 81) is located in Saluda, Greenwood, McCormick and Edgefield Counties and consists primarily of **TURKEY CREEK** and its tributaries. The Turkey Creek watershed contains a total of 110.15 stream miles. The watershed contains: Little Turkey Creek, Little Stevens Creek, Sleep Creek, Mountain Creek, Little Mountain Creek, Rocky Creek and Cyper Creek; the entire drainage flows into Stevens Creek. The Beaver Creek watershed (03060107-030) flows into this watershed.

The watershed occupies 149,262 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Herndon-Tatum-Georgeville series. The erodibility of the soil (K-factor) averages 0.35; the slope of the terrain averages 7.2%, with a range of 2-25%. Land use/land cover in the watershed includes: 75% forested land, 13% scrub/shrub land, 11% agricultural land, <1% urban land, <1% barren land, <1% forested wetland, and <1% water. The Sumter National Forest covers a portion of the watershed.

There are no permitted discharges in this watershed.

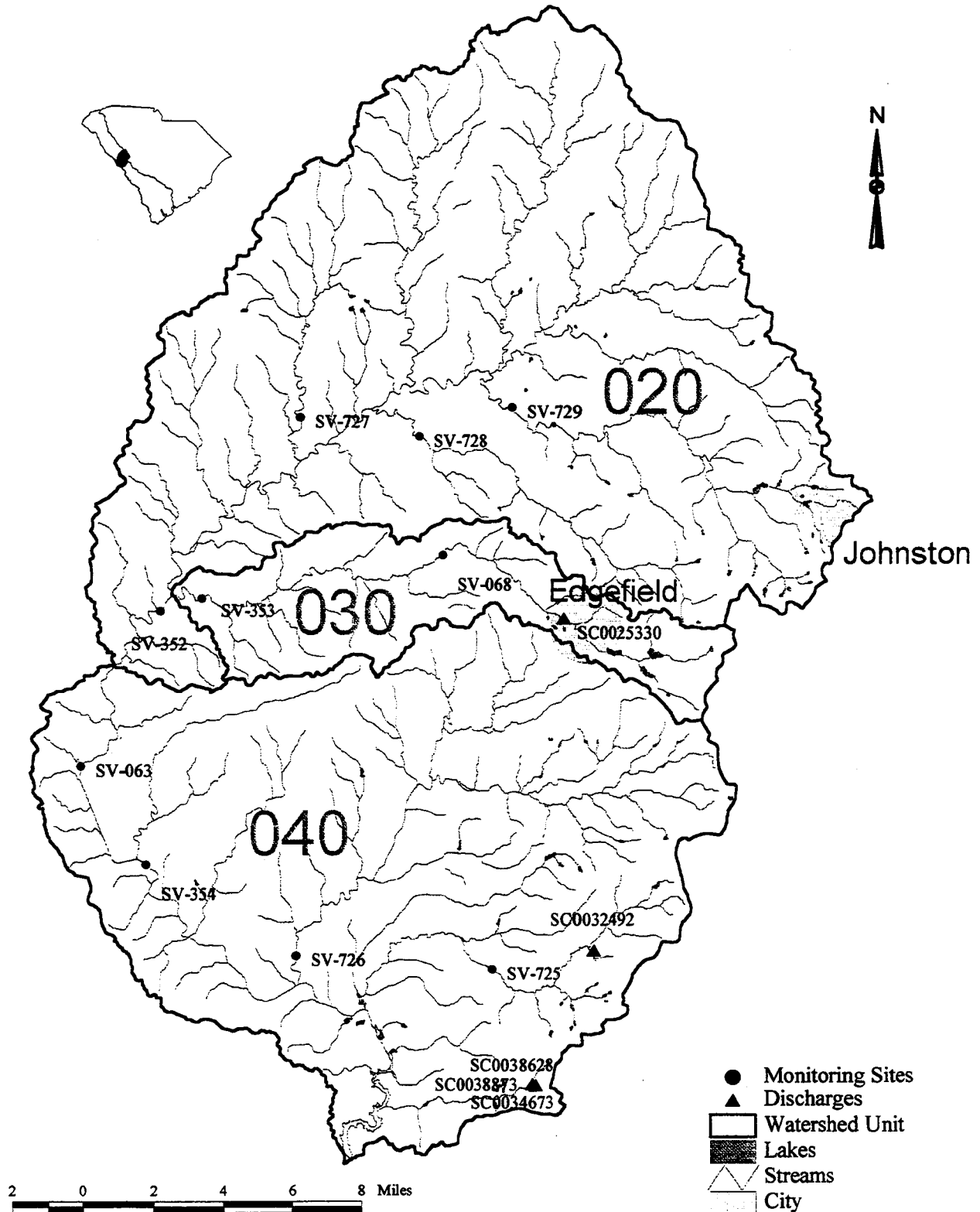
Monitoring Locations			
Station Number	Type*	Class[†]	Station Description
SV-729	BIO	FW	Turkey Creek at S-19-100
SV-728	BIO	FW	Log Creek at S-19-315
SV-727	BIO	FW	Rocky Creek at S-19-61
SV-352	SS	FW	Turkey Creek at S-33-227/S-19-68
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in **LOG CREEK (SV-728)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **ROCKY CREEK (SV-727)** based on macroinvertebrate community data. Recreational use support was not assessed.

There are two monitoring sites on **TURKEY CREEK**. At the upstream site (SV-729), aquatic life uses are fully supported based on macroinvertebrate community data. At the downstream site (SV-352), aquatic life and recreational uses are fully supported.

Watersheds 03060107-020, -030, -040 Savannah and Salkehatchie River Basins



03060107-030. Watershed 03060107-030 (map page 81) is located in Edgefield County and consists primarily of **BEAVERDAM CREEK** and its tributaries. The Beaverdam Creek watershed contains a total of 19.10 stream miles. Beaverdam Creek flows through the town of Edgefield and enters the Turkey Creek watershed (03060107-020), which flows into Stevens Creek (03060106-040).

The watershed occupies 27,569 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Tatum-Herndon-Georgeville series. The erodibility of the soil (K-factor) averages 0.31; the slope of the terrain averages 7.0%, with a range of 2-25%. Land use/land cover in the watershed includes: 63% forested land, 17% scrub/shrub land, 13% agricultural land, 5% urban land, 1% water, <1% barren land, and <1% forested wetland. The Sumter National Forest covers the area where Beaverdam Creek flows into Turkey Creek.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0025330	ECW&SA/BROOKS AVE	BEAVERDAM	MU	0.725

*IN=industrial, CO=community, MU=municipal
 †MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-068	S	FW	Beaverdam Creek at S-19-35, 3.8 miles NW of Edgefield
SV-353	SS/BIO	FW	Beaverdam Creek at Forest Service Road 621 off S-19-68

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
 † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on **BEAVERDAM CREEK**. At the upstream site (SV-068), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggests improving conditions for these parameters. Recreational uses are fully supported at this site.

At the downstream site (SV-353), aquatic life uses are fully supported based on macroinvertebrate, physical and chemical data. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03060107-040. Watershed 03060107-040 (map page 81) is located in Edgefield and McCormick Counties and consists primarily of **STEVENS CREEK** and its tributaries. This watershed contains a segment of Stevens Creek that flows from below the Turkey Creek confluence to the Stevens Creek dam at the

Savannah River. There are a total of 97 stream miles in this watershed. Smaller drainages that join into this segment of Stevens Creek include: Cuffy Branch, Gundy Creek, Lloyd Creek, Horn Creek (Double Branch and Cedar Creek), Dry Branch, Cheves Creek and Sweetwater Branch

The watershed occupies 144,020 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee-Lakeland series. The erodibility of the soil (K-factor) averages 0.24; the slope of the terrain averages 8.7%, with a range of 0-25%. Land use/land cover in the watershed includes: 69% forested land, 21% scrub/shrub land, 7% agricultural land, 1% urban land, 1% water, <1% barren land, and <1% forested. The Sumter National Forest extends over roughly half of the watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0032492	ECW&SA/LAND-O-LAKES	CHEVES CRK	MU	0.015
SC0034673	BP OIL INC/N AUGUSTA	SWEETWATER	IN	MR
SC0038628	CONOCO INC/N AUG TER	SWEETWATER	IN	MR
SC0038873	AMOCO OIL/N AUG	SWEETWATER	IN	MR

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-063	BIO	FW	Stevens Creek at SC 23
SV-354	SS	FW	Stevens Creek at S-33-88/S-19-143
SV-726	BIO	FW	Horn Creek at S-19-143
SV-725	BIO	FW	Cheves Creek at S-19-34

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on STEVENS CREEK in this watershed unit. At the upstream site (SV-063) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed. At the downstream site (SV-354), aquatic life and recreational uses are fully supported.

Aquatic life uses are fully supported in HORN CREEK (SV-726) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in CHEVES CREEK (SV-725) based on macroinvertebrate community data. Recreational use support was not assessed.

A nonpoint source pollution reduction project has been implemented in this watershed by SC Department of Natural Resources through SCDHEC. The goal of the project is to reduce sediment, nutrients, and chemical runoff from cropland, pasture, hayland, unconfined livestock, logging activities, and unpaved roads. Implementation activities include education, demonstration, training, and technical assistance on sustainable agriculture practices, forestry BMPs, and unpaved, dirt road maintenance. SCDHEC is conducting water quality monitoring. This project commenced in May 1995 and is ongoing, with scheduled completion in May 1998.

Management Unit WMU-0103

Management Unit WMU-0103 extends along the western edge of South Carolina from Aiken County through Jasper County. It contains portions of Barnwell, Allendale, and Hampton Counties as well.

Population. The 1990 populations and projections for the year 2010 for counties within WMU-0103 are listed in the table below. Jasper County is expected to experience the greatest population change during this time period, with an increase of 46%.

<i>County</i>	<i>1990 Population</i>	<i>2010 Population</i>	<i>Change (%)</i>
Aiken	120,940	149,000	23
Allendale	11,722	13,100	12
Barnwell	20,293	26,200	29
Hampton	18,191	20,700	14
Jasper	15,487	22,600	46

Climate. Normal annual rainfall in the WMU-0103 area was 47.82 inches, according to the S.C. historic climatological record. The data were collected from National Weather Service stations in Aiken, Blackville and Hampton. The highest seasonal rainfall of 14.8 inches was in the summer related to the higher occurrence of thunderstorms in the area. The lowest rainfall occurred during the fall with 8.6 inches. Winter and spring rainfalls were 11.6 and 12.8 inches, respectively. The mean annual temperature for the watershed management unit was 64.2°F. Summer temperatures averaged 79.2°F; fall, winter and spring temperatures averaged 65.1, 48.3 and 64.3°F, respectively.

Fish Consumption Advisories. A fish consumption advisory has been issued by SCDHEC for VAUCLUSE POND and FLAT ROCK POND, advising people to limit the amount of some types of fish consumed from these waters 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 or pond, then the person should

cut back even further on the amounts of each species consumed. For example, if a person eats two pounds of largemouth bass from the Flat Rock Pond, the person should not eat any catfish from that pond that month. The types of fish with elevated mercury and the maximum amounts of those fish that can be safely consumed are as follows:

Vaocluse Pond Largemouth Bass	1.5 lb./month
Flat Rock Pond Largemouth bass	2.0 lb./month
Channel Catfish	1.75 lb./month

The source of mercury contamination in fish tested by SCDHEC is uncertain. Mercury occurs naturally, which may be partially responsible for the levels found in fish tissue. Another source is deposition from the air, a result of the combustion of fossil fuels. There are no data available linking mercury in wastewater discharges as a major source of mercury in fish. Naturally occurring low pH, low hardness, low alkalinity and low dissolved oxygen levels commonly found in coastal plains swamps and blackwater streams are conditions that promote the transformation of inorganic mercury into methylmercury, the form most readily accumulated by fish.

South Carolina is not the only state where mercury is showing up in fish. About 40 other states are also seeing high mercury levels and have issued advisories. States are working together and with the U.S. Environmental Protection Agency to try to identify the cause or causes of mercury in fish.

Since the late 1800's, untreated or partially treated textile wastewater was discharged to Horse Creek and LANGLEY POND resulting in sediment contaminated with chromium, mercury and PCBs. In 1979, a new regional wastewater treatment facility that discharged to the Savannah River was constructed providing proper wastewater treatment to Horse Creek dischargers. Since the treatment facility began operation, water quality in Langley Pond has improved; however, sediments in the pond remain contaminated and fish accumulate these contaminants. The manufacture and use of PCBs was banned in 1979, but PCBs are very resistant to degradation and therefore are very persistent in the environment.

The Department has issued a fish consumption advisory, warning people not to consume fish from Langley Pond because of the presence of elevated concentrations of mercury and PCBs.

A fish consumption advisory has been issued by SCDHEC for the SAVANNAH RIVER advising people to limit the amount of fish consumed from these waters and their tributaries due to contamination by mercury and the radioactive isotopes Cesium-137 and Strontium-90. In 1995, analysis of fish tissue by the SCDHEC revealed mercury contamination in certain types of fish from specific areas of the Savannah River. As a result of these findings, a fish consumption advisory was issued to reduce human exposure. In 1996 the original advisory was expanded to include all species of fish in certain areas based on levels of the two radioisotopes.

The radioisotope releases occurred due to historic methods for the disposal of radioactive materials at the Savannah River Site (SRS). As with mercury, fish also concentrate the radioisotopes to levels of concern.

The types of fish with restrictions and the maximum amounts of those fish that can be safely consumed are as follows:

Thurmond Reservoir to Beech Island

Largemouth Bass 4.75 lb./month
all other fish no limit

Beech Is. to Allendale/Barnwell county line

Largemouth bass 1.75 lb./month
all other fish 1.5 lb./month

Allendale/Barnwell county line to Web Wildlife Center

Largemouth Bass 2.5 lb./month
all other fish 4.0 lb./month

Webb Wildlife Center to I-95

Largemouth Bass 1.0 lb./month
all other fish no limit

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.

Capacity Use Area. As part of the Capacity Use Program, the Department monitors a number of wells to determine the relationship between water levels and pumpage in order to determine regional impacts and evaluate reserve supply. The Department has undertaken a project in conjunction with the State of Georgia to determine the extent of salt water intrusion in Southern Beaufort and Jasper Counties. Beaufort, Colleton, and Jasper Counties make up the Low Country Capacity Use Area.

03060106-030. Watershed 03060106-030 (map page 87) is located in Edgefield and Aiken Counties and consists primarily of the SAVANNAH RIVER and its tributaries. This watershed includes the segment of the Savannah River that flows from the Lake Thurmond dam through the Stevens Creek dam to the confluence with the Horse Creek watershed. There are a total of 32.02 stream miles in this watershed. The watershed also includes Fox Creek and Pole Branch, which flow into the river below the Stevens Creek dam. As a reach of the Savannah River, this watershed accepts all upstream drainage, including the Stevens Creek watershed (03060107-040).

The watershed occupies 33,235 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Cataula-Cecil series. The erodibility of the soil (K-factor) averages 0.20; the slope of the terrain averages 7.4%, with a range of 0-15%. Land use/land cover in the watershed includes: 46% forested land, 26% urban land, 15% scrub/shrub land, 6% water, 5% agricultural land, 2% forested wetland, and <1% barren land.

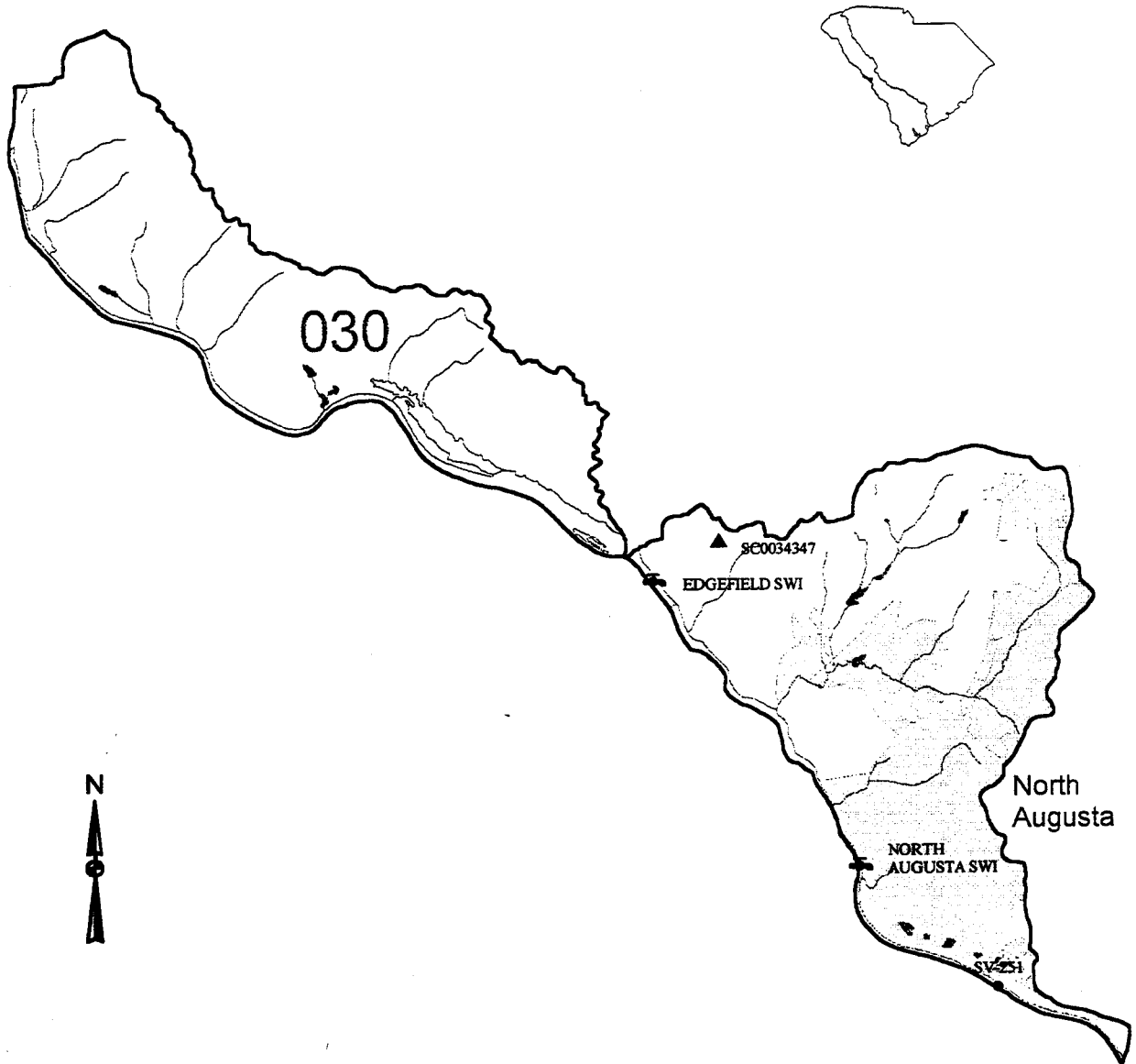
Permitted Discharges








Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0034347	ECW&SA	SAVANNAH	IN	0.06

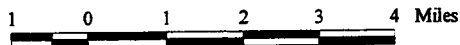
*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Watershed 03060106-030 Savannah and Salkehatchie River Basins



-  Surface Water Intakes
-  Monitoring Sites
-  Discharges
-  Watershed Unit
-  Lakes
-  Streams
-  City



Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-251	P	FW	Savannah River at US 1, 1.5 miles SW of North Augusta
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for mercury, Cesium-137 and Strontium-90 and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103).

Aquatic life uses are fully supported in SAVANNAH RIVER (SV-251), but may be threatened by a significant decreasing trend in pH and a high concentration of zinc measured in 1993. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

South Carolina Electric and Gas Company operates a hydroelectric facility on Stevens Creek Reservoir.








03060106-050. Watershed 03060106-050 (map page 89) is located in Edgefield and Aiken Counties and consists primarily of HORSE CREEK and its tributaries. The Horse Creek watershed runs alongside the City of Aiken and flows into the Savannah River. There are a total of 64.81 stream miles in this watershed. There are also several ponds and small lakes that are fed by Horse Creek and Little Horse Creek. Some of the smaller creeks and ponds that drain into Horse Creek include: Little Horse Creek (a small tributary, not the major branch), Mathis Pond, Long Branch, Camp Branch, Spring Branch, VAUCLUSE POND, FLAT ROCK POND, Bridge Creek, Bridge Creek Pond, Wilkinson Creek, and LANGLEY POND. The SAND RIVER merges with Horse Creek before flowing into Langley Pond.

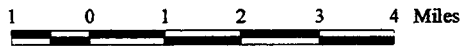
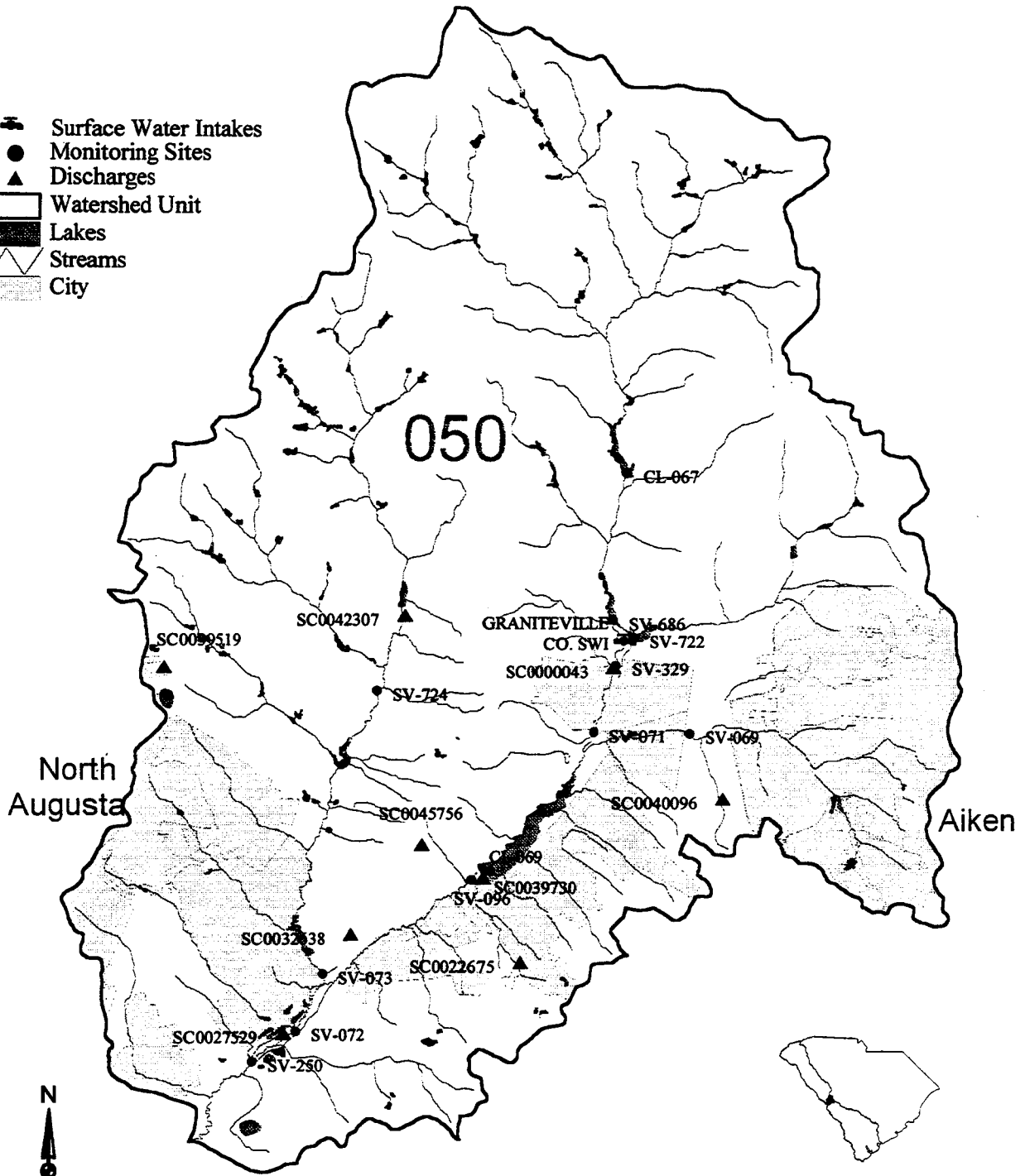
LITTLE HORSE CREEK flows into Horse Creek and accepts drainage from Eagleston Lake, Antique Lake, Hightower Creek, Franklin Branch, Sudlow Lake, Mathis Lake and Clearwater Pond.

The watershed occupies 100,993 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Lakeland-Fuquay-Troup series. The erodibility of the soil (K-factor) averages 0.12; the slope of the terrain averages 5.2%, with a range of 2-25%. Land use/land cover in the watershed includes: 58% forested land, 20% urban land, 9% agricultural land, 8% scrub/shrub land, 3% forested wetland, 2% water, and <1% barren land.

Watershed 03060106-050

Savannah and Salkehatchie River Basins

-  Surface Water Intakes
-  Monitoring Sites
-  Discharges
-  Watershed Unit
-  Lakes
-  Streams
-  City



Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000043	GRANITEVILLE CO	HORSE CREEK	IN	0.83
SC0022675	J M HUBER CORP	HORSE CREEK	IN	0.015
SC0027529	AUGUSTA SAND & GRAVEL	HORSE CREEK	IN	MR
SC0032638	GREEN ACRES MHP	HORSE CREEK	MU	0.017
SC0039519	CHARTER TERMINAL	FRANKLIN BR	IN	MR
SC0039730	AIR PRODUCTS	HORSE CREEK	IN	3
SC0040096	J M HUBER CORP	HORSE CREEK	IN	0.04
SC0042307	MARTIN MARIETTA	LITTLE HORSE	IN	1.4
SC0042307	MARTIN MARIETTA	LITTLE HORSE	IN	1.4
SC0045756	ALLSTATE #225	HORSE CREEK	IN	0.03456

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CL-067	SS	FW	Vaucluse Pond in forebay near dam
SV-686	SS	FW	Flat Rock Pond in forebay near dam
SV-722	SS	FW	Bridge Creek Pond forebay
SV-329	P	FW	Horse Creek at Ascauga Lake Rd (S-02-33) in Graniteville
SV-071	P	FW	Horse Creek at S-02-104, 0.6 miles SW of Graniteville
SV-069	P/BIO	FW	Sand River at old US 1, 1.2 miles SE of Warrentville
CL-069	SS	FW	Langley Pond in forebay near dam
SV-096	P	FW	Horse Creek below Langley Pond at S-02-254
SV-724	BIO	FW	Little Horse Creek at S-02-104
SV-073	S	FW	Little Horse Creek at SC 421
SV-072	S	FW	Horse Creek at S-02-145
SV-250	P	FW	Horse Creek at SC 125, 1.5 miles SW of Clearwater

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

VAUCLUSE POND (CL-067) is a 125-acre impoundment on Horse Creek, with a maximum depth of approximately 15 feet (4.6 meters) and an average depth of approximately seven feet (2.1 meters). The pond's watershed comprises 88 square miles (228 km²). Eutrophication assessments indicate that Vacluse Pond is one of the least eutrophic small lakes in South Carolina, characterized by the low nutrient concentrations, low pH, and dark color typical of Sandhills impoundments. Preservation of this lake's desirable trophic condition is recommended. A fish consumption advisory has been issued by the Department for Vacluse Pond due to mercury contamination (see Fish Consumption Advisory, Management Unit WMU-0103).

FLAT ROCK POND (SV-686) is an 80-acre impoundment on Horse Creek, with a maximum depth of approximately 13 feet (4.0 meters) and an average depth of approximately seven feet (2.1 meters). Eutrophication assessments indicate that Flat Rock Pond is one of the least eutrophic small lakes in South Carolina, characterized by the low nutrient concentrations, low pH, and dark color typical of Sandhills impoundments. Preservation of this lake's desirable trophic condition is recommended. A fish consumption advisory has been issued by the Department for Flat Rock Pond due to mercury contamination (see Fish Consumption Advisory, Management Unit WMU-0103).

BRIDGE CREEK POND (SV-722) is a 60-acre impoundment on Bridge Creek, with a maximum depth of approximately 16 feet (5.0 meters) and an average depth of approximately five feet (1.5 meters). Eutrophication assessments indicate that Bridge Creek Pond is one of the least eutrophic small lakes in South Carolina, characterized by low phosphorus concentrations, dense aquatic plant growth, and dark, very clear water. Preservation of this lake's desirable trophic condition is recommended.

There are five monitoring sites on **HORSE CREEK**. At the most upstream site (SV-329), aquatic life uses are only partially supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by a significant increasing trend in turbidity. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

At the next site downstream (SV-071), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH and a high concentration of zinc measured in 1996. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Downstream of Langley Pond (SV-096), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by a significant decreasing trend in pH and significant increasing trends in total nitrogen concentration and turbidity. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, P,P' DDT was measured in 1994 and 1995, and P,P' DDD, a metabolite of DDT, was also detected in 1994. 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 concentration suggests improving conditions for these

parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Further downstream (SV-072), below the confluence with Little Horse Creek, aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, a very high concentration of cadmium was measured in 1994, a high concentration of chromium in 1993, very high concentrations of chromium were measured in 1995 and 1996, and a very high concentration of mercury in 1996. Also in sediment, P,P' DDE, a metabolite of DDT, was detected in 1996 and PCB 1254 was detected in 1993. Although the use of DDT was banned in 1973, and the manufacture and use of PCBs was banned in 1979, both are very resistant to degradation and therefore are very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggests improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the most downstream site (SV-250), aquatic life use are fully supported, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, very high concentrations of chromium were measured in 1993, 1994 and 1995, a high concentration of chromium in 1996, a high concentration of copper was measured in 1993, and very high concentrations of mercury were measured in 1993 and 1996. Also in sediment, O,P' DDD and P,P' DDE, metabolites of DDT, were measured in 1993, PCB 1254 was measured in 1994, and chlordane was measured in 1996. Although the use of DDT was banned in 1973, and the manufacture and use of PCBs was banned in 1979, both are very resistant to degradation and therefore are very persistent in the environment. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggests improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in SAND RIVER (SV-069) based on macroinvertebrate community data, but may be threatened due to occurrences of chromium, copper, and zinc in excess of the aquatic life acute standards, compounded by very high concentrations of chromium measured in 1992 and 1996, a very high concentration of lead measured in 1996, a very high concentration of zinc measured in 1995, a high concentration of zinc measured in 1994 and a significant increasing trend in turbidity. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

LANGLEY POND (CL-069) is a 250-acre impoundment on Horse Creek, with a maximum depth of approximately 19 feet (5.8 meters) and an average depth of approximately 4.9 feet (1.5 meters). Eutrophication assessments indicate that Langley Pond is of intermediate trophic condition among small lakes in South Carolina, and is characterized by low nitrogen concentrations, and the low pH and dark color typical of Sandhills impoundments. A fish consumption advisory has been issued by the Department for Langley Pond due to mercury and PCB contamination (see Fish Consumption Advisory, Management Unit WMU-0103).

There are two monitoring sites on **LITTLE HORSE CREEK**. At the upstream site (SV-724) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (SV-073), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. In sediment, a high concentration of copper was measured in 1994, a high concentration of lead was measured in 1995, and endosulfan was measured in 1996. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are fully supported at this site but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

03060106-060. Watershed 03060106-060 (map page 94) is located in Aiken County and consists primarily of the **SAVANNAH RIVER** and its tributaries. There are a total of 53.37 stream miles in this watershed. **HOLLOW CREEK** incorporates the drainage from smaller creeks and ponds from both Hollow Creek (Little Hollow Creek) and Town Creek (McElmurrays Pond and Boyd Pond). Above the Hollow Creek drainage, Little Pine Creek enters the river, connecting several oxbow lakes. Below the Hollow Creek drainage are more river oxbows. Island Creek enters the river near the base of the watershed. As a reach of the Savannah River, this watershed also accepts the drainage of all streams entering the river upstream of the watershed.

The watershed occupies 121,666 acres of the Upper Coastal Plain of South Carolina. Predominant soil types consist of an association of the Fuquay-Troup-Chewacla series. Erodibility of the soil (K-factor) averages 0.17; the slope of the terrain averages 4.2%, with a range of 0-25%. Land use/cover in the watershed includes: 35% forested, 21% agricultural, 20% forested wetland, 14% scrub/shrub, 7% urban, 2% water, <1% barren, and <1% nonforested wetland.

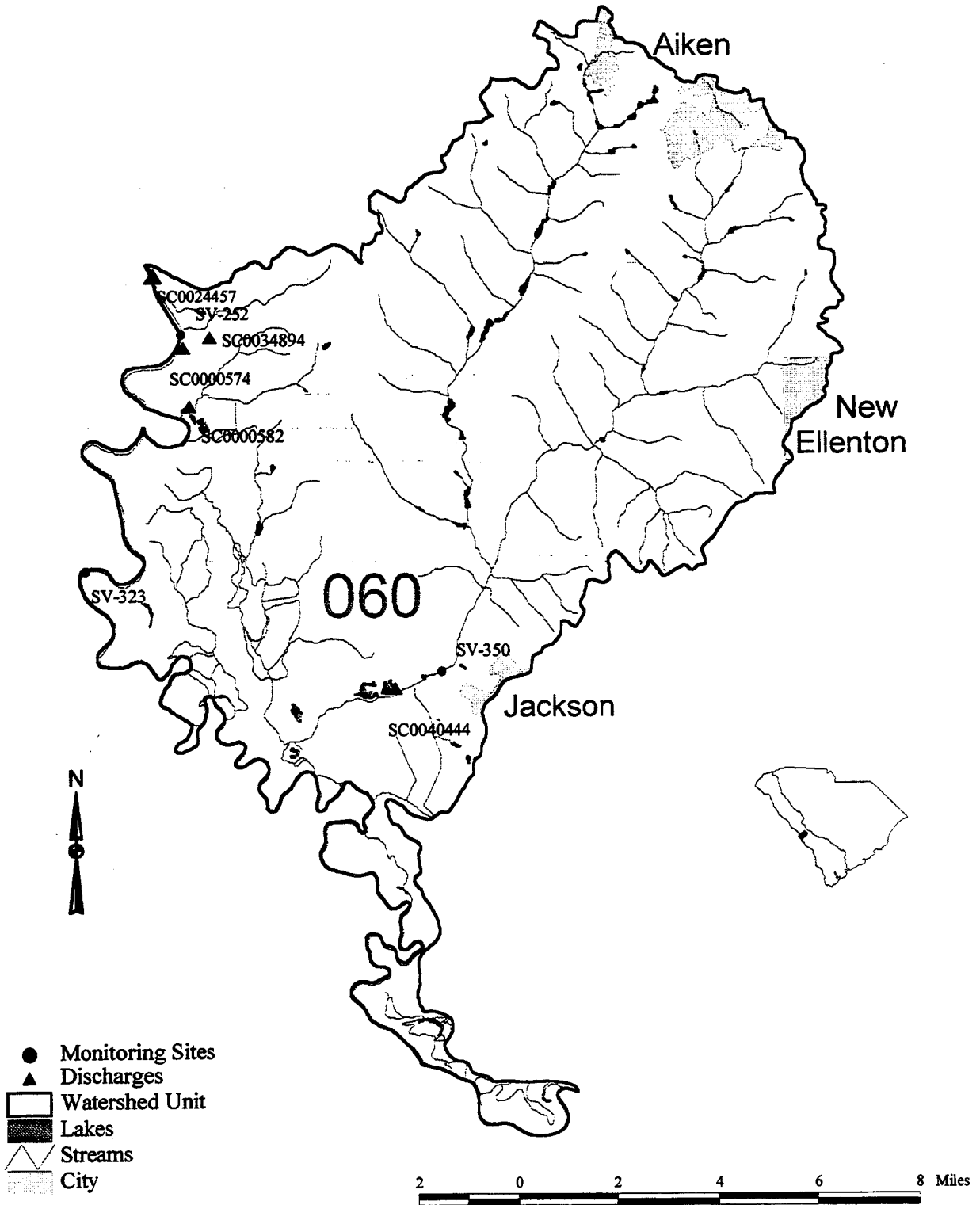
Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD) [†]
SC0000574	SC ELEC & GAS	SAVANNAH R.	IN	----
SC0000574	SC ELEC & GAS	SAVANNAH R.	IN	----
SC0000574	SC ELEC & GAS	SAVANNAH R.	IN	----
SC0000582	KIMBERLY-CLARK CORP.	SAVANNAH R.	IN	6.46
SC0024457	AIKEN PSA/HORSE CREEK	SAVANNAH R.	MU	26
SC0034894	TODDS CAR WASH	SAVANNAH R.	IN	---
SC0040444	SEABOARD SYSTEM RAIL	HOLLOW CK	IN	0.0216

*IN=industrial, CO=community, MU=municipal

[†]MGD=million gallons per day, MR=monitor and report

Watershed 03060106-060 Savannah and Salkehatchie River Basins



Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-252	P	FW	Savannah River at SC 28, 1.6 miles NNW of Beech Island
SV-323	P	FW	Savannah River at Lock and Dam
SV-350	SS/BIO	FW	Hollow Creek at S-02-5
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for mercury, Cesium-137 and Strontium-90 and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103).

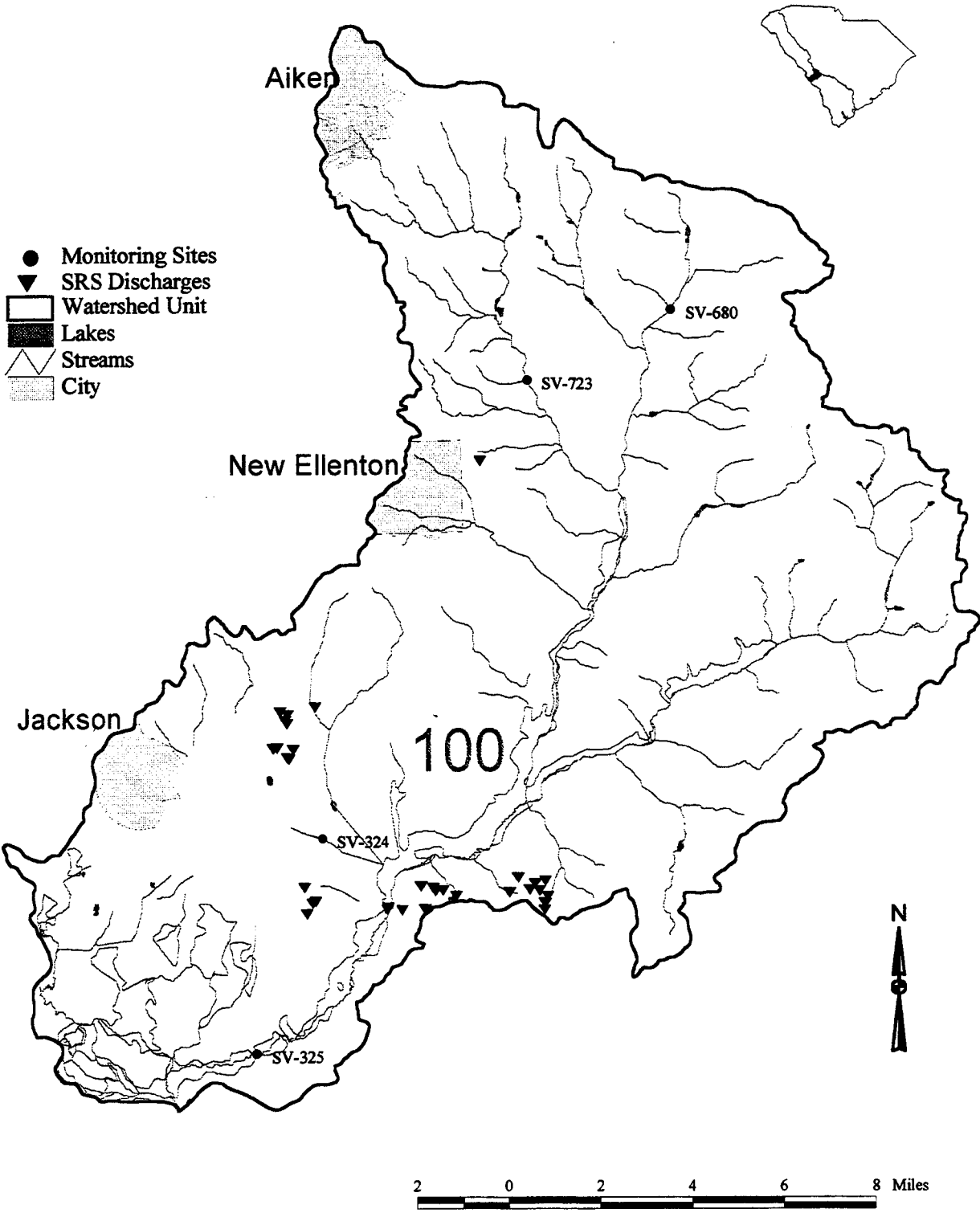
There are two monitoring sites on the SAVANNAH RIVER in this watershed unit. At the upstream site (SV-252), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the downstream site (SV-323), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. Endosulfan sulfate and 1,2-dichloropropane were detected in the water column in 1994. In sediment, di-n-butylphthalate was measured in 1995, very high concentrations of lead and zinc were measured in 1993, and a high concentration of mercury was measured in 1996. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and total suspended solids suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are fully supported in HOLLOW CREEK (SV-350) based on macroinvertebrate community data. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

03060106-100. Watershed 03060106-100 (map page 96) is located in Aiken and Barnwell Counties and consists primarily of UPPER THREE RUNS CREEK and its tributaries. The Upper Three Runs Creek watershed, which drains into the Savannah River, contains a total of 58.4 stream miles. Tributaries of the Upper Three Runs Creek watershed include: Cedar Creek, Jackson Branch, Tinker Creek, Mill Creek and TIMS BRANCH.

Watershed 03060106-100 Savannah and Salkehatchie River Basins



The watershed occupies 140,783 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Fuquay-Troup-Ailey-Vaucluse series. The erodibility of the soil (K-factor) averages 0.13; the slope of the terrain averages 5.8%, with a range of 0-25%. Land use/land cover in the watershed includes: 64% forested land, 12% scrub/shrub land, 10% agricultural land, 9% forested wetland, 4% urban land, <1% barren land, <1% nonforested wetland, and <1% water. The lower half of the watershed is within the boundaries of the U.S. Department of Energy's Savannah River Site.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000175	USDOE WESTINGHOUSE SRS	CROUCH BR	IN	0.07
SC0000175	USDOE WESTINGHOUSE SRS	CROUCH BR	IN	0.17
SC0000175	USDOE WESTINGHOUSE SRS	MCQUEEN BR	IN	0.037
SC0000175	USDOE WESTINGHOUSE SRS	MCQUEEN BR	IN	0.05
SC0000175	USDOE WESTINGHOUSE SRS	TIMS BRANCH	IN	0.0014
SC0000175	USDOE WESTINGHOUSE SRS	TIMS BRANCH	IN	0.878
SC0000175	USDOE WESTINGHOUSE SRS	TIMS BRANCH	IN	2.04
SC0000175	USDOE WESTINGHOUSE SRS	TIMS BRANCH	IN	0.926
SC0000175	USDOE WESTINGHOUSE SRS	UPPER 3 RUNS	IN	0.035
SC0000175	USDOE WESTINGHOUSE SRS	UPPER 3 RUNS	IN	0.099
SC0000175	USDOE WESTINGHOUSE SRS	UPPER 3 RUNS	IN	0.085
SC0000175	USDOE WESTINGHOUSE SRS	UPPER 3 RUNS	IN	0.34
SC0000175	USDOE WESTINGHOUSE SRS	UPPER 3 RUNS	IN	0.13

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-680	BIO	FW	Upper Three Runs Creek at S-02-113
SV-723	BIO	FW	Cedar Creek at S-02-79
SV-324	P	FW	Tims Branch at SRS Road C
SV-325	P	FW	Upper Three Runs Creek at SRS Road A

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in CEDAR CREEK (SV-723) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in TIMS BRANCH (SV-324), but may be threatened by significant increasing trends in total phosphorus and total nitrogen concentrations, and turbidity, and a very high concentration of zinc measured in 1992. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

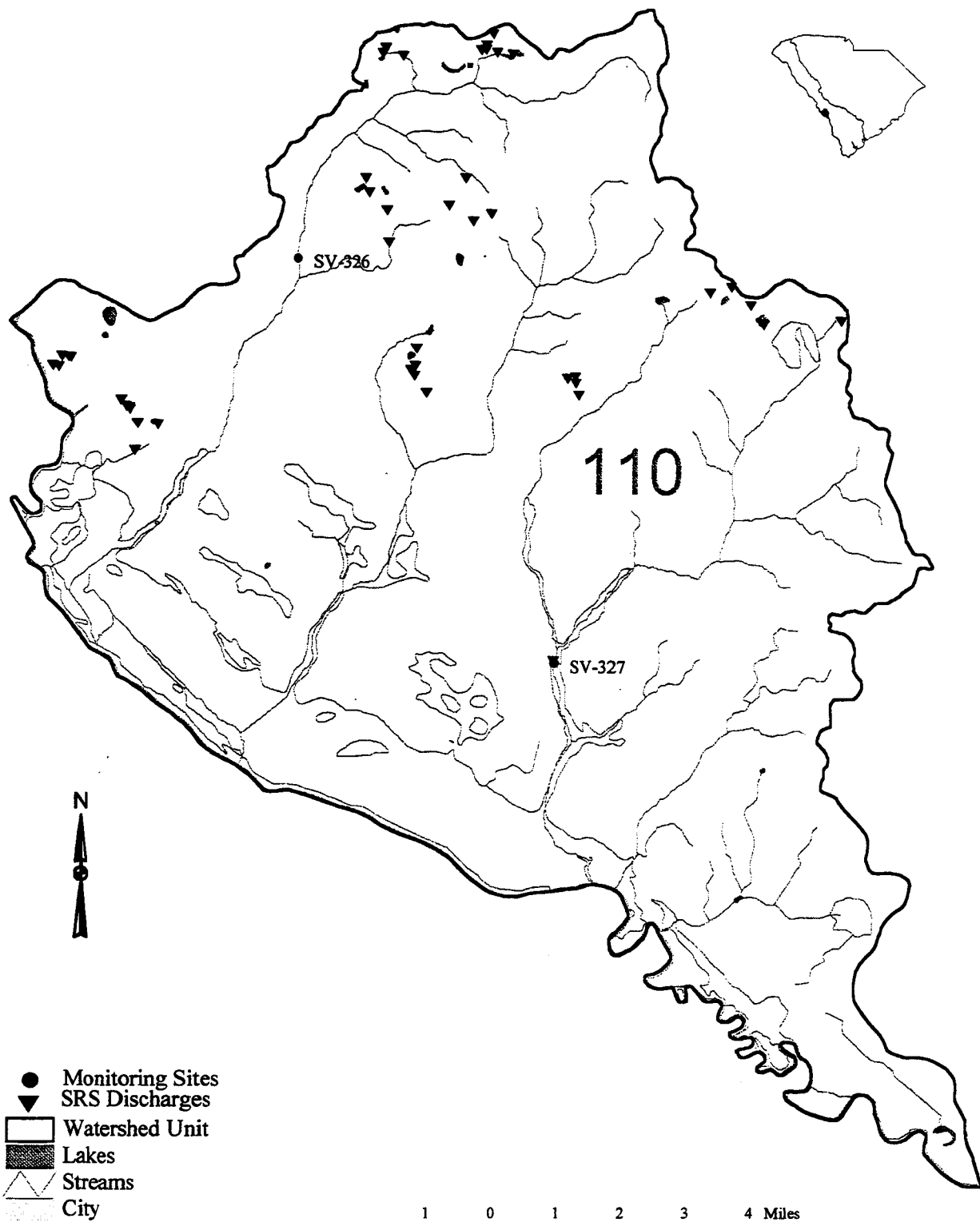
There are two monitoring sites on UPPER THREE RUNS CREEK. At the upstream site (SV-680) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (SV-325), aquatic life uses are fully supported but may be threatened by a significant increasing trend in turbidity, a very high concentration of copper measured in 1995, and a high concentration of zinc measured in 1996. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03060106-110. Watershed 03060106-110 (map page 99) is located in Aiken, Barnwell and Allendale Counties, and consists of the Savannah River and its tributaries between Upper and Lower Three Runs Creek. The watershed draining into this segment of the Savannah River contains 80.41 stream miles. FOURMILE CREEK enters the Savannah River at the top of the watershed. Further downstream, the STEEL CREEK drainage, consisting of Pen Branch (Indian Grave Branch) and Meyers Branch, enters the river. As a reach of the Savannah River, this watershed also accepts the drainage of all streams entering the river upstream of the watershed.

The watershed occupies 92,062 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Troup series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 3.3%, with a range of 0-10%. Land use/land cover in the watershed includes: 57% forested land, 20% forested wetland, 8% scrub/shrub land, 7% agricultural land, 7% water, <1% nonforested wetland, <1% urban land, and <1% barren land. With the exception of a small drainage area that includes Boggy Gut Branch and Briar Branch, the entire watershed is within the boundaries of the U.S. Department of Energy's Savannah River Site.

Watershed 03060106-110 Savannah and Salkehatchie River Basins



Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0000175	USDOE WESTINGHOUSE SRS	BEAVER DAM	IN	0.02
SC0000175	USDOE WESTINGHOUSE SRS	FOURMILE BR	IN	1.05
SC0000175	USDOE WESTINGHOUSE SRS	FOURMILE BR	IN	0.02
SC0000175	USDOE WESTINGHOUSE SRS	FOURMILE BR	IN	1.15
SC0000175	USDOE WESTINGHOUSE SRS	FOURMILE BR	IN	2
SC0000175	USDOE WESTINGHOUSE SRS	FOURMILE BR	IN	1.076
SC0000175	USDOE WESTINGHOUSE SRS	INDIAN GRAVE	IN	2.91
SC0000175	USDOE WESTINGHOUSE SRS	INDIAN GRAVE	IN	0.337
SC0000175	USDOE WESTINGHOUSE SRS	INDIAN GRAVE	IN	M/R
SC0000175	USDOE WESTINGHOUSE SRS	INDIAN GRAVE	IN	M/R
SC0000175	USDOE WESTINGHOUSE SRS	INDIAN GRAVE	IN	0.024
SC0000175	USDOE WESTINGHOUSE SRS	L-LAKE	IN	41.7
SC0000175	USDOE WESTINGHOUSE SRS	L-LAKE	IN	0.912
SC0000175	USDOE WESTINGHOUSE SRS	L-LAKE	IN	0.035
SC0000175	USDOE WESTINGHOUSE SRS	PAR POND	IN	3.86
SC0000175	USDOE WESTINGHOUSE SRS	PAR POND TRIB	IN	0.0012
SC0000175	USDOE WESTINGHOUSE SRS	SAVANNAH R.	IN	0.02
SC0000175	USDOE WESTINGHOUSE SRS	SAVANNAH R.	IN	0.41
SC0000175	USDOE WESTINGHOUSE SRS	SAVANNAH R.	IN	0.058
SC0000175	USDOE WESTINGHOUSE SRS	SAVANNAH R.	IN	0.056
SC0000175	USDOE WESTINGHOUSE SRS	STEEL CREEK	IN	3.86
SC0000175	USDOE WESTINGHOUSE SRS	STEEL CREEK	IN	0.022
SC0047431	SC ELEC & GAS / SRS	BEAVER DAM	IN	55.8
SC0047431	SC ELEC & GAS / SRS	SAVANNAH R.	IN	0.13
SC0047431	SC ELEC & GAS / SRS	SAVANNAH R.	IN	1.383

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-326	P	FW	Four Mile Creek at SRS Road A-7
SV-327	P	FW	Steel Creek at SRS Road A

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in **FOURMILE CREEK (SV-326)**, but may be threatened by a significant increasing trend in turbidity and di-n-butylphthalate measured in 1994. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in **STEEL CREEK (SV-327)**, but may be threatened by a significant decreasing trend in pH and a very high concentration of zinc measured in 1992. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and turbidity suggests improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

03060106-130. Watershed 03060106-130 (map page 102) is located in Barnwell and Allendale Counties and consists primarily of **LOWER THREE RUNS CREEK** and its tributaries. The Lower Three Runs Creek watershed contains a total of 46.74 stream miles. The drainage includes Par Pond, near the Town of Barnwell, together with Mill Creek and Davis Branch.

The watershed occupies 112,619 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Blanton-Fuquay series. The erodibility of the soil (K-factor) averages 0.13; the slope of the terrain averages 3.1%, with a range of 0-10%. Land use/land cover in the watershed includes: 42% forested land, 30% scrub/shrub land, 13% forested wetland, 12% agricultural land, 3% water, <1% urban land, <1% barren land, and <1% nonforested wetland. Par Pond and the upper portion of Lower Three Runs Creek lie within the grounds of the U.S. Department of Energy's Savannah River Site.

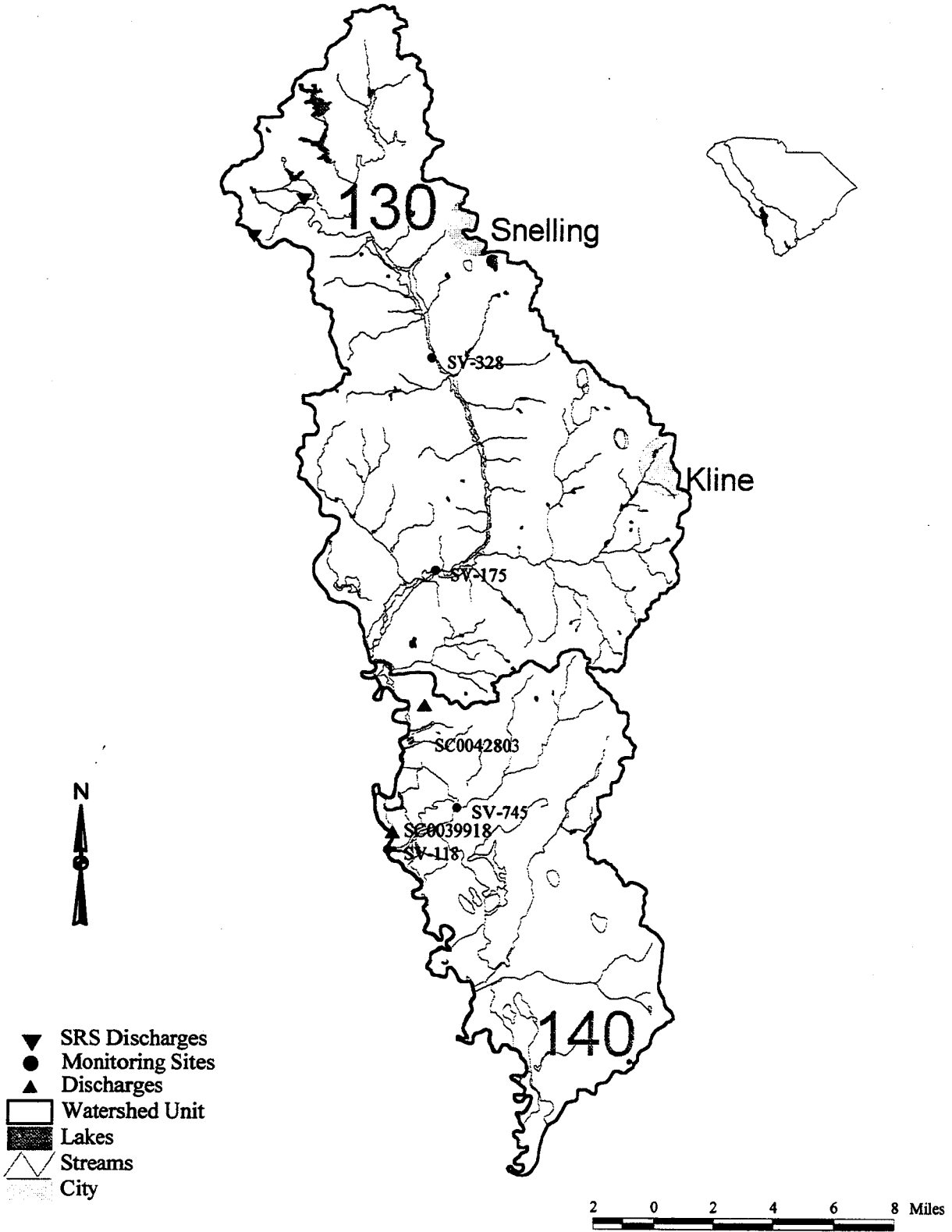
Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-328	P	FW	Lower Three Runs Creek at S-06-20, 7.5 miles SW of Barnwell
SV-175	S	FW	Lower Three Runs Creek at SC 125, 11 miles NW of Allendale

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on **LOWER THREE RUNS CREEK**. At the upstream site (SV-328), aquatic life uses are only partially supported due to occurrences of copper in excess of the aquatic life acute standards, including a high concentration of copper measured in 1995, compounded by a significant decreasing trend in pH and a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

At the downstream site (SV-175), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter.

Watersheds 03060106-130, -140 Savannah and Salkehatchie River Basins



Recreational uses are fully supported, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

03060106-140. Watershed 03060106-140 (map page 102) is located in Allendale County and consists of the SAVANNAH RIVER and its tributaries below Lower Three Runs Creek to Gall Branch. This watershed contains a total of 47.5 stream miles. Brier Creek (consisting of Stoney Creek and Little Brier Creek) flows into the Savannah River at the top of the watershed; and, farther downriver, The Gaul enters. At the base of the watershed, Gall Branch drains into the river. As a reach of the Savannah River, this watershed also accepts the drainage of all streams entering the river upstream of the watershed.

The watershed occupies 60,892 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Blanton-Ogeechee-Chisolm series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 1.9%, with a range of 0-6%. Land use/land cover in the watershed includes: 78% forested land, 11% scrub/shrub land, 8% agricultural land, 2% water, <1% urban land, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type* (MGD) [†]
SC0039918	ALLENDALE/TOWN OF	SAVANNAH RIV MU	1.7
SC0042803	SANDOZ CHEMICAL CORP	SAVANNAH RIV IN	3

*IN=industrial, CO=community, MU=municipal
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
SV-118	P	FW	Savannah River at US 301, 12.5 miles SW of Allendale
SV-745	BIO	FW	Brier Creek at S-03-102

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for mercury, Cesium-137 and Strontium-90 and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103).

Aquatic life uses are not supported in SAVANNAH RIVER (SV-118) due to occurrences of zinc in excess of the aquatic life acute standards, compounded by a significant decreasing trend in pH. Fluoranthene and P,P' DDE, a metabolite of DDT, were detected in the water column in 1994. In sediment, di-n-butylphthalate was measured in 1995. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and total suspended solids suggest improving conditions for these parameters. Recreational

uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are fully supported in **BRIER CREEK (SV-745)** based on macroinvertebrate community data. Recreational use support was not assessed.

03060109-020. Watershed 03060109-020 (map page 105) is located in Allendale, Hampton and Jasper Counties and consists of the **SAVANNAH RIVER** and its tributaries between Gall Branch and Cypress Branch. This watershed contains a total of 84.3 stream miles. Long Branch enters the river at the top of the watershed. The Boggy Swamp drainage, which incorporates Mill Bay Creek, enters the river further downstream. As a reach of the Savannah River, this watershed also accepts the drainage of all streams entering the river upstream of the watershed.

The watershed occupies 99,732 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chastain-Rains-Argent-Norfolk-Tawcaw series. The erodibility of the soil (K-factor) averages 0.21; the slope of the terrain averages 1.3%, with a range of 0-6%. Land use/land cover in the watershed includes: 41% forested land, 30% forested wetland, 11% scrub/shrub land, 11% agricultural land, 5% nonforested wetland, 2% water, <1% urban land, and <1% barren land.

There are no permitted discharges in this watershed in South Carolina.

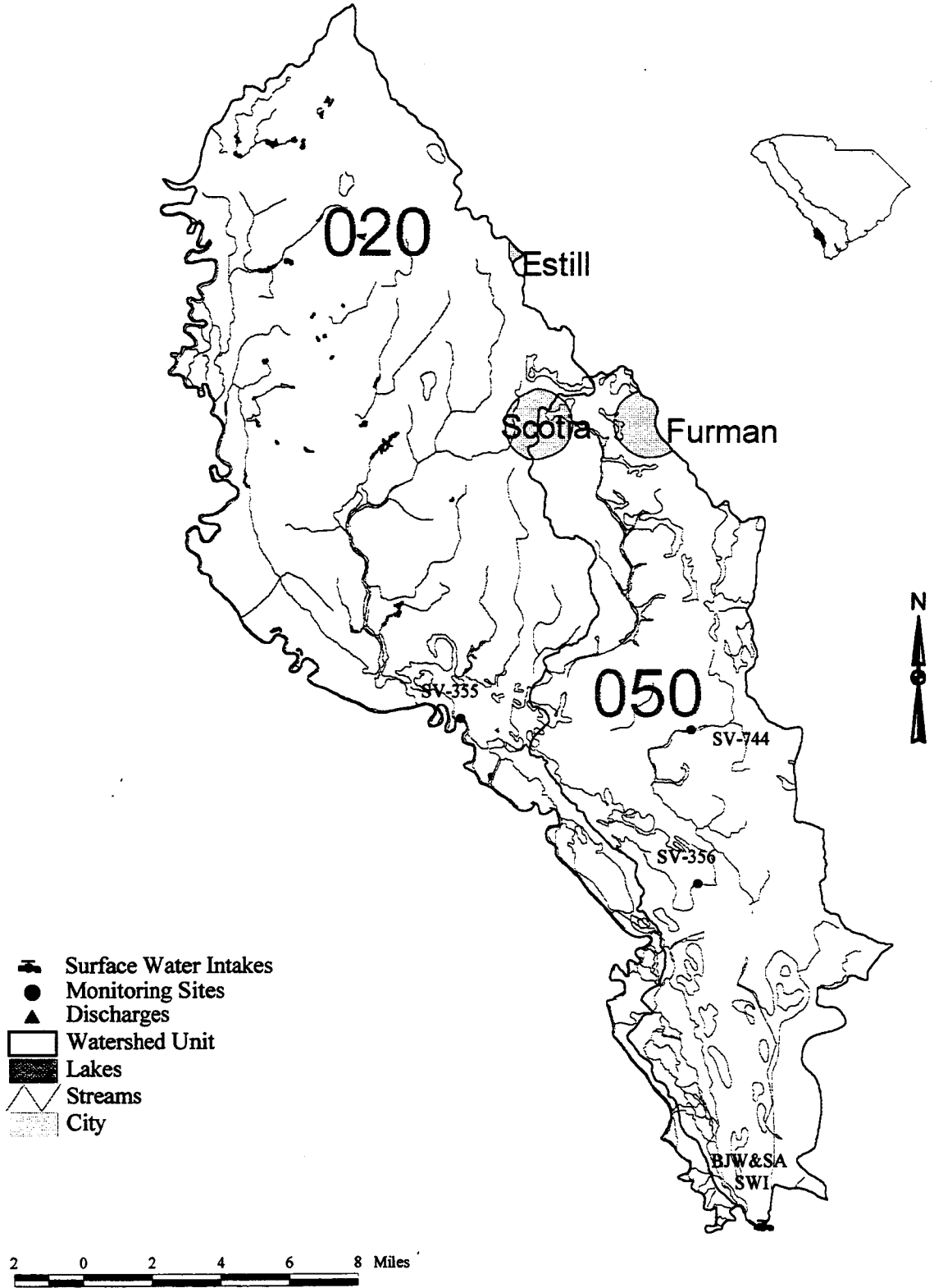
Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-355	SS	FW	Savannah River at Stokes Bluff Landing off S-25-461
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for mercury, Cesium-137 and Strontium-90 and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103). Aquatic life and recreational uses are fully supported in **SAVANNAH RIVER (SV-355)** at this site.

03060109-050. Watershed 03060109-050 (map page 105) is located in Hampton and Jasper Counties and consists of a segment of the Savannah River with **CYPRESS CREEK** draining into the top of the reach, and Lakes Coleman and Mayers draining into the base of the reach. There are a total of 18.5 stream miles in this watershed. Cypress Branch flows into Cypress Creek, which flows into the Savannah River. Further downstream, several unnamed creeks drain into Coleman Lake and Mayers Lake, which drain into the river.

The watershed occupies 79,239 acres of the Lower Coastal region of South Carolina. The predominant soil types consist of an association of the Santee-Argent-Rains-Lynchburg-Goldsboro series. The erodibility of the soil (K-factor) averages 0.20; the slope of the terrain averages 1.2%, with a range of 0-2%. Land use/land cover in the watershed includes: 42% forested land, 26% forested wetland, 18% agricultural land, 7% nonforested wetland, 5% scrub/shrub land, 2% urban land, <1% barren land, and <1% water.

Watersheds 03060109-020, -050 Savannah and Salkehatchie River Basins



There are no permitted discharges in this watershed in South Carolina.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-744	BIO	FW	Cypress Branch at US 321
SV-356	SS	FW	Cypress Creek at S-27-119

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
 † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in CYPRESS BRANCH (SV-744) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are not supported in CYPRESS CREEK (SV-356) due to dissolved oxygen excursions. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

03060109-060. Watershed 03060109-060 (map page 107) is located in Jasper County and consists of the downstream-most segment of the SAVANNAH RIVER. This watershed contains a total of 18.0 stream miles, which includes the Savannah River Estuary, and empties into the Atlantic Ocean. Meyer Lake drains into the river at the top of the watershed. Downriver, Union Creek joins the Savannah at the upper edge of the Savannah River Wildlife Refuge. Within the refuge, Vermezobre Creek and Clydale Creek flow into the Back River, which reconnects with the Savannah River before draining into the ocean. Saltwater Creek connects the Savannah River to the Wright River (03050208-140) via the Back River; and downstream, the Mud River (Fields Cut) has a similar connection. As a reach of the Savannah River, this watershed also accepts the drainage of all streams entering the river upstream of the watershed.

The watershed occupies 39,298 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Argent series. The erodibility of the soil (K-factor) averages 0.13; the slope of the terrain averages 1.0%, with a range of 0-2%. Land use/land cover in the watershed includes: 40% nonforested wetland, 17% forested land, 14% agricultural land, 10% forested wetland, 8% urban land, 7% water, 3% scrub/shrub land, and 1% barren land.

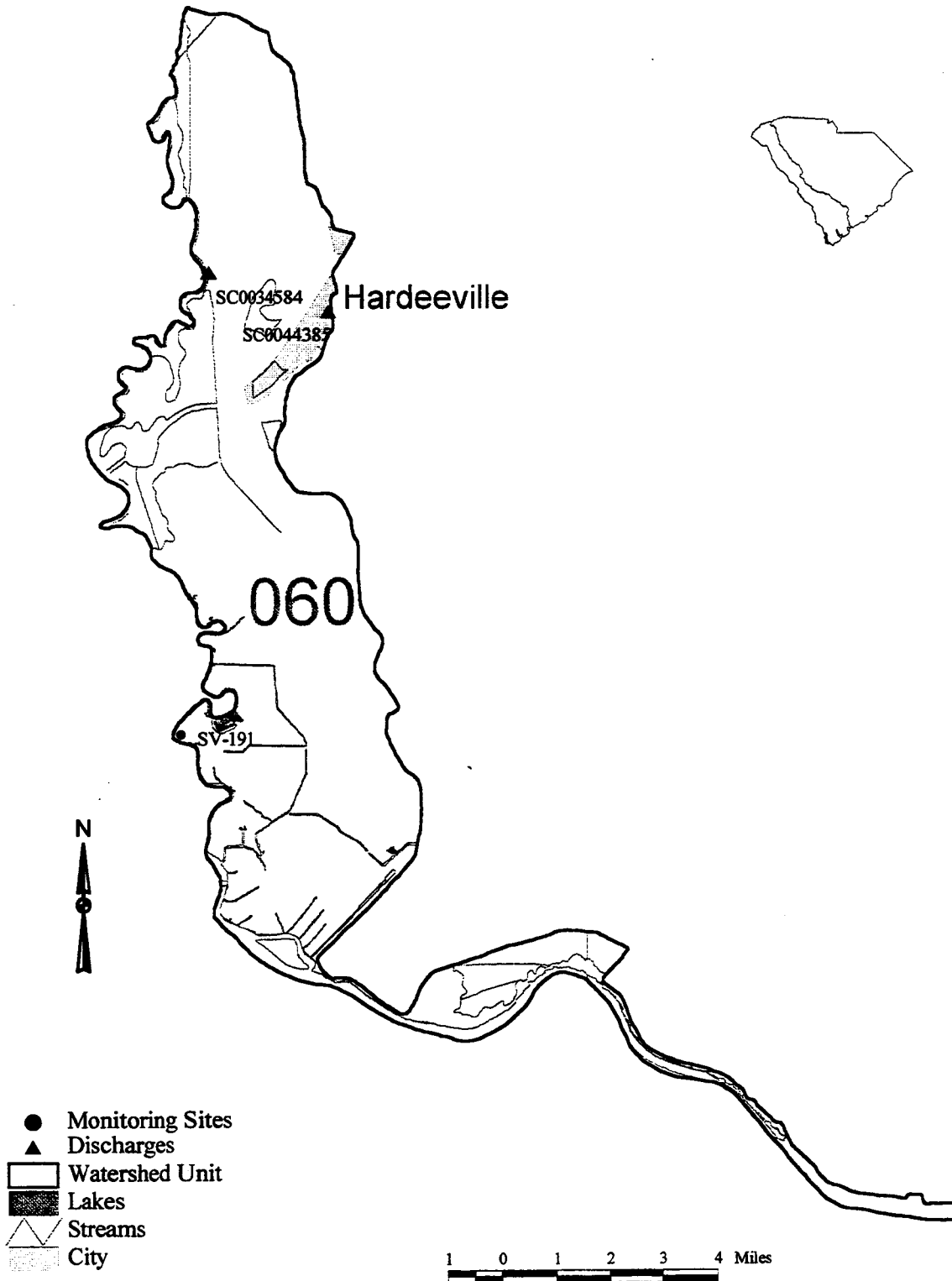
Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0044385	AMOCO SERVICE	SAVANNAH	IN	0.023
SC0034584	HARDEEVILLE	SAVANNAH	MU	1.01

*IN=industrial, CO=community, MU=municipal
 †MGD=million gallons per day, MR=monitor and report

Watershed 03060109-060

Savannah and Salkehatchie River Basins



Monitoring Locations			
Station Number	Type*	Class†	Station Description
SV-191	P	SB*	Savannah River at US 17, 8.9 miles SSW of Hardeeville
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

A fish consumption advisory has been issued by the Department for mercury, Cesium-137 and Strontium-90 and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103).

Aquatic life uses are fully supported in SAVANNAH RIVER (SV-191), but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. Although there were pH excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, endosulfan II and P,P' DDE, a metabolite of DDT, were detected in 1995. 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 nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. The bacteria standard was changed in April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Management Unit WMU-0104

Management Unit WMU-0104 is located in the southern part of South Carolina and extends from Barnwell County to the Atlantic Ocean. It contains portions of Bamberg, Allendale, Colleton, Hampton, Jasper, and Beaufort Counties as well.

Population. The 1990 populations and projections for the year 2010 for counties within WMU-0104 are listed in the following table. Beaufort County is expected to experience the greatest population change during this time period, with an increase of 111%. A decrease of 2% is expected in Bamberg County.

<i>County</i>	<i>1990 Population</i>	<i>2010 Population</i>	<i>Change (%)</i>
Allendale	11,722	13,100	12
Bamberg	16,902	16,500	-2
Barnwell	20,293	26,200	29
Beaufort	86,425	182,100	111
Colleton	34,377	44,400	29
Hampton	18,191	20,700	14
Jasper	15,487	22,600	46

Climate. Data from National Weather Service stations in Bamberg, Blackville, Hampton, Walterboro, Yemassee, Ridgeland and Beaufort were compiled to determine seasonal climatic information for the WMU-0104 area. Historical climatological records were compiled to provide the normal values. The normal annual rainfall was 49.52 inches. The highest seasonal rainfall occurred in the summer with 17.22 inches due to the higher occurrences of thunderstorms in the coastal plain. The average fall, winter and spring rainfall totals were 9.38, 10.67 and 12.25 inches, respectively. The mean annual daily temperature was 64.7°F, the warmest of the four drainage basins. Summer temperatures averaged 79.3°F; fall, winter and spring temperatures averaged 65.6, 49.1 and 64.8°F, respectively.

Fish Consumption Advisory. A fish consumption advisory has been issued by SCDHEC for the **COMBAHEE RIVER** and the **COOSAWHATCHIE RIVER** advising people to limit the amount of some types of fish consumed from these waters 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 types of fish with elevated mercury and the maximum amounts of those fish that can be safely consumed are as follows:

Combahee River	Largemouth Bass	0.75 lb./month
Coosawhatchie River	Bowfin	1.5 lb./month

The source of mercury contamination in fish tested by SCDHEC is uncertain. Mercury occurs naturally, which may be partially responsible for the levels found in fish tissue. Another source is deposition from the air, a result of the combustion of fossil fuels. There is no data available linking mercury in wastewater discharges as a major source of mercury in fish. Mercury levels cannot be traced to any industries. Naturally occurring low pH, low hardness, low alkalinity and low dissolved oxygen levels commonly found in coastal plains swamps and blackwater streams are conditions that promote the transformation of inorganic mercury into methylmercury, the form most readily accumulated by fish.

South Carolina is not the only state where mercury is showing up in fish. About 40 other states are also seeing high mercury levels and have issued advisories. States are working together and with the U.S. Environmental Protection Agency to try to identify the cause or causes of mercury in fish.

Capacity Use Area. As part of the Capacity Use Program, the Department monitors a number of wells to determine the relationship between water levels and pumpage in order to determine regional impacts and evaluate reserve supply. The Department has undertaken a project in conjunction with the State of Georgia to determine the extent of salt water intrusion in Southern Beaufort and Jasper Counties. Beaufort, Colleton, and Jasper Counties make up the Low Country Capacity Use Area.

03050207-010. Watershed 03050207-010 (map page 111) is located in Barnwell County and consists of the upper **SALKEHATCHIE RIVER** and its tributaries above Turkey Creek. The upper Salkehatchie River originates with the confluence of Rosemary Creek (Gin Branch) and Buck Creek, and flows past the Town of Barnwell. There are a total of 25.1 stream miles in this watershed.

The watershed occupies 51,701 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Varina-Blanton series. The erodibility of the soil (K-factor) averages 0.14; the slope of the terrain averages 4.0%, with a range of 0-10%. Land use/land cover

in the watershed includes: 40% forested land, 23% scrub/shrub land, 20% agricultural land, 11% forested wetland, 5% urban land, <1% barren land, <1% nonforested wetland, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-578	BIO	FW	Buck Creek at S-06-167
CSTL-028	P	FW	Salkehatchie River at SC 64, 2 miles W of Barnwell
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in BUCK CREEK (CSTL-578) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are not supported in SALKEHATCHIE RIVER (CSTL-028) due to occurrences of copper in excess of the aquatic life acute standards, compounded by a significant increasing trend in turbidity and a very high concentration of zinc measured in 1996. In sediment, P,P' DDT was measured in 1992 and 1994, and P,P' DDE, a metabolite of DDT, was measured in 1992, 1993 and 1994. 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, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

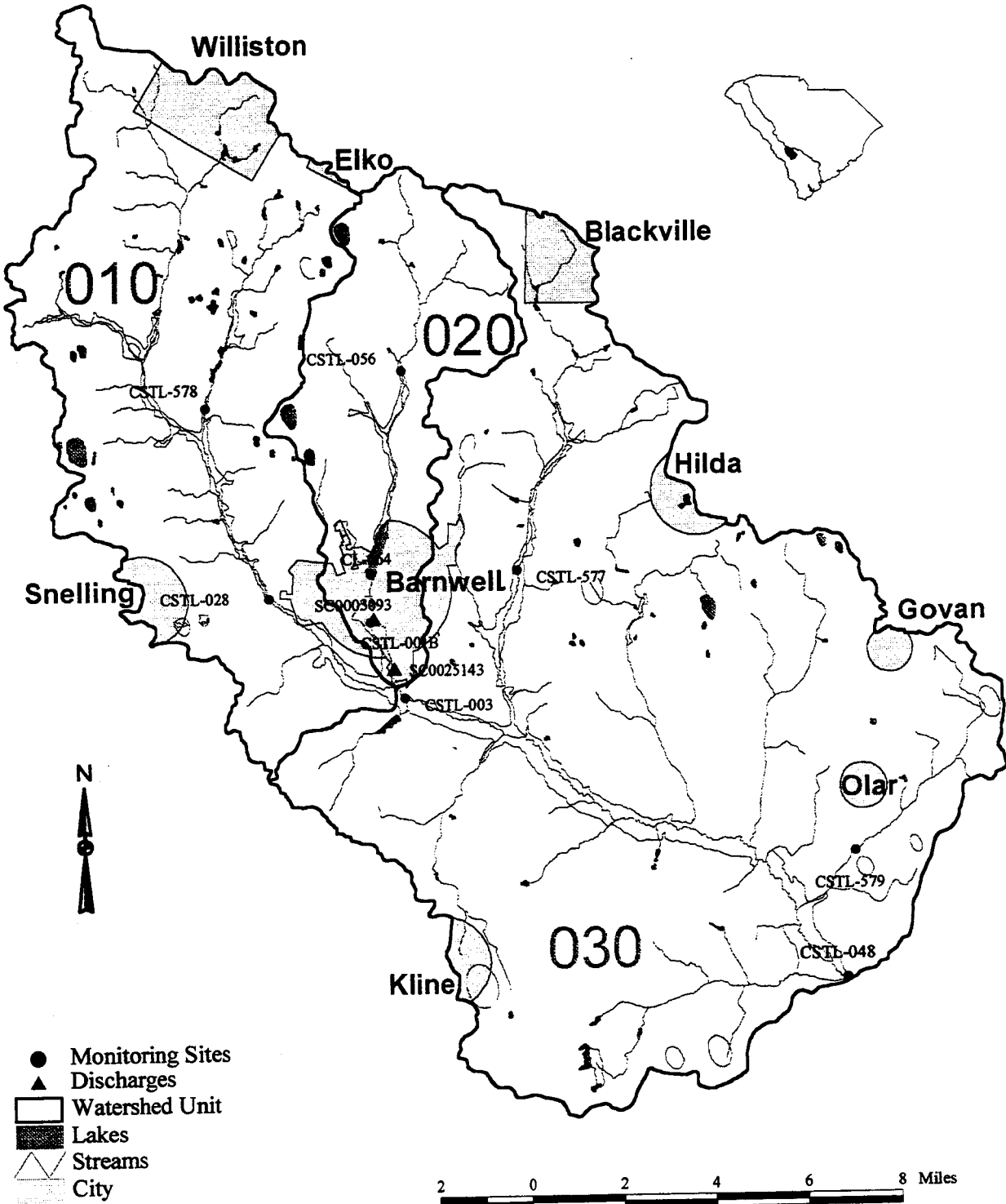
03050207-020. Watershed 03050207-020 (map page 111) is located in Barnwell County and consists of TURKEY CREEK and its tributaries. Turkey Creek is joined by Long Branch and flows around LAKE EDGAR A. BROWN, through the Town of Barnwell, and into the upper Salkehatchie River. The Turkey Creek watershed contains a total of 12.0 stream miles.

The watershed occupies 16,179 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Dothan-Fuquay-Varina series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 3.8%, with a range of 0-6%. Land use/land cover in the watershed includes: 35% scrub/shrub land, 19% agricultural land, 18% forested land, 14% forested wetland, 13% urban land, 1% water, <1% barren land, and <1% nonforested wetland. Barnwell State Park is located in this watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type* (MGD)†
SC0003093	MILLIKEN & CO	TURKEY CREEK IN	1.3
SC0025143	BARNWELL/CITY OF	TURKEY CREEK MU	1.5
*IN=industrial, CO=community, MU=municipal			
†MGD=million gallons per day, MR=monitor and report			

Watersheds 03020507-010, -020, -030 Savannah and Salkehatchie River Basins



Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-056	BIO	FW	Turkey Creek at S-06-169
CL-064	SS	FW	Lake Edgar Brown in forebay near dam
CSTL-001B	S	FW	Turkey Creek, 1 mile below Milliken Barnwell outfall at Clinton St.
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

LAKE EDGAR A. BROWN (CL-064) is a 133-acre divided impoundment on Turkey Creek, with a maximum depth of approximately 10 feet (3.0 meters) and an average depth of approximately three feet (1.0 meters). An embankment isolates the lake proper from a smaller impoundment that conveys Turkey Creek flow. Excluding Turkey Creek drainage, Lake Brown's watershed comprises only 0.15 square miles (0.4 km²). Eutrophication assessments indicate that Lake Brown is the most eutrophic small lake in South Carolina, characterized by very high densities of algae and resultant poor water clarity. A diagnostic and feasibility study of Lake Brown was conducted by SCDHEC with assistance from the U.S. Environmental Protection Agency. Rediversion of Turkey Creek through the lake was recommended, since the current poor flushing fosters high internal nutrient loading and recurrent nuisance algal blooms. Aquatic life uses are not supported in Lake Edgar Brown due to pH excursions, compounded by a significant increasing trend in pH. The South Carolina Department of Natural Resources manages the lake.

There are two monitoring sites on **TURKEY CREEK**. Upstream of Lake Edgar Brown (CSTL-056) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed. Downstream of Lake Edgar Brown (CSTL-001B), aquatic life uses are fully supported but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. A significant increasing trend in dissolved oxygen and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03050207-030. Watershed 03050207-030 (map page 111) is located in Barnwell, Bamberg and Allendale Counties and consists primarily of the **SALKEHATCHIE RIVER** and its tributaries from Turkey Creek to just below Wells Branch. This segment of the Salkehatchie River includes the drainage of Toby Creek (Jordan Branch), Georges Juniper Creek, Birds Branch and Wells Branch. There are a total of 69.04 stream miles in this watershed. This watershed accepts drainage from the upper Salkehatchie watershed (03050207-010) and from the Turkey Creek watershed (03050207-020).

The watershed occupies 110,799 acres of the Sandhills region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Troup-Blanton series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 3.6%, with a range of 1-10%. Land use/land cover in the watershed includes: 31% scrub/shrub land, 28% agricultural land, 24% forested land, 14% forested wetland, 1% barren land, 1% urban land, 1% nonforested wetland, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-003	P	FW	Salkehatchie River at SC 278, 2.5 miles S of Barnwell
CSTL-577	BIO	FW	Toby Creek at S-06-29
CSTL-579	BIO	FW	Birds Branch at S-05-567
CSTL-048	SS	FW	Salkehatchie River at U.S. 301 & 321
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in **TOBY CREEK (CSTL-577)** based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in **BIRDS BRANCH (CSTL-579)** based on macroinvertebrate community data. Recreational use support was not assessed.

There are two monitoring sites on the **SALKEHATCHIE RIVER** in this watershed unit. At the upstream site (CSTL-003), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, compounded by 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 only 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.

At the downstream site (CSTL-048), aquatic life uses are fully supported. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

03050207-040. Watershed 03050207-040 (map page 115) is located in Bamberg, Allendale, Hampton and Colleton Counties and consists of the **SALKEHATCHIE RIVER** and its tributaries from just below Wells Branch to the Little Salkehatchie River. There are a total of 75.99 stream miles in this watershed. The streams draining into this reach of the Salkehatchie River include Kirkland Creek, Three Mile Branch, Tenanis Branch and Savannah Creek. This segment of the river also accepts drainage from the upper Salkehatchie River (03050207-030) and the Jackson Branch watershed (03050207-050).

The watershed occupies 105,330 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Torhunta-Lynchburg-Goldsboro series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 1.5%, with a range of 0-2%. Land use/land cover in the watershed includes: 36% forested wetland, 27% forested land, 22% agricultural land, 11% scrub/shrub land, 3% nonforested wetland, <1% urban land, <1% barren land, and <1% water. River's Bridge State Park is on the Salkehatchie River within this watershed.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0004073	MULTITEX CORP	GIN BRANCH	IN	0.003
SC0042099	EHRHARDT/TOWN OF	SAVANNAH CK	MU	0.08

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-053	BIO	FW	Savannah Creek at S-05-87
CSTL-006	P	FW	Salkehatchie River at 601, 9 miles NE of Hampton
CSTL-104	SS	FW	Salkehatchie River at SC 63

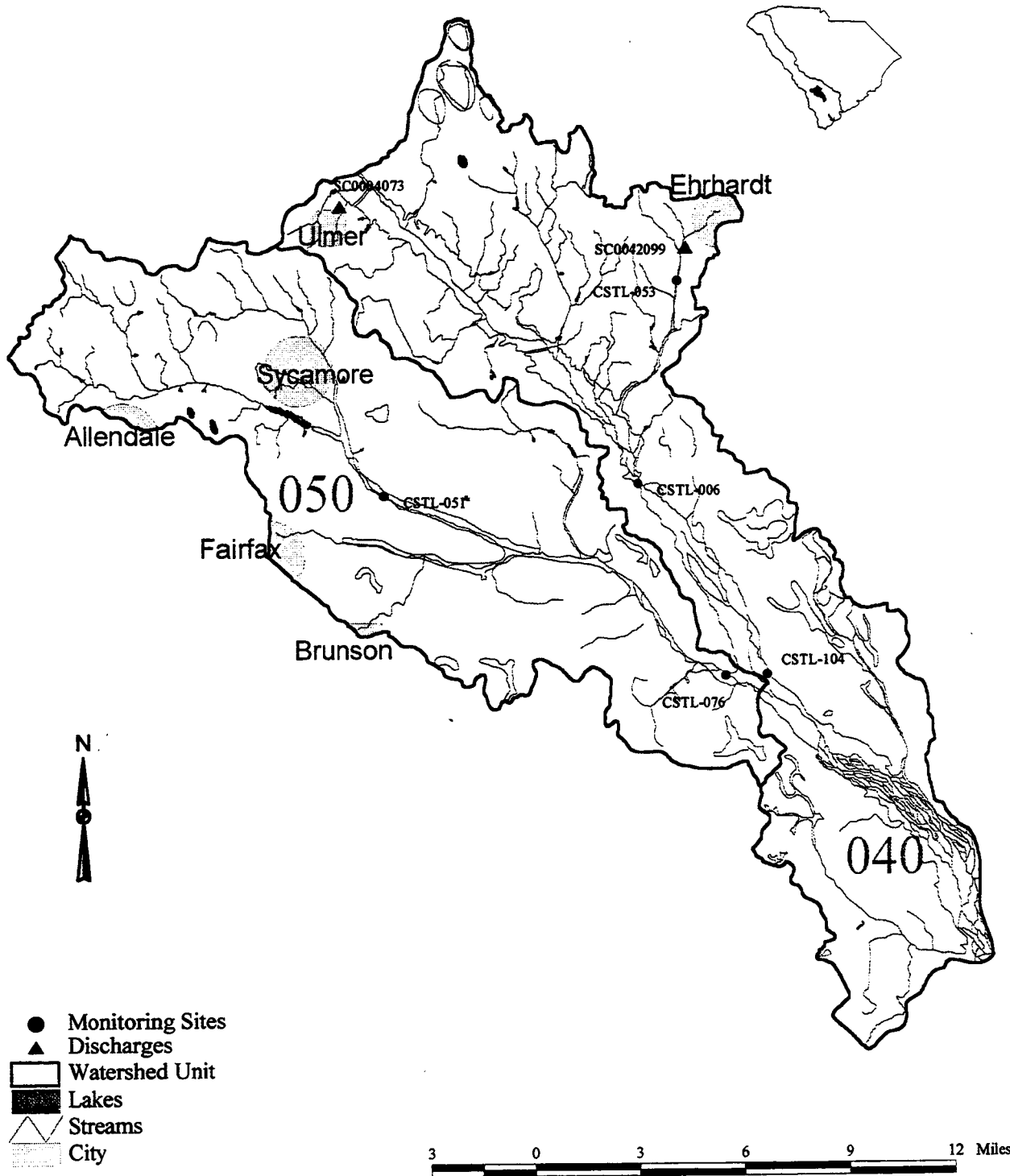
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in SAVANNAH CREEK (CSTL-053) based on macroinvertebrate community data. Recreational use support was not assessed.

There are two monitoring sites on the SALKEHATCHIE RIVER in this watershed unit. At the upstream site (CSTL-006), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. In sediment, P,P' DDE, a metabolite of DDT, was measured in 1994 and 1995. 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 only partially supported at this site due to fecal coliform bacteria excursions compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the downstream site (CSTL-104), aquatic life uses are fully supported. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

Watersheds 03020507-040, -050 Savannah and Salkehatchie River Basins



03050207-050. Watershed 03050207-050 (map page 115) is located in Allendale and Hampton Counties and consists primarily of Jackson Branch and its tributaries. The Jackson Branch watershed contains a total of 50.4 miles, and drains into the Salkehatchie River. Jackson Branch incorporates the drainages of Log Branch (near the Town of Allendale), Miller Creek, Caw Swamp (near the Town of Fairfax), and Cope Creek, all of which flow through WHIPPY SWAMP en route to the Salkehatchie River.

The watershed occupies 96,924 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Norfolk-Coxville series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 1.4%, with a range of 0-6%. Land use/land cover in the watershed includes: 40% agricultural land, 21% forested wetland, 20% forested land, 13% scrub/shrub land, 3% nonforested wetland, 2% urban land, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-051	BIO	FW	Jackson Branch at S-03-18
CSTL-076	SS	FW	Whippy Swamp at S-25-13
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

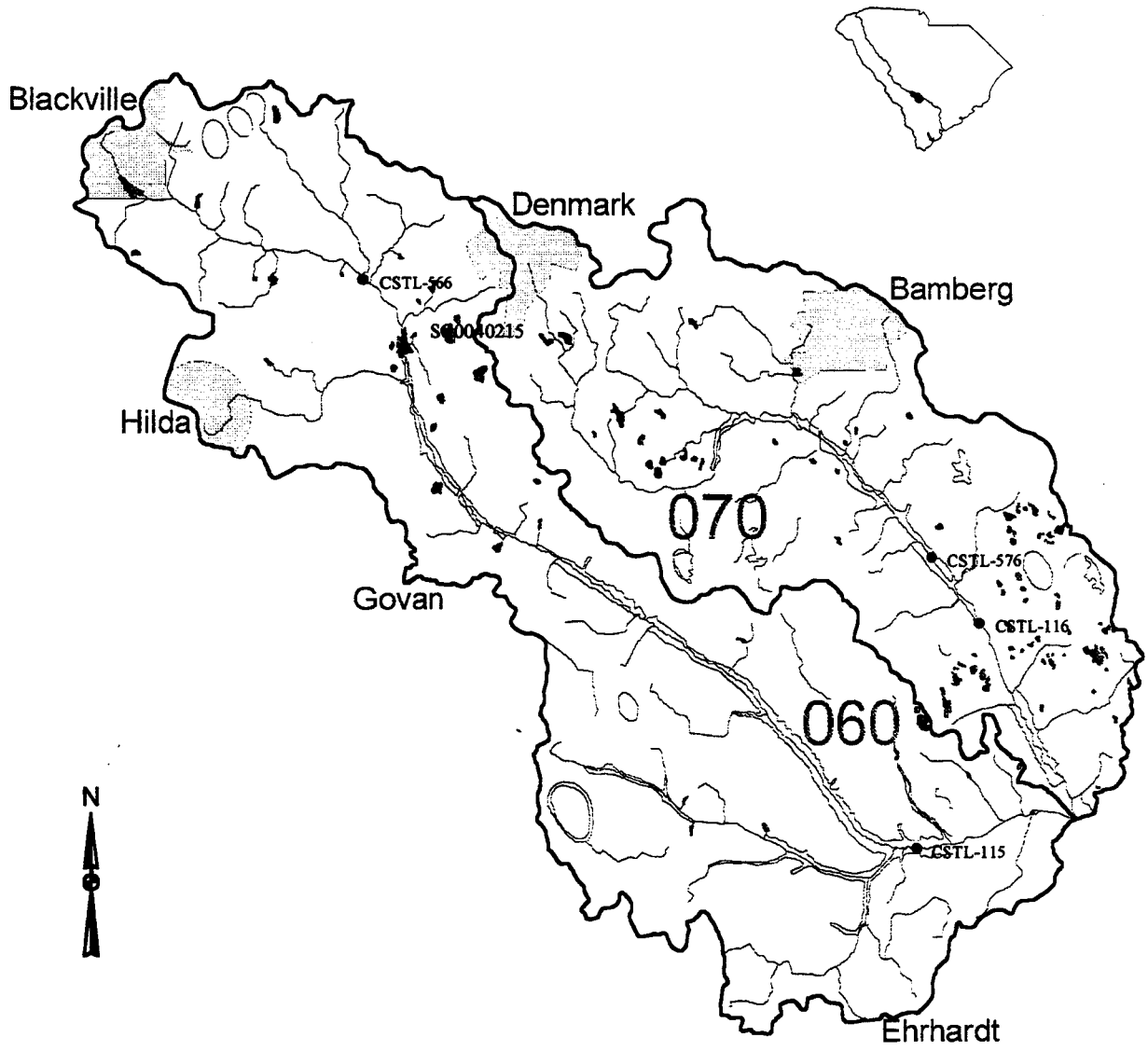
Aquatic life uses are fully supported in JACKSON BRANCH (CSTL-051) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are fully supported in WHIPPY SWAMP (CSTL-076). Although there were dissolved oxygen excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

03050207-060. Watershed 03050207-060 (map page 117) is located in Barnwell and Bamberg Counties and consists of upper LITTLE SALKEHATCHIE RIVER and its tributaries. The upper Little Salkehatchie River watershed contains a total of 46.42 stream miles. The Little Salkehatchie River originates near the Towns of Blackville and Denmark; Little Salkehatchie Creek is joined by Colston Branch (Indian Camp Branch).

The watershed occupies 72,716 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Fuquay-Dothan-Troup-Rains series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 2.6%, with a range of 0-10%. Land use/land cover in the watershed includes: 30% agricultural land, 26% scrub/shrub land, 26% forested land, 15% forested wetland, 1% urban land, <1% barren land, <1% nonforested wetland, and <1% water.

Watersheds 03020507-060, -070 Savannah and Salkehatchie River Basins



- Monitoring Sites
- ▲ Discharges
- Watershed Unit
- Lakes
- ▽ Streams
- ⊞ City



Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD) [†]
SC0040215	DENMARK/CITY OF	LITTLE SALK.	MU	0.388
SC0040215	DENMARK/CITY OF	LITTLE SALK.	MU	1

*IN=industrial, CO=community, MU=municipal
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
CSTL-566	BIO	FW	Little Salkehatchie River at SC 70
CSTL-115	SS	FW	Little Salkehatchie River at U.S. 601

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

There are two monitoring sites on the **LITTLE SALKEHATCHIE RIVER** in this watershed unit. At the upstream site (CSTL-566) aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (CSTL-115), aquatic life uses are fully supported. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This portion of the Little Salkehatchie River was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

03050207-070. Watershed 03050207-070 (map page 117) is located in Bamberg County and consists of **LEMON CREEK** and its tributaries. The Lemon Creek watershed drains into the Little Salkehatchie River, incorporating the drainages of Grapevine Creek and Halfmoon Creek. There are a total of 24.72 stream miles in this watershed.

The watershed occupies 38,168 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Fuquay-Coxville-Troup-Dothan series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 2.6%, with a range of 0-10%. Land use/land cover in the watershed includes: 38% forested land, 21% scrub/shrub land, 20% agricultural land, 18% forested wetland, 3% urban land, <1% barren land, and <1% water. The watershed lies between the Towns of Denmark and Bamberg.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-576	BIO	FW*	Lemon Creek at S-05-74
CSTL-116	SS	FW*	Lemon Creek at S-05-541
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

There are two monitoring sites on **LEMON CREEK**. At the upstream site (CSTL-576), aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (CSTL-116), aquatic life uses are fully supported, but may be threatened by a very high concentration of zinc measured in 1996. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

03050207-080. Watershed 03050207-080 (map page 121) is located in Bamberg and Colleton Counties and consists of the **LITTLE SALKEHATCHIE RIVER** and its tributaries from just below Lemon Creek to Buckhead Creek. This watershed incorporates a total of 20.3 stream miles. Drainages from the upper Little Salkehatchie River watershed (03050207-060), the Lemon Creek watershed (03050207-070) and the Buckhead Creek watershed (03050207-090) flow into this segment of the Little Salkehatchie River.

The watershed occupies 42,249 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lynchburg-Torhunta-Rains-Goldsboro-Coxville series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 1.5%, with a range of 0-10%. Land use/land cover in the watershed includes: 31% forested land, 26% forested wetland, 21% agricultural land, 19% scrub/shrub land, 2% nonforested wetland, <1% barren land, <1% urban land, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-117	SS	FW	Little Salkehatchie River at SC 64
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in the **LITTLE SALKEHATCHIE RIVER** (CSTL-117). Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

03050207-090. Watershed 03050207-090 (map page 121) is located in Bamberg and Colleton Counties and consists of **BUCKHEAD CREEK** and its tributaries. The Buckhead Creek watershed contains a total of 26.7 stream miles, and drains into the Little Salkehatchie River. Buckhead Creek incorporates drainages from Bear Creek, Hog Branch and Deep Bottom Creek.

The watershed occupies 50,612 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-factor) averages 0.16; the slope of the terrain averages 1.2%, with a range of 0-3%. Land use/land cover in the watershed includes: 36% forested land, 34% scrub/shrub land, 15% agricultural land, 9% forested wetland, 4% barren land, 2% urban land, <1% nonforested wetland, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)[†]
SC0033766	RUFFIN HIGH SCH/COLL	BUCKHEAD SW	CO	0.015

*IN=industrial, CO=community, MU=municipal

[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class[†]	Station Description
CSTL-119	SS	FW	Buckhead Creek at SC 212

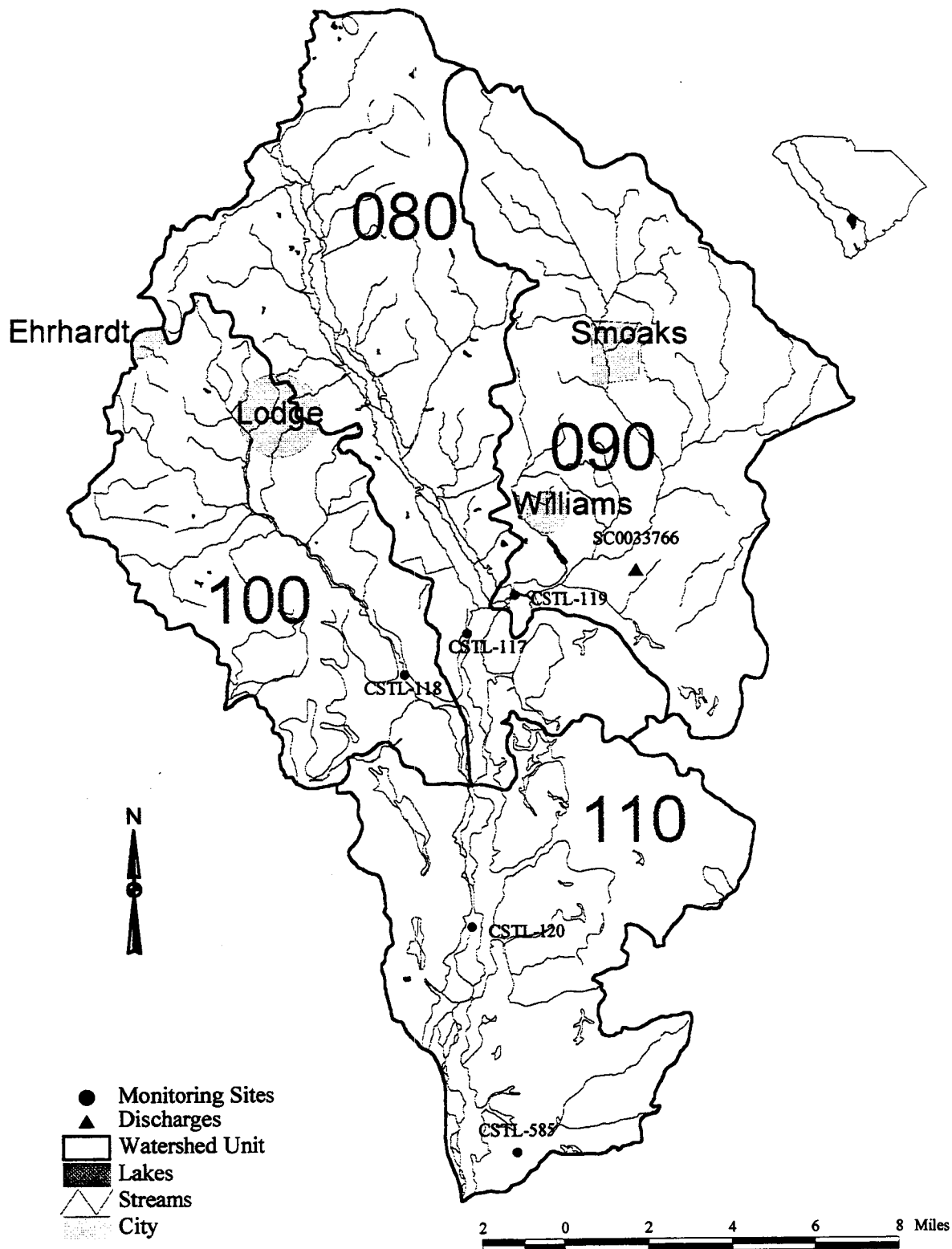
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in **BUCKHEAD CREEK** (CSTL-119). Although there were dissolved oxygen and pH excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

03050207-100. Watershed 03050207-100 (map page 121) is located in Bamberg and Colleton Counties and consists primarily of the **WILLOW SWAMP** and its tributaries. The Willow Swamp watershed incorporates the drainages from McCurren Branch, Fender Creek and Dry Branch before flowing into the Little Salkehatchie River. There are a total of 16.14 stream miles in this watershed.

The watershed occupies 34,049 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Torhunta series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 1.3%, with a range of 0-2%. Land use/land cover in the watershed includes: 31% agricultural land, 27% forested wetland, 26% forested land, 14% scrub/shrub land, 2% nonforested wetland, <1% urban land, <1% barren land, and <1% water.

Watersheds 03020507-080, -090, -100, -110 Savannah and Salkehatchie River Basins



There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-118	SS	FW	Willow Swamp at S-15-27
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in WILLOW SWAMP (CSTL-118). Although there were a dissolved oxygen and a pH excursion, because of the small number of samples, aquatic life uses are considered to be fully supported. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

03050207-110. Watershed 03050207-110 (map page 121) is located in Colleton County and consists of the lower LITTLE SALKEHATCHIE RIVER and its tributaries from Willow Swamp to its confluence with the Salkehatchie River. This Little Salkehatchie River watershed contains a total of 29.3 stream miles, and drains into the Salkehatchie River. Before joining the Salkehatchie River, this river segment accepts the drainages of Indian Creek and Deep Creek, together with the drainages of the upstream watersheds (03050207-060, 070, 080, 090 and 100).

The watershed occupies 46,417 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Torhunata series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 1.3%, with a range of 0-2%. Land use/land cover in the watershed includes: 40% forested land, 25% scrub/shrub land, 15% forested wetland, 13% agricultural land, 3% barren land, 2% urban land, <1% nonforested wetland, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-120	SS	FW	Little Salkehatchie River at SC 63
CSTL-585	BIO	FW	Sandy Run Creek at US 21
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in the **LITTLE SALKEHATCHIE RIVER (CSTL-120)**, but may be threatened by a very high concentration of chromium measured in 1996. Although there were dissolved oxygen excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are fully supported in **SANDY RUN CREEK (CSTL-585)** based on macroinvertebrate community data. Recreational use support was not assessed.

03050208-010. Watershed 03050208-010 (map page 124) is located in Colleton, Hampton and Beaufort Counties and consists primarily of the **COMBAHEE RIVER** and its tributaries. The confluence of the Salkehatchie River and the Little Salkehatchie River form the Combahee River, which flows into St. Helena Sound and the Atlantic Ocean. There are a total of 50.43 stream miles in this watershed. Black Creek flows into the Combahee River in the upper area of the watershed; and much farther downstream the river accepts drainage from Calfpen Swamp. Calfpen Swamp drains into the river in the brackish zone. The Combahee River Estuary accepts drainage from the Old Chehaw River and the New Chehaw River before flowing into the sound. The Winbee Creek drainage and the Channel Williman Creek drainage merge to form the Bull River, which runs parallel to the Combahee and flows into the sound.

The watershed occupies 223,344 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bohicket-Bladen-Coosaw-Capers-Wahee series. The erodibility of the soil (K-factor) averages 0.12; the slope of the terrain averages 1.1%, with a range of 0-6%. Land use/land cover in the watershed includes: 36% forested land, 18% forested wetland, 17% scrub/shrub land, 16% nonforested wetland, 6% water, 5% agricultural land, 1% urban land, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	Flow (MGD)†
SC0025950	YEMASSEE/TOWN OF	COMBAHEE RV	MU	0.24

*IN=industrial, CO=community, MU=municipal

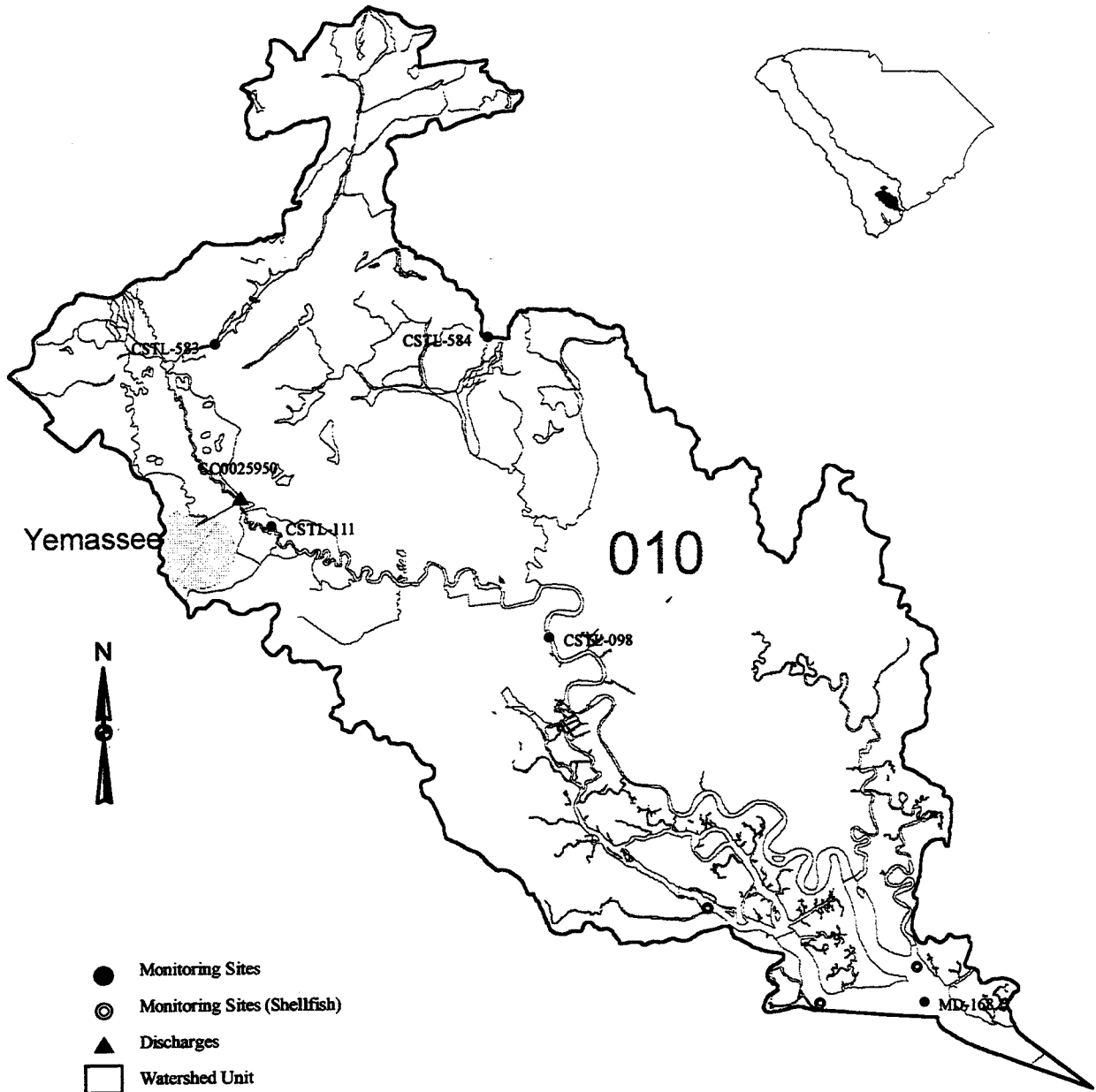
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-583	BIO	FW	Black Creek at US 21
CSTL-111	S	FW	Combahee River below Yemassee Sewage Outfall
CSTL-584	BIO	FW	Remick Swamp Creek at S-15-41
CSTL-098	P	FW/SFH	Combahee River at US 17, 10 miles ESE of Yemassee

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watershed 03050208-010

Savannah and Salkehatchie River Basins



A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0103).

Aquatic life uses are fully supported in **BLACK CREEK** (CSTL-583) based on macroinvertebrate community data. Recreational use support was not assessed.

Aquatic life uses are not supported in **REMICK SWAMP CREEK** (CSTL-584) based on macroinvertebrate community data. Very little data exists on natural community composition from streams in this hydrogeologic setting. The observed community structure may actually reflect natural conditions for streams of this type. Recreational use support was not assessed.

There are two monitoring sites on the **COMBAHEE RIVER** in this watershed unit. At the upstream site (CSTL-111), aquatic life uses are not supported due to dissolved oxygen excursions. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

At the downstream site (CSTL-098), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH, compounded by the detection of diethyl phthalate in 1994. This monitoring site is located in the freshwater-saltwater mixing zone. Low dissolved oxygen and pH values exemplify the natural transition of the river and are typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, benzo(k)fluoranthene and pyrene were measured in 1994, bis(2-ethylhexyl)phthalate was measured in 1995 and 1996, and di-n-butylphthalate was measured in 1995. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and total suspended solids, suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Station MD-168 represents the Coosaw River, and is discussed on pages 143-144.

03050208-020. Watershed 03050208-020 (map page 127) is located in Colleton County and consists primarily of the **ASHEPOO RIVER** and its tributaries, above its confluence with Horseshoe Creek. The upper Ashepoo River watershed contains a total of 27.0 stream miles. Jones Swamp (Wolf Creek) and **IRELAND CREEK** (Allen Creek) merge near the Town of Walterboro to form the headwaters of the Ashepoo River, which flows through the Great Swamp.

The watershed occupies 102,314 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Goldsboro-Echaw-Blanton series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 1.3%, with a range of 0-6%. Land use/land cover in the watershed includes: 47% forested land, 20% scrub/shrub land, 13% forested wetland, 10% agricultural land, 8% urban land, <1% water, <1% barren land, and <1% nonforested wetland.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0002135	CCX FIBERGLASS	IRELAND CK	IN	0.037
SC0002135	CCX FIBERGLASS	IRELAND CK	IN	0.0171
SC0027545	DAYCO PRODUCTS INC	IRELAND CK	IN	0.45
SC0038989	IVENIA BROW ELEM	ASHEPOO R.	CO	0.004
SC0040436	WALTERBORO/CITY OF	IRELAND CK	MU	2.64

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

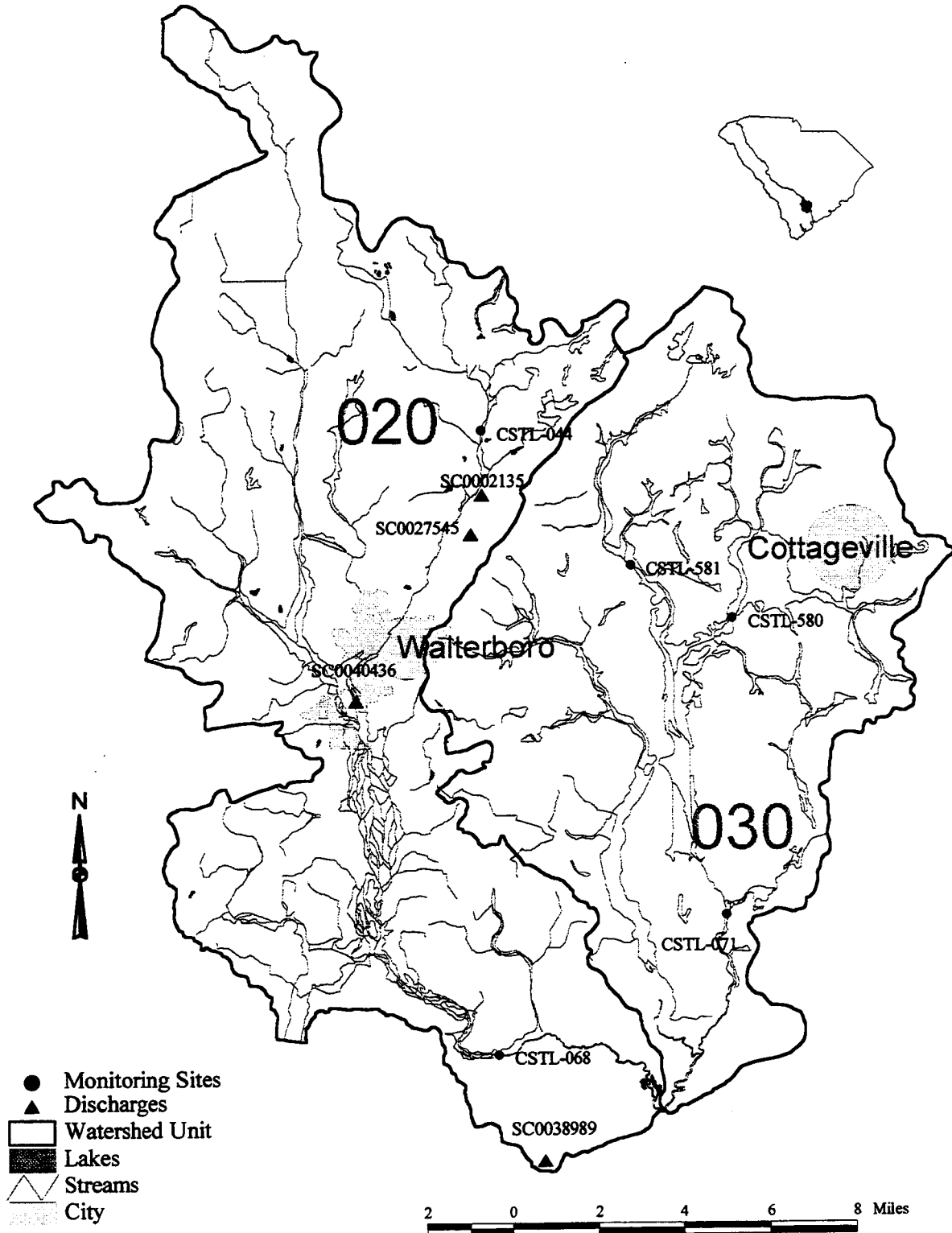
Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-044	S/BIO	FW	Ireland Creek at S-15-116, 5 1/2 miles N of Walterboro
CSTL-068	P	FW/SFH	Ashepoo River at SC 303, 10 miles SSW of Walterboro

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in IRELAND CREEK (CSTL-044) based on macroinvertebrate community data. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Although there were dissolved oxygen excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Aquatic life uses are fully supported in the ASHEPOO RIVER (CSTL-068) but may be threatened by a significant increasing trend in turbidity. This monitoring site is located in the freshwater-saltwater mixing zone. Although there were dissolved oxygen and pH excursions, the low values exemplify the natural transition of the river and are typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Watersheds 03050208-020, -030 Savannah and Salkehatchie River Basins



03050208-030. Watershed 03050208-030 (map page 127) is located in Colleton County and consists primarily of **HORSESHOE CREEK** and its tributaries. The Horseshoe Creek watershed contains a total of 25.87 stream miles, and flows into the upper Ashepoo River. This watershed consists of smaller Chessey Creek and Fuller Swamp Creek combining to form the Horseshoe Creek headwaters, and another, larger Chessey Creek flowing into Horseshoe Creek farther downstream, prior to the Ashepoo River confluence.

The watershed occupies 96,469 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Wahee-Bladen-Ogeechee-Argent-Santee series. The erodibility of the soil (K-factor) averages 0.16; the slope of the terrain averages 1.1%, with a range of 0-2%. Land use/land cover in the watershed includes: 54% forested land, 22% scrub/shrub land, 14% forested wetland, 9% agricultural land, <1% urban land, <1% barren land, <1% nonforested wetland, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-581	BIO	FW	Fuller Swamp Creek at US 17A
CSTL-580	BIO	FW	Chessey Creek at S-15-45
CSTL-071	SS	FW	Horseshoe Creek at SC 64
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are only partially supported in **FULLER SWAMP** (CSTL-581) based on macroinvertebrate community data. Very little data exists on natural community composition from streams in this hydrogeologic setting. The observed community structure may actually reflect natural conditions for streams of this type. Recreational use support was not assessed.

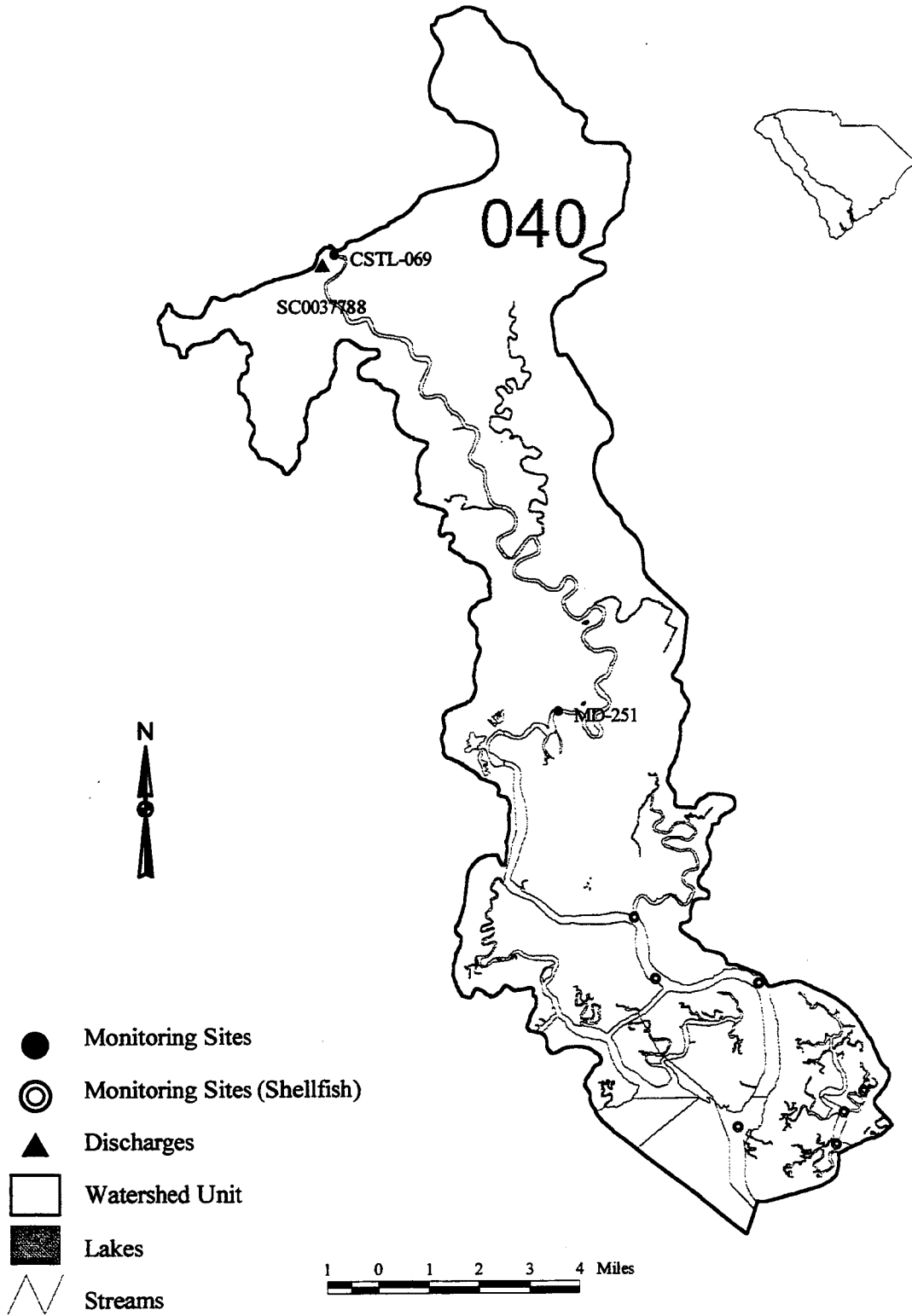
Aquatic life uses are not supported in **CHESSEY CREEK** (CSTL-580) based on macroinvertebrate community data. Very little data exists on natural community composition from streams in this hydrogeologic setting. The observed community structure may actually reflect natural conditions for streams of this type. Recreational use support was not assessed.

Aquatic life uses are fully supported in **HORSESHOE CREEK** (CSTL-071). Although there were dissolved oxygen and pH excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

03050208-040. Watershed 03050208-040 (map page 129) is located in Colleton County and consists primarily of the lower **ASHEPOO RIVER** and its tributaries between Horseshoe Creek and St. Helena Sound. This watershed accepts the drainage from the upper Ashepoo River watershed (03050208-020) and the

Watershed 03050208-040

Savannah and Salkehatchie River Basins



Horseshoe Creek watershed (03050208-030). The lower Ashepoo River watershed contains a total of 36.27 stream miles, which drain into St. Helena Sound and the Atlantic Ocean. A cut connects the Ashepoo River to the South Edisto River Watershed near Fenwick Island prior to entering the sound.

The watershed occupies 57,275 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Pungo-Bladen-Wahee series. The erodibility of the soil (K-factor) averages 0.10; the slope of the terrain averages 1.0%, with a range of 0-2%. Land use/land cover in the watershed includes: 34% forested land, 22% forested wetland, 20% nonforested wetland, 11% scrub/shrub land, 11% water, 2% agricultural land, and <1% urban land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0037788	BOLEN POINT SD	ASHEPOO R.	CO	0.01

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-069	S	SFH	Ashepoo River at US 17, 3.4 miles ESE of Green Pond
MD-251	SS	SFH	Ashepoo River at S-15-26

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

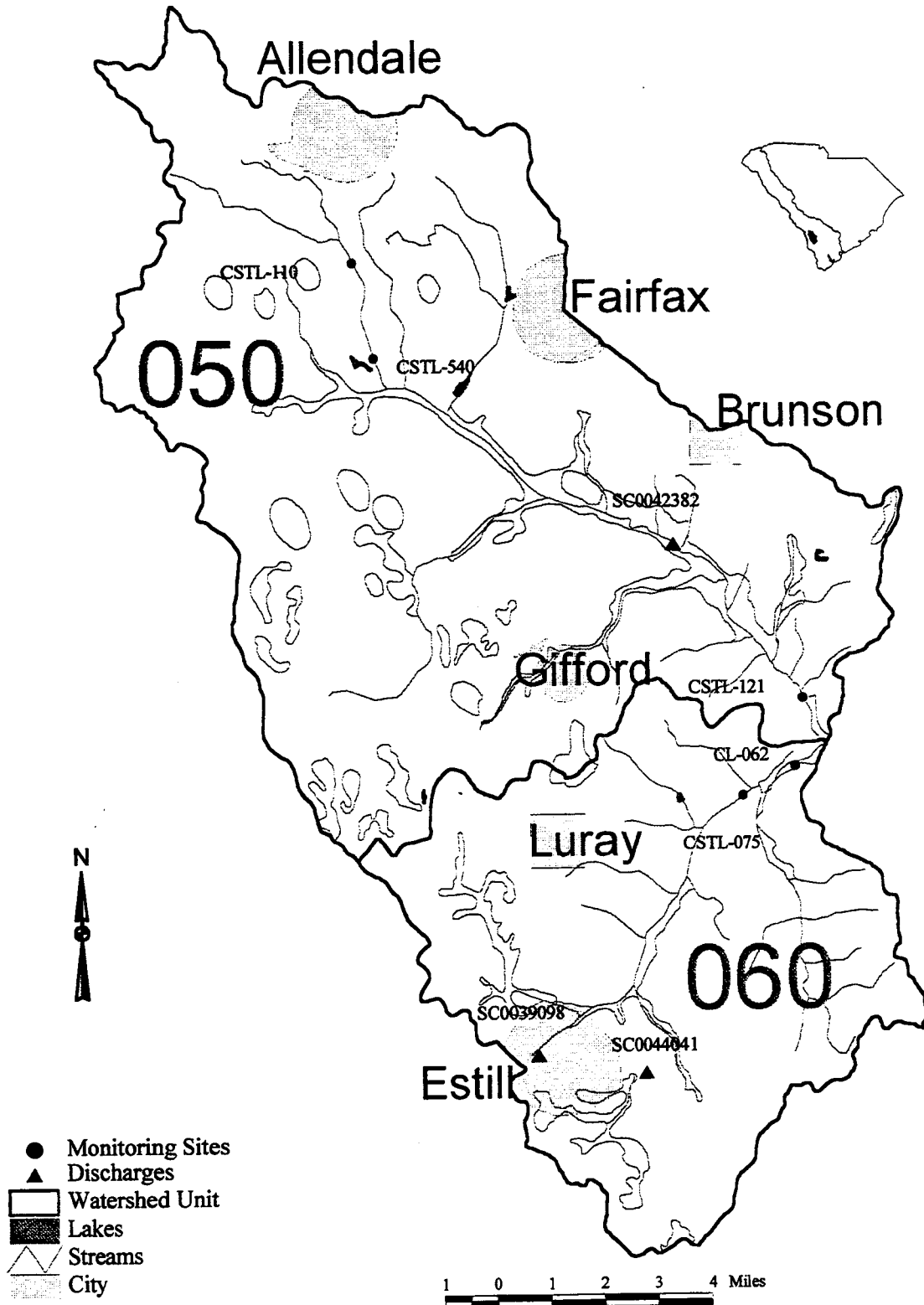
There are two monitoring sites on the ASHEPOO RIVER in this watershed unit. At the upstream site (CSTL-069), aquatic life uses are fully supported. Although there were dissolved oxygen and pH excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

At the downstream site (MD-251), aquatic life uses are fully supported. Although there were dissolved oxygen and pH excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

03050208-050. Watershed 03050208-050 (map page 131) is located in Allendale and Hampton Counties and consists primarily of the upper COOSAWHATCHIE RIVER and its tributaries down to Black Creek. The Coosawhatchie River headwaters originate near the Towns of Allendale and Fairfax and incorporates drainage from Duck Creek, Beach Branch, Bloodhill Creek and Cedar Branch. The upper Coosawhatchie River watershed contains a total of 33.50 stream miles.

The watershed occupies 88,530 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Bonneau-Ogeechee-Norfolk series. The

**Watersheds 03050208-050, -060
Savannah and Salkehatchie River Basins**



erodibility of the soil (K-factor) averages 0.14; the slope of the terrain averages 1.4%, with a range of 0-6%. Land use/land cover in the watershed includes: 28% forested land, 26% forested wetland, 25% agricultural land, 15% scrub/shrub land, 3% urban land, 2% nonforested wetland, <1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0042382	BRUNSON/TOWN OF	COOSAWHATCHIE	MU	0.11

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-110	P	FW	Coosawhatchie River at S-03-47
CSTL-540	BIO	FW	Coosawhatchie River at S-03-350
CSTL-121	SS	FW	Coosawhatchie River at SC 363

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0104).

There are three monitoring sites on the COOSAWHATCHIE RIVER in this watershed unit. At the upstream site (CSTL-110), aquatic life uses are only partially supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in dissolved oxygen concentrations, a high concentration of zinc measured in 1995 and a very high concentration of chromium measured in 1996. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Further downstream (CSTL-540), aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (CSTL-121), aquatic life uses are only partially supported due to dissolved oxygen excursions. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

03050208-060. Watershed 03050208-060 (map page 131) is located in Allendale and Hampton Counties and consists primarily of Black Creek and its tributaries. The Black Creek watershed originates near the Town of Estill and flows into the Coosawhatchie River, incorporating Filly Branch, Briar Creek and

several unnamed tributaries. LAKE GEORGE WARREN is located on Black Creek at the confluence with Briar Creek. There are a total of 21.04 stream miles in this watershed.

The watershed occupies 51,137 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Bonneau-Rains-Norfolk-Lynchburg series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 1.4%, with a range of 0-6%. Land use/land cover in the watershed includes: 36% agricultural land, 27% forested land, 20% forested wetland, 10% scrub/shrub land, 4% nonforested wetland, 3% urban land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0039098	SOUTHERN SOYA CORP	BLACK CREEK	IN	STORM
SC0039098	SOUTHERN SOYA CORP	BLACK CREEK	IN	STORM
SC0039098	SOUTHERN SOYA CORP	BLACK CREEK	IN	STORM
SC0044041	PROPST AQUA FARMS	BLACK CREEK	IN	0.864

*IN=industrial, CO=community, MU=municipal
†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-075	S	FW	Lake Warren, Black Creek arm, at S-25-41, 5 miles SW of Hampton
CL-062	SS	FW	Lake Warren forebay

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for mercury, which while not specifically naming any waterbodies in this watershed unit, should be considered when consuming fish from this watershed (see Fish Consumption Advisory, Management Unit WMU-0104).

LAKE GEORGE WARREN (CSTL-075, CL-062) is a 600-acre impoundment on Black Creek, with a maximum depth of approximately seven feet (2.1 meters) and an average depth of approximately six feet (1.8 meters). The lake's watershed comprises 71 square miles (183.3 km²). Eutrophication assessments indicate that Lake Warren is of intermediate trophic condition among small lakes in South Carolina, and is characterized by high densities of algae and rooted aquatic plants, and the low pH and dark color typical of Coastal Plain impoundments. Aquatic life uses are not supported in Lake Warren due to dissolved oxygen excursions, compounded by a significant increasing trend in turbidity and a very high concentration of chromium measured in 1996. CSTL-075 is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Although there were pH

excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site.

03050208-070. Watershed 03050208-070 (map page 135) is located in Hampton and Jasper Counties and consists of the middle reach of the COOSAWHATCHIE RIVER and its tributaries between Black Creek and Cypress Branch. There are a total of 29.19 stream miles in this watershed. The middle reach of the Coosawhatchie River flows past the Towns of Hampton and Varnville, and incorporates the drainage from SANDERS BRANCH. This watershed also accepts the drainage from the upper Coosawhatchie River watershed (03050208-050) and the Black Creek watershed (03050208-060).

The watershed occupies 65,639 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Albany-Goldsboro-Pelham series. The erodibility of the soil (K-factor) averages 0.15; the slope of the terrain averages 1.2%, with a range of 0-2%. Land use/land cover in the watershed includes: 39% forested land, 28% forested wetland, 14% agricultural land, 10% scrub/shrub land, 6% urban land, 3% nonforested wetland, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0001830	WESTINGHOUSE ELEC	SANDERS BR	IN	1.9
SC0021318	HAMPTON/TOWN OF	SANDERS BR	MU	2
SC0042242	CHAMBERS MEDICAL	SANDERS BR	IN	MR
SC0042242	CHAMBERS MEDICAL	SANDERS BR	IN	STORM
SC0042251	FAST FARE #681	SANDERS BR	IN	M/R

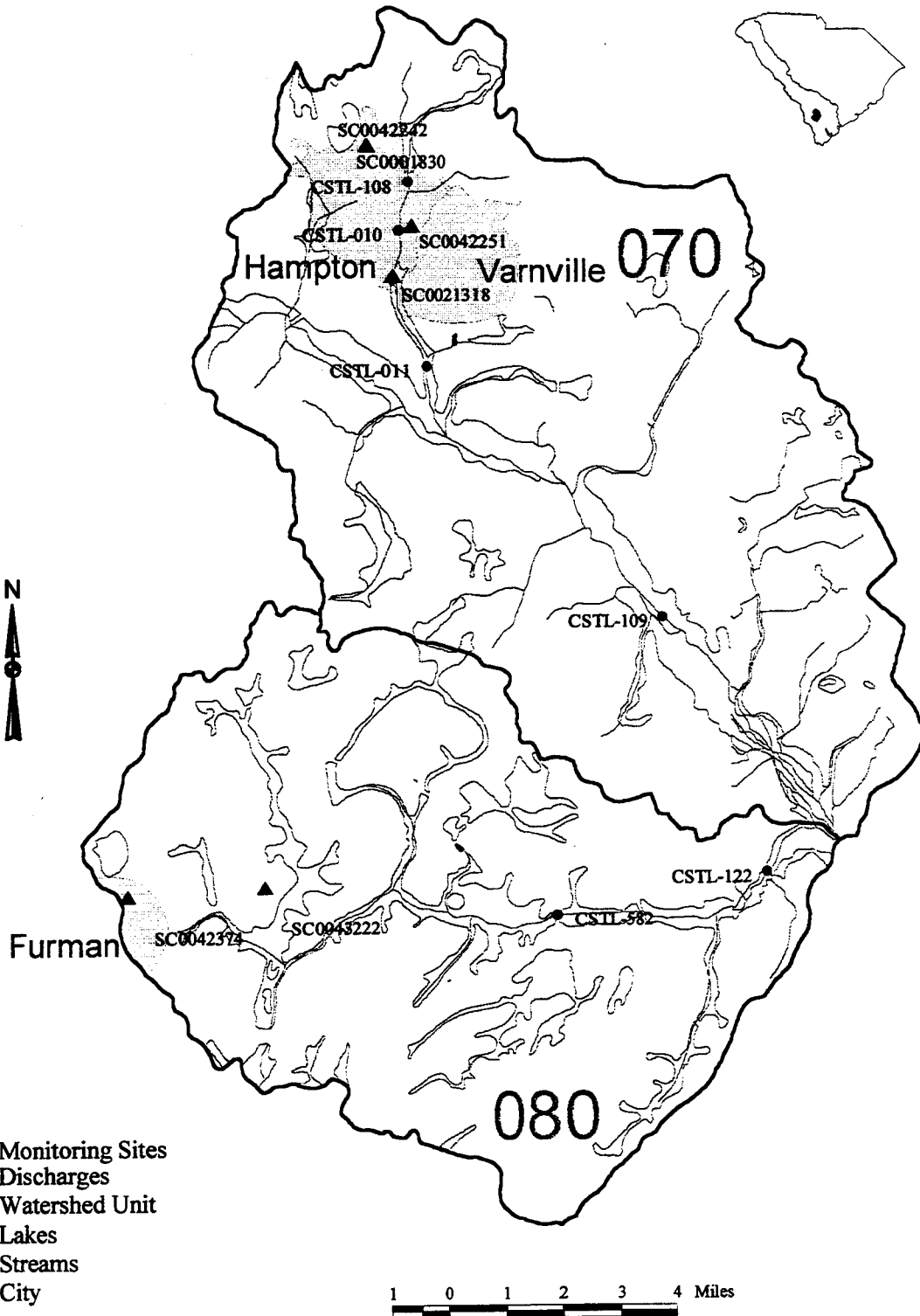
*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-108	S	FW*	Sanders Branch at SC Rd 363
CSTL-010	S	FW*	Sanders Branch at SC 278
CSTL-011	S/BIO	FW*	Sanders Branch at S-25-50
CSTL-109	P	FW	Coosawhatchie River at S-25-27, 2.5 miles SW of Cummings

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Watersheds 03050208-070, 080 Savannah and Salkehatchie River Basins



A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0104).

There are three monitoring sites on SANDERS BRANCH. At the upstream site (CSTL-108), aquatic life uses are fully supported, but may be threatened by 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 at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the next site downstream (CSTL-010), aquatic life uses are fully supported. A significant decreasing trend in total phosphorus concentrations suggests improving conditions for this parameter. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

At the downstream site (CSTL-011), aquatic life uses are not supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in dissolved oxygen concentration and significant increasing trends in five-day biochemical oxygen demand and turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. This creek was Class B until April, 1992 and due to the implementation schedule the full effect of the more stringent fecal coliform bacteria limits may not be reflected in this assessment.

Aquatic life uses are not supported in the COOSAWHATCHIE RIVER (CSTL-109) due to dissolved oxygen excursions, compounded by a significant decreasing trend in pH and significant increasing trends in turbidity and total suspended solids, and a high concentration of zinc measured in 1996. In 1995, 3,3'-dichlorobenzidine was detected in the water column. In sediment, p,p'-DDD, a metabolite of DDT, was measured in 1993, di-n-butylphthalate was measured in 1995, a very high concentration of zinc was measured in 1995, and a high concentration of zinc was measured in 1996. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

03050208-080. Watershed 03050208-080 (map page 135) is located in Hampton and Jasper Counties and consists primarily of CYPRESS CREEK and its tributaries. The Cypress Creek watershed flows into the lower reach of the Coosawhatchie River, incorporating the drainage from John Pen Branch, Ziglag Creek, Elbo Creek and Beaverdam Creek. There are a total of 22.08 stream miles in this watershed.

The watershed occupies 72,395 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Albany-Pelham-Ocilla-Chipley series. The erodibility of the soil (K-factor) averages 0.13; the slope of the terrain averages 1.3%, with a range of 0-2%. Land

use/land cover in the watershed includes: 44% forested land, 21% forested wetland, 21% agricultural land, 9% scrub/shrub land, 4% nonforested wetland, 1% urban land, <1% barren land, and <1% water.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD)†
SC0042374	YOUMAN'S FISH PONDS	ditch	IN	0.5
SC0043222	DELOACH CATFISH FARM	JOHN PEN BR	IN	0.1

*IN=industrial, CO=community, MU=municipal
 †MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
CSTL-582	BIO	FW	Cypress Creek at SC 3
CSTL-122	SS	FW	Cypress Creek at S-27-108

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
 † TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for mercury, which while not specifically naming any waterbodies in this watershed unit, should be considered when consuming fish from this watershed (see Fish Consumption Advisory, Management Unit WMU-0104).

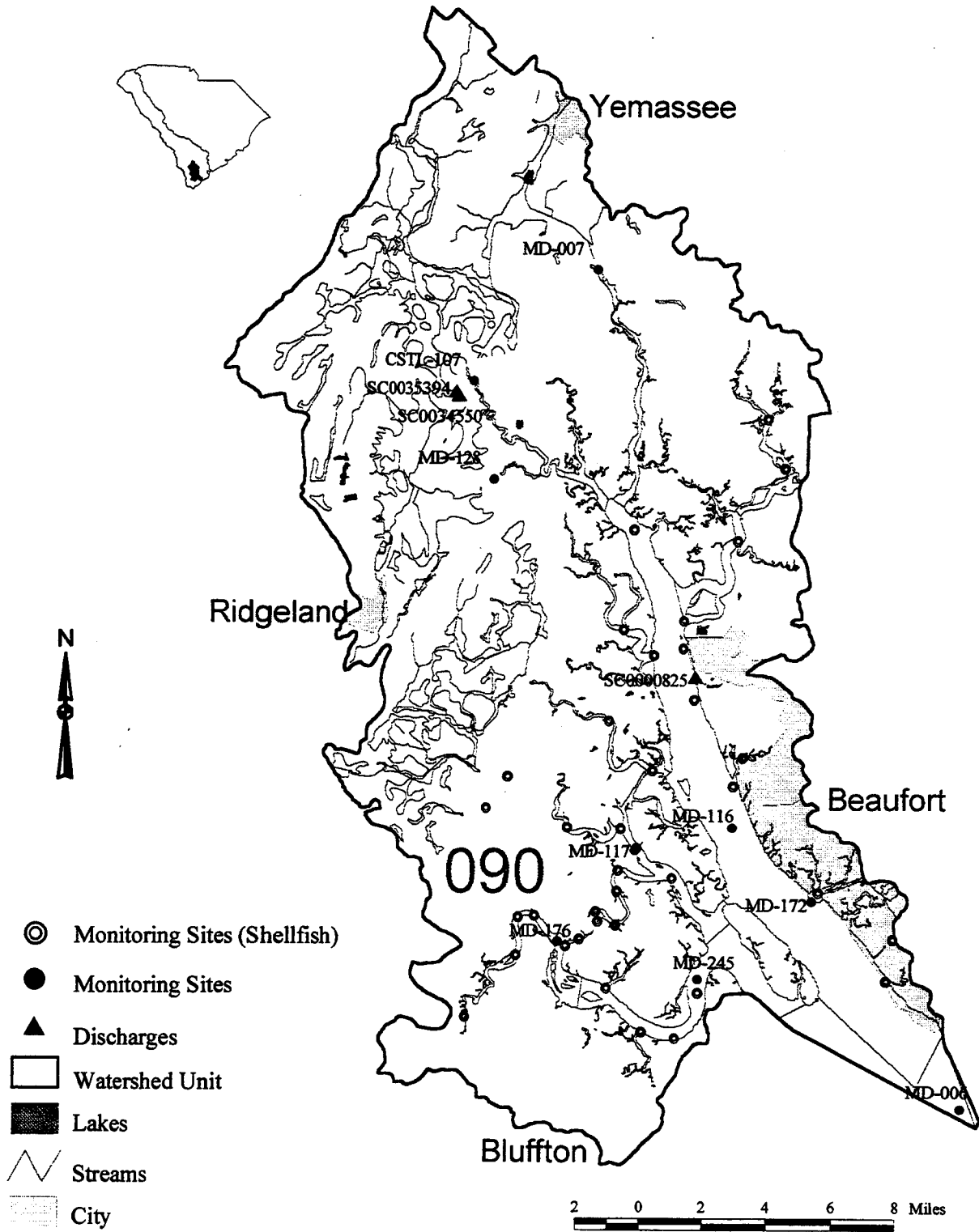
There are two monitoring sites on CYPRESS CREEK. At the upstream site (CSTL-582), aquatic life uses are fully supported based on macroinvertebrate community data. Recreational use support was not assessed.

At the downstream site (CSTL-122), aquatic life uses are fully supported. Although there were dissolved oxygen and pH excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

03050208-090. Watershed 03050208-090 (map page 138) is located in Hampton, Jasper and Beaufort Counties and consists of the lower COOSAWHATCHIE RIVER, the POCOTALIGO RIVER and the BROAD RIVER and their tributaries. The Broad River is formed from the confluence of the lower Coosawhatchie River and the Pocotaligo River, and flows through the Broad River Estuary into PORT ROYAL SOUND and the Atlantic Ocean. This watershed accepts the drainage from the Coosawhatchie River watersheds (03050208-050,060,070, and 080) and interacts with the adjacent Beaufort River watershed (03050208-100) through tidal creeks.

Prior to the confluence, the Tulifinny River, BEES CREEK and Little Bees Creek flow into the lower Coosawhatchie River; and Haulover Creek flows into the headwaters of the Pocotaligo River. Boyds Creek,

Watershed 03050208-090 Savannah and Salkehatchie River Basins



together with East Branch Creek, West Branch Creek, South Haulover Creek and Whale Branch (Middle Creek) all drain into the headwaters of the Broad River. Euhaw Creek enters the Broad River farther downstream together with Hazzards Creek. Okatee River, Callawassie Creek, Chechessee Creek and Sawmill Creek all flow into the COLLETON RIVER, which flows into the CHECHESSEE RIVER. The Chechessee River combines with the Broad River in Port Royal Sound, but they are also connected to Daws Creek between Daws and Lemon Islands. Also entering the sound are Edding Creek, Ballast Creek and Archer Creek. There are a total of 92.7 stream miles in this watershed.

The watershed occupies 265,585 acres of the Coastal Zone of South Carolina. The predominant soil types consist of an association of the Bohicket-Argent-Okeetee-Coosaw-Albany series. The erodibility of the soil (K-factor) averages 0.13; the slope of the terrain averages 1.2%, with a range of 0-2%. Land use/land cover in the watershed includes: 40% forested land, 19% water, 15% nonforested wetland, 11% forested wetland, 6% scrub/shrub land, 6% agricultural land, 2% urban land, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Flow	
			Type*	(MGD) [†]
	RIDGELAND (proposed)	CAPT BILLS CK	MU	0.25
SC0000825	US MARINES/BEAUFORT	BROAD RIVER	IN	0.75
SC0034550	STUCKEY'S PECAN SHOP	LITTLE BEES	CO	0.005
SC0035394	DIXIE BOY TRUCK STOP	COOSAWHATCHIE	CO	0.01

*IN=industrial, CO=community, MU=municipal
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
CSTL-107	P	FW/SFH	Coosawhatchie River at US 17 at Coosawhatchie
MD-128	S	SB	Bees Creek at SC 462, 5.9 miles NE of Ridgeland
MD-007	P	SFH	Pocotaligo River at US 17 at Pocotaligo
MD-116	P	SFH	Broad River at SC 170, 7.5 miles SW of Beaufort
MD-172	S	SFH	Broad River at Mouth of Archer Creek on SW side of USMC base
MD-117	S	SFH	Chechessee River at SC 170, 10.5 miles SW of Beaufort
MD-176	SS	ORW	Colleton River at Colleton Neck, at junction with Chechessee River
MD-245	P	ORW	Colleton River near mouth (Shellfish Station 18-5)
MD-006	S	SFH	Port Royal between buoy 25 & 24, W of Bay Point Island

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Fish Consumption Advisory, Management Unit WMU-0104).

Aquatic life uses are fully supported in the **COOSAWHATCHIE RIVER (CSTL-107)**, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. This monitoring site is located in the freshwater-saltwater mixing zone. Although there were dissolved oxygen and pH excursions, the low values exemplify the natural transition of the river and are typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life uses are only partially supported in **BEES CREEK (MD-128)** due to dissolved oxygen excursions, compounded by a significant decreasing trend in pH and a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Although there were pH excursions, these were typical of values seen in blackwater systems. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are only partially supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are fully supported in the **POCOTALIGO RIVER (MD-007)**. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

There are two monitoring sites on the **BROAD RIVER**. At the upstream site (MD-116), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH and a significant increasing trend in total nitrogen concentrations. In sediment, a very high concentration of copper was measured in 1995. Significant decreasing trends in total phosphorus concentrations and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

At the downstream site (MD-172), aquatic life uses are fully supported, but may be threatened by significant decreasing trends in dissolved oxygen concentrations and pH. Although there were dissolved oxygen excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in the **CHECHESSEE RIVER (MD-117)**, but may be threatened by significant decreasing trends in dissolved oxygen concentrations and pH. Although there were dissolved oxygen excursions, these were typical of values seen in tidally influenced systems with significant marsh

drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. A significant decreasing trend in total phosphorus concentrations suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

There are two monitoring sites on the **COLLETON RIVER**. At the upstream site (MD-176), aquatic life uses are fully supported, but may be threatened by a significant decreasing trend in pH. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the downstream site (MD-245), aquatic life uses are fully supported, but may be threatened by significant increasing trends in total phosphorus and total nitrogen concentrations. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported in **PORT ROYAL SOUND** (MD-006). A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

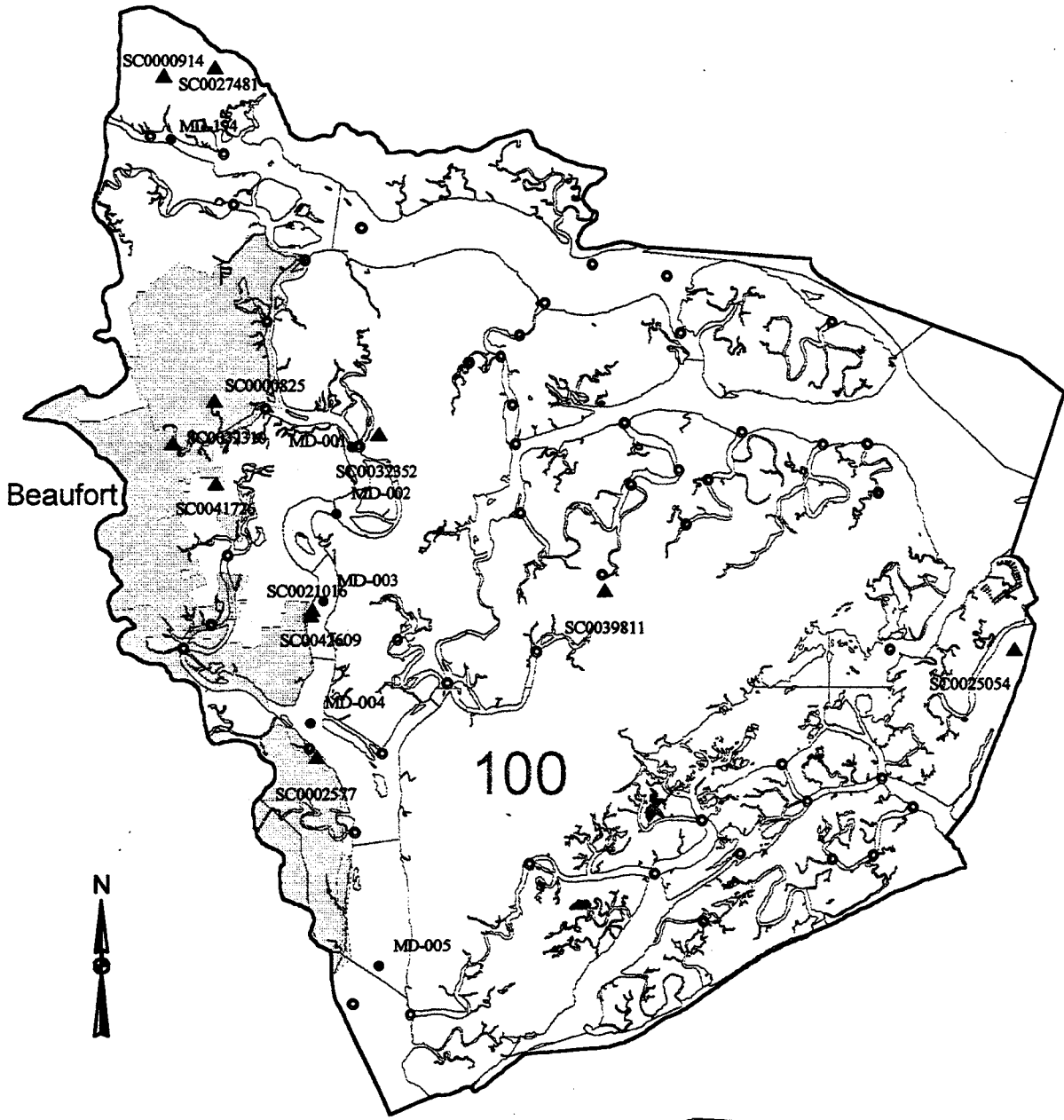
A baseline assessment of the ecological health of Okatee River estuarine drainage system is being performed by SCDHEC, the South Carolina Department of Natural Resources Marine Resource Research Institute, the National Marine Fisheries Service, and the Town of Hilton Head. The Okatee River is a relatively undeveloped watershed, but development pressures may significantly alter the character of this drainage system in the future. The baseline assessment will provide useful data on the physical and biological condition of various estuarine habitats within the drainage system using a variety of physical and biological measures. A draft report will be prepared by September, 1998.

03050208-100. Watershed 03050208-100 (map page 142) is located in Beaufort County and consists of the **BEAUFORT RIVER**, **COOSAW RIVER**, and Morgan River and their tributaries. The Beaufort River watershed, which includes the Beaufort River Estuary, consists primarily of sea islands and the tidally influenced creeks that separate them. The Coosaw River and Morgan River flow into St. Helena Sound and into the Atlantic Ocean. The Beaufort River connects to the Coosaw River via Brickyard Creek; the Beaufort River drains into the ocean primarily through Port Royal Sound. **WHALE BRANCH** connects the Coosaw and Broad Rivers (03050208-090). There are a total of 40.8 stream miles in this watershed.

The watershed occupies 170,093 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Capers-Lynnhaven-Lakeland series. The erodibility of the soil (K-factor) averages 0.08; the slope of the terrain averages 1.6%, with a range of 0-6%. Land use/land cover in the watershed includes: 34% nonforested wetland, 24% water, 23% forested land, 7% scrub/shrub land, 6% urban land, 5% agricultural land, <1% barren land, and <1% forested wetland. Hunting Island State Park is encircled by Harbor Creek, Fripp Inlet, St. Helena Sound and the Atlantic Ocean.

Watershed 03050208-100

Savannah and Salkehatchie River Basins



- ⊙ Monitoring Sites (Shellfish)
- Monitoring Sites
- ▲ Discharges
- ▭ Watershed Unit
- Lakes
- ▬ Streams
- ▨ City



Permitted Discharges

Permit #	Facility	Receiving Water	Flow Type*	(MGD)†
SC0000825	US MARINES/BEAUFORT	ALBERGOTTI	IN	0.75
SC0000914	LOBECO PRODUCTS INC	WHALE BR	IN	0.353
SC0002577	US MARINES/PARRIS IS	BEAUFORT RIV	IN	0.015
SC0002577	US MARINES/PARRIS IS	BEAUFORT RIV	IN	3
SC0002577	US MARINES/PARRIS IS	BEAUFORT RIV	IN	7.2
SC0021016	BEAUFORT/CITY OF	BEAUFORT RIV	MU	4
SC0025054	SC DEPT PRT	ATLANTIC	CO	0.1
SC0027481	JAMES J DAVIS	HALFMOON CK	CO	0.008
SC0032310	HOWARD JOHNSONS	SALT CK	CO	0.025
SC0032352	MARSH HARBOR	BROOMFIELD CK	CO	0.035
SC0032352	MARSH HARBOR (proposed)	BROOMFIELD CK	MU	0.1
SC0032352	MARSH HARBOR (proposed)	BROOMFIELD CK	MU	0.12
SC0039811	BJW&SA/FROGMORE WTP	BEAUFORT RIV	MU	0.6
SC0041726	OC WELCH FORD & LINC	BATTERY CK	IN	----
SC0042609	BJW&SA/SHELL POINT W	BEAUFORT RIV	MU	0.8

*IN=industrial, CO=community, MU=municipal

†MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class†	Station Description
MD-194	S	SFH	Whale Branch at junction with Campbell's Creek
MD-168	P	SFH	Coosaw River at confluence of Combahee River, near buoy 186
MD-001	S	SA	Beaufort River above Beaufort at channel marker 231
MD-002	S	SA	Beaufort River at drawbridge on US 21
MD-003	P	SA	Beaufort River below Beaufort at channel marker 244
MD-004	S	SFH	Beaufort River at junction with Battery Creek near marker 42
MD-005	P	SFH	Beaufort River below outfall of Parris Island at buoy 29

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are fully supported in **WHALE BRANCH (MD-194)**, but may be threatened by significant decreasing trends in dissolved oxygen concentrations and pH and significant increasing trends in five-day biochemical oxygen demand and turbidity, and a very high concentration of zinc measured in 1996. Although there were dissolved oxygen excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, a high concentration of chromium was measured in 1993, and a very high concentration of chromium and high concentrations of lead and nickel were measured in 1994. Also in sediment, P,P' DDT was measured in 1992 and butylbenzyl phthalate was measured in 1996. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are not supported in the **COOSAW RIVER (MD-168, see map for watershed 03050208-010)** due to occurrences of zinc in excess of the aquatic life acute standards, including two very high concentrations measured in 1993 and a high concentration measured in 1994, compounded by a significant increasing trend in total nitrogen concentrations. Although there were dissolved oxygen excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are fully supported at this site.

There are five monitoring sites on the **BEAUFORT RIVER**. At the most upstream site (MD-001), aquatic life uses are not supported due to dissolved oxygen excursions, compounded by significant decreasing trends in dissolved oxygen concentrations and pH, and a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site.

At the next site downstream (MD-002), aquatic life uses are not supported due to dissolved oxygen excursions, compounded by significant decreasing trends in dissolved oxygen concentrations and pH, and a significant increasing trend in turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

Further downstream (MD-003), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards, a very high concentration of lead measured in 1993, and dissolved oxygen excursions, compounded by significant decreasing trends in dissolved oxygen concentrations and pH, and a significant increasing trend in total nitrogen concentration. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (MD-004), aquatic life uses are not supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in dissolved oxygen concentrations. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site.

At the most downstream site (MD-005), aquatic life uses are fully supported, but may be threatened by significant decreasing trends in dissolved oxygen concentrations and pH, and a significant increasing trend in total nitrogen concentration. A significant decreasing trend in total phosphorus concentrations suggest

improving conditions for this parameter. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

03050208-110. Watershed 03050208-110 (map page 146) is located in Beaufort County and consists primarily of the **MAY RIVER**, the Cooper River and their tributaries. The May River watershed, which includes the May River Estuary, consists of sea islands and tidally-influenced streams. The May River combines with MacKays Creek, **SKULL CREEK** and **BROAD CREEK** in **CALIBOGUE SOUND** before flowing into the Atlantic Ocean near Hilton Head Island. The May River accepts drainage from Bass Creek and Bull Creek, which also drains to the Cooper River. There are a total of 49.6 stream miles in this watershed.

The watershed occupies 86,228 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Lynnhaven-Lakeland-Chipley series. The erodibility of the soil (K-factor) averages 0.08; the slope of the terrain averages 1.8%, with a range of 0-6%. Land use/land cover in the watershed includes: 31% forested land, 31% water, 18% urban land, 14% nonforested wetland, 3% scrub/shrub land, 1% forested wetland, 1% agricultural land, and <1% barren land.

Permitted Discharges

Permit #	Facility	Receiving Water	Type*	Flow (MGD) [†]
SC0042501	SOUTH ISLAND PSD	BOGGY GUT	MU	5
SC0043605	HILTON HEAD PLANT UT	CYPRESS	CO	0.15
SC0043605	HILTON HEAD PLANT UT	WHOOPIING CRANE	CO	0.5

*IN=industrial, CO=community, MU=municipal

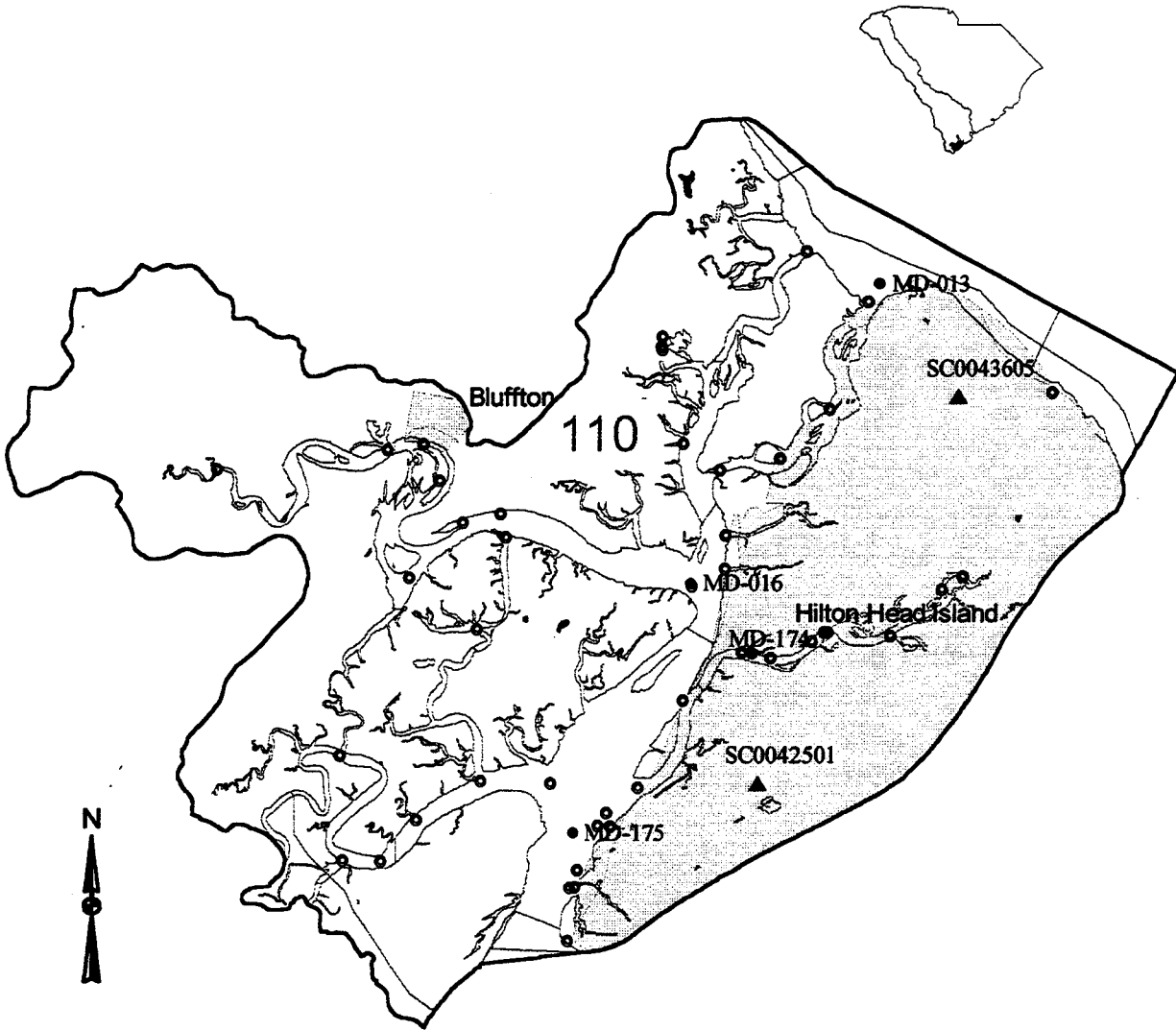
[†]MGD=million gallons per day, MR=monitor and report

Monitoring Locations			
Station Number	Type*	Class [†]	Station Description
MD-013	S	SFH	Mouth of Skull Creek between channel markers 3 & 4 near Redbo
MD-016	SS	ORW/SFH	Mouth of May River, 1.0 miles W of channel marker 29
MD-174	P	SFH	Broad Creek opposite end of S-07-80
MD-175	P	SFH	Calibogue Sound at mouth of Cooper River, near red buoy 32

* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate
[†] TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters

Aquatic life uses are only partially supported in **SKULL CREEK** (MD-013) due to dissolved oxygen excursions, compounded by a significant decreasing trend in pH. This is a secondary monitoring station and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site.

Watershed 03050208-110 Savannah and Salkehatchie River Basins



- ⊙ Monitoring Sites (Shellfish)
- Monitoring Sites
- ▲ Discharges
- ▭ Watershed Unit
- Lakes
- △ Streams
- ▨ City



Aquatic life uses are fully supported in the **MAY RIVER (MD-016)**, but may be threatened by a significant decreasing trend in pH. Recreational uses are fully supported at this site.

Aquatic life uses are only partially supported in **BROAD CREEK (MD-174)** due to dissolved oxygen excursions, compounded by a significant increasing trend in total nitrogen concentrations and a very high concentration of zinc measured in 1996. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site, but may be threatened by a significant increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are fully supported in **CALIBOGUE SOUND (MD-175)**, but may be threatened by a significant decreasing trend in pH, a significant increasing trend in total nitrogen concentrations, and a high concentration of zinc measured in 1994. A significant decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are fully supported at this site.

A nonpoint source (NPS) reduction project has been implemented in this watershed by the Town of Hilton Head through SCDHEC. The goal of the project is to improve water quality in Broad Creek, the central water body of the Island. Objectives include identifying sources of NPS pollution, evaluating potential best management practices, and informing citizens of their role in the issue. Project grant period: March 30, 1997-December 31, 1997.

A baseline assessment of the ecological health of the Broad Creek estuarine drainage system is being performed by the SCDHEC, the South Carolina Department of Natural Resources Marine Resource Research Institute, the National Marine Fisheries Service, and the Town of Hilton Head. Broad Creek is surrounded by a watershed that is extensively developed for urban and suburban land use. The baseline assessment will provide useful data on the physical and biological condition of various estuarine habitats within the drainage system using a variety of physical and biological measures. A draft report will be prepared by September, 1998.

03050208-120. Watershed 03050208-120 (map page 149) is located in Jasper County and consists primarily of the **GREAT SWAMP** drainage. The Great Swamp originates in Calfpn Bay and is joined by Broadwater Creek (Waggon Branch) farther downstream near the Town of Ridgeland.

The watershed occupies 56,959 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Paxville-Albany-Lynchburg series. The erodibility of the soil (K-factor) averages 0.17; the slope of the terrain averages 1.2%, with a range of 0-2%. Land use/land cover in the watershed includes: 47% forested land, 23% forested wetland, 17% agricultural land, 8% nonforested wetland, 2% urban land, 2% scrub/shrub land, <1% barren land, and <1% water.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
MD-129	SS	FW	Great Swamp at U.S. 17
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Aquatic life uses are fully supported in **GREAT SWAMP (MD-129)**. Although there were dissolved oxygen and pH excursions, these were typical of values seen in blackwater systems with significant swamp drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

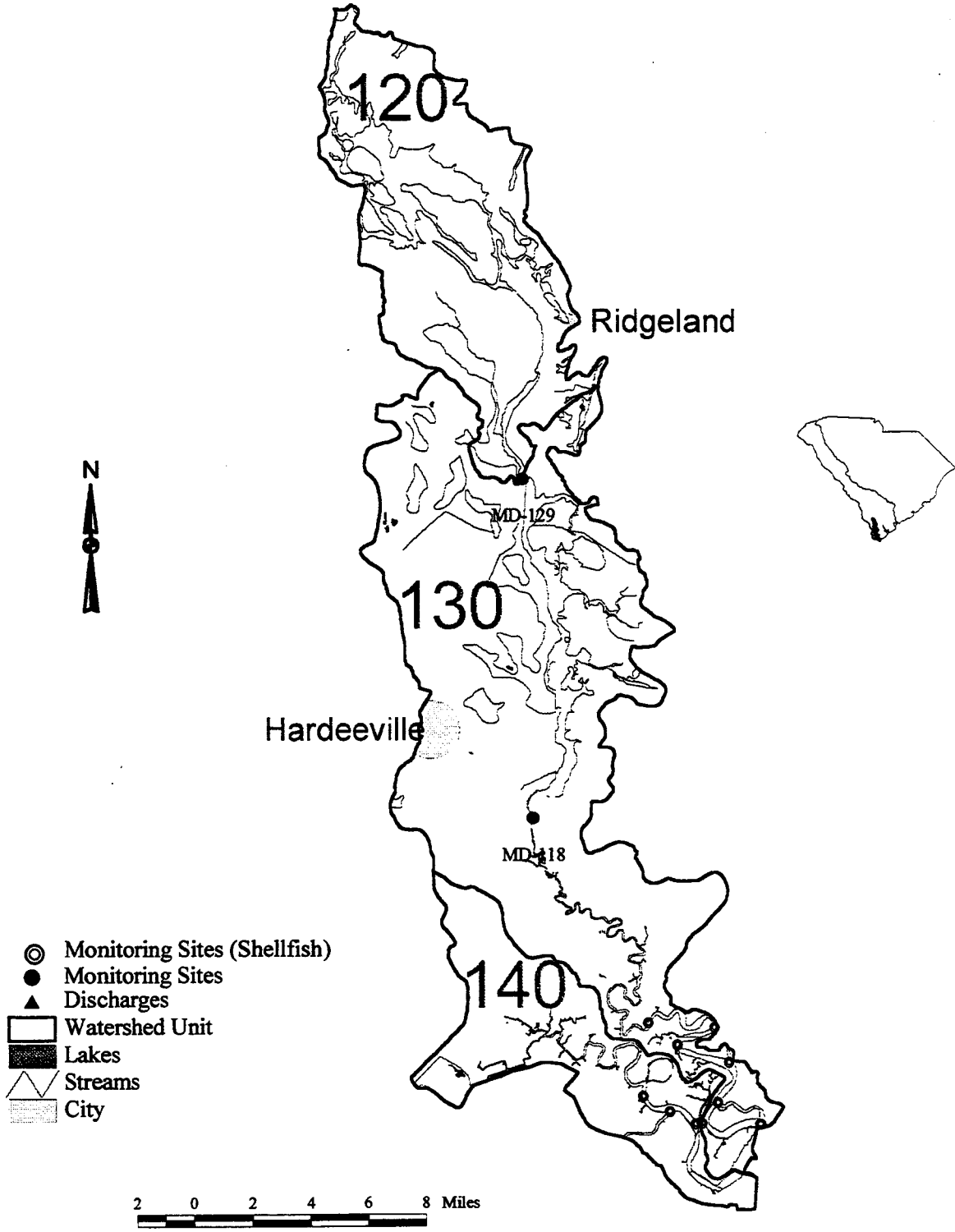
03050208-130. Watershed 03050208-130 (map page 149) is located in Jasper and Beaufort Counties and consists of the lower portion of the Great Swamp and the **NEW RIVER** and their tributaries. The New River watershed, which includes the New River Estuary, drains to the Atlantic Ocean. Great Swamp and Bagshaw Swamp join to form the New River. Causeway Swamp enters the New River, as does Bob Dam Swamp and Brickyard Swamp downstream. There are a total of 11.0 stream miles in this watershed. The New River forms a section of the Atlantic Intracoastal Waterway before entering the Atlantic Ocean near Daufauskie Island. This watershed accepts the drainage of the upper Great Swamp (03050208-120) and interacts with the Wright River watershed (03050208-140) through tidal creeks.

The watershed occupies 96,023 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Argent-Okeetee-Santee series. The erodibility of the soil (K-factor) averages 0.19; the slope of the terrain averages 1.1%, with a range of 0-6%. Land use/land cover in the watershed includes: 56% forested land, 18% nonforested wetland, 12% forested wetland, 7% agricultural land, 3% water, 2% urban land, 2% scrub/shrub land, and <1% barren land.

There are no permitted discharges in this watershed.

Monitoring Locations			
Station Number	Type*	Class†	Station Description
MD-118	P	SA	New River at SC 170, 9 miles W of Bluffton
* P=primary, S=secondary, SS=watershed, BIO=macroinvertebrate			
† TPGT=trout put, grow and take; ORW=outstanding resource waters; FW=freshwaters			

Watersheds 03050208-120, -130, 140 Savannah and Salkehatchie River Basins



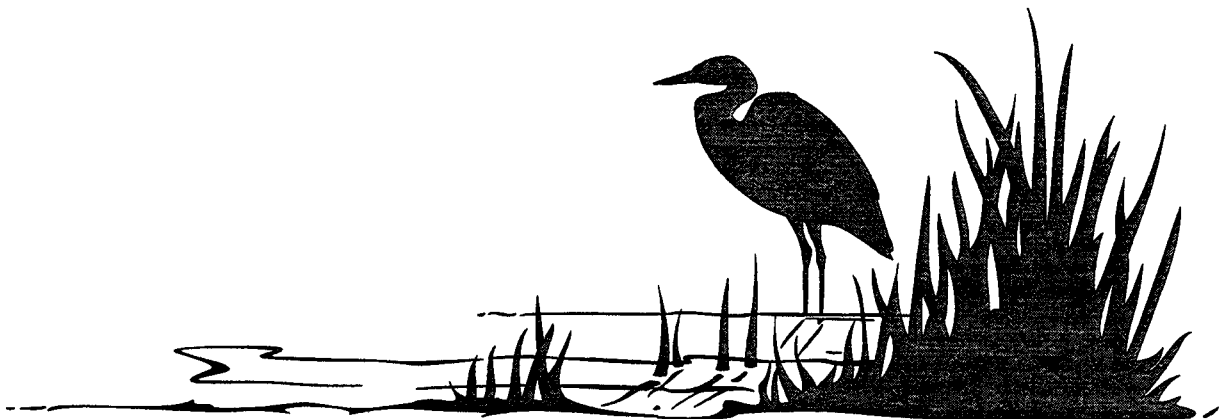
Aquatic life uses are fully supported in NEW RIVER (MD-118), but may be threatened by a significant decreasing trend in pH and a significant increasing trend in turbidity. Although there were dissolved oxygen and pH excursions, these were typical of values seen in tidally influenced systems with significant marsh drainage. As such they were considered to be natural in origin, and are not considered to be standards violations. In sediment, a high concentration of lead was measured in 1994. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

A nonpoint source (NPS) reduction project has been implemented in this watershed by the Low Country Council of Governments through SCDHEC. The goal of the project is source identification along the New River which will include a geographic information system, land use identification, property owner identification, and analysis of monitoring data. Best management practice alternatives will be assessed. Four public education seminars will be held in the area to educate the population on the issue. Project grant period: 7/01/97-6/31/98.

03050208-140. Watershed 03050208-140 (map page 149) is located in Jasper County and consists of the Wright River and its tributaries. The Wright River is connected to the Savannah River (03060109-060) through the channel-like Mud River (Fields Cut) and Saltwater Creek. The Wright River also connects to the New River watershed (03050208-130) near Turtle Island.

The watershed occupies 30,631 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Capers-Coosaw series. The erodibility of the soil (K-factor) averages 0.12; the slope of the terrain averages 1.1%, with a range of 0-2%. Land use/land cover in the watershed includes: 37% nonforested wetland, 35% forested land, 11% agricultural land, 6% forested wetland, 6% water, 3% urban land, 1% scrub/shrub land, and 1% barren land. The Wright River flows through the Tybee Migratory Bird Refuge.

There are no permitted discharges in this watershed.



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APPENDIX A
Public Participation Summary

The UPPER SAVANNAH Watershed Workshop was held in Clemson on January 30, 1997. The information exchanged will be very useful as we begin the next cycle of the Watershed Water Quality Management Strategy.

The workshop produced several categories of concerns about water quality. The overriding concern for the upper basin is the rapid rate of residential, commercial and industrial growth. This growth directly or indirectly leads to many of the more specific concerns expressed including, but not limited to, increased runoff, increased usage of septic systems, enforcement concerns, trout waters concerns and educational opportunities.

The most prevalent concern is runoff. Specifically, participants questioned the effectiveness of sediment and erosion control practices including the handling of the Sediment and Erosion Control Act. Enforcement issues and the lack of education about runoff controls were also cited. Concerns for the runoff associated with building and maintaining golf courses, nutrient runoff, agricultural runoff and forestry were also expressed.

For many workshop participants septic systems are seen as a serious threat to water quality in the Upper Savannah Basin. The concern lies with the suitability of the soils for septic tanks as well as the potential malfunctioning and lack of care of septic tanks.

Many other water quality issues were articulated including DHEC's enforcement of water quality laws, discharges from boats, the operation of lakes, the degradation of trout waters, DHEC's focus on correction of problems instead of prevention, and the need to coordinate efforts between DHEC and other organizations, agencies and states.

In addition to the problems, several positive activities that are protecting or improving water quality were mentioned. These include efforts by the Natural Resource Conservation Service (NRCS) and the Department of Natural Resources (DNR) district offices, local organizations such as Friends of Lake Keowee Society (FOLKS), Duke Power, farmers, the Cattlemen's Association, recycling efforts, and DHEC's NPDES program. Participants suggested activities that would aid in the protection or correction of water quality problems. Many participants feel more emphasis should be given to education. Runoff controls and the monetary benefits of best management practices (BMPs) should be taught to local land owners and developers.

Following is a complete listing of the concerns and comments from the workshop.

NONPOINT SOURCE CONCERNS

Residential growth

Industrial growth

Agriculture, development, & municipalities taking over storm water programs

Runoff from roads, agriculture, and drainage ditches

Voluntary compliance of BMPs and voluntary monitoring not working

Increased development, impervious surface, increased velocities, increased runoff

NPS runoff from development, example nutrient runoff

General runoff

Urban and suburban nutrient runoff

NPS runoff -sediment and nutrients

Lack of education for developers; developers are not required to have licenses

Sediment and storm water runoff controls

Lack of enforcement in residential development -stormwater runoff

Lack of local & state govt. working together to reduce sediment, stormwater problems.
Impact of smaller developers on WQ (exempt from Sediment and Erosion Control Act)
Erosion at small industries
Erosion is increasing because of urbanization
Agriculture BMP's (pasture, row crops) not being encouraged enough
Animals access to streams adjacent to pasture land
Livestock waste -concerned about runoff from dairies and agriculture
New golf courses
Land disturbance with increase of golf courses
Runoff from golf courses -concerned about herbicides and pesticides in runoff
Logging not following BMPs -deforestation; stormwater runoff
Increased sediment and silt at headwaters due to urban and forestry activities
Forestry BMPs are voluntary and not working
Forestry overall and streamside -not seeing enough buffers around streams
Septic tanks -lack of infrastructure; use too high
Private septic systems -feel like people are allowed to install them anywhere
Concerned about DHEC's permitting of septic systems
Population growth very scattered and not conducive to central sewer treatment
Increasing number of septic tanks contributing to contamination
Beach and campground areas (discharge from boats)
Concern about regulations for holding tanks & dumping at marinas
Water quantity as water quality problem -development leading to more water

ENFORCEMENT CONCERNS

Lack of enforcement and monitoring
Lack of uniform enforcement and monitoring
Lack of staff to uniformly enforce
Lack of enforcement in residential development -stormwater runoff
Enforcement!!

HYDROLOGIC CONCERNS

Pump/backs, turbine on lakes -seeing fish kills, sediment turnover and DO problems
DO below dams is very low -wondering if it is being addressed through relicensing
Altering stream channels on lakes (developers making more lake for lakeside property)
Hydro electric projects meet Water Quality standards

TROUT CONCERNS

Litter problems-trout streams: beverage containers, paper, plastics, tires
Aquatic habitat degradation -losing quality trout streams due to sediment
Trout water degradations from increased temp and sediment
Thermal pollution from construction of lakes and ponds

The MIDDLE SAVANNAH & UPPER SALKEHATCHIE Watersheds Workshop was held in North Augusta on March 13, 1997. The information exchanged will be very useful as we begin the next cycle of the Watershed Water Quality Management Strategy.

The workshop produced several categories of concerns about water quality. The overriding concern for these watersheds is growth and its associated challenges. Growth directly or indirectly leads to many of the more specific concerns expressed including, but not limited to, increased runoff, increased need for wastewater treatment, groundwater concerns, flooding concerns and partnership opportunities.

The most prevalent concerns are related to stormwater and sediment. Permitting issues and hydrologic concerns were also cited. Concern for wetlands, exotic organisms, and metals contamination was also expressed.

In addition to the problems, several positive activities that are protecting or improving water quality were mentioned. These include efforts by the US Geological Survey (USGS) and the US Environmental Protection Agency (EPA). Participants suggested activities that would aid in the protection or correction of water quality problems. Many participants feel more emphasis should be given to education. Improved data collection and utilization were encouraged.

Following is a complete listing of the concerns and comments from the workshop.

NONPOINT SOURCE CONCERNS

- Sediment control into catch basins
- Sedimentation - various sources
- Sediment control and recreational uses in subdivision ponds
- Stormwater/sediment from dirt roads
- Increased urban development and associated stormwater runoff
- Urban land use and runoff, e.g., golf courses
- Nutrient loading from urban areas (lawns)
- Forestry impacts
- Dealing with forestry sediment and erosion problems (exempt from regs)

POINT SOURCE (NPDES) CONCERNS

- Industrial concerns - coordination between states
- Georgia's industries impact decisions made in SC
- Urban growth outdistancing the wastewater treatment facilities
- WWTPs - ability of municipalities to handle growth
- Large developments and infrastructure support
- Consistency of regulations between states' permitting
- Wasteload allocation between states
- Lack of regulation of hog and turkey farms
- Future unnecessary regulation of agriculture

HYDROLOGIC CONCERNS

- River water level fluctuation
- Dam management, water quality below dam (temp. & DO)
- Saltwater intrusion due to use of groundwater and lack of interstate focus

Potential for water use conflicts with new groundwater capacity use regs
Effects of new construction/development on 100-year flood level

OTHER CONCERNS

Definition of wetlands and related land use
Impacts on wetlands
Interagency and interstate collaboration, incl. USACE
USACE involvement in strategy development
More realistic water quality standards for protection of legitimate uses
Mercury and other heavy metals in sediment and fish
Springs with naturally low pH
Aquifers
Changes in WQ related to development of trout fish hatchery
No zoning for boating use conflicts, e.g., no motors

Specific Water Quality Concerns

Reversing turbines at the dams and WQ effects (DO, pH, etc.)
Corps leases and other management changes
Exotic organisms invading Savannah River
Low DO from Thurmond dam
Need more enforcement of stormwater regulations in Greenwood area
Stevens Creek sediment and organic loading
Turbidity and organics are increasing in Savannah River (drinking water)
Effects on WQ and water level of diversion through the Augusta Canal
Land use changes in Augusta and other areas
Development across river from Augusta (e.g., golf course, NPS, aesthetics, habitat)
Augusta municipal wastewater plant and its effect on Sav. R. WQ

IMPROVEMENT EFFORTS UNDERWAY

USGS NAWQA includes Salkehatchie
EPA's Savannah River Basin watershed project
SREL, US Forest Service, Clemson studying streams in SRS
Watershed approach to permitting and WQ assessment

IMPROVEMENT EFFORTS NEEDED

Coordinated public education efforts (workshops, brochures)
Educating children about the environment
BMP education for general public and farmers
More funding/creative partnerships in funding
Encourage Conservation Reserve Program expansion
Inclusion of data from outside sources
Increase biological monitoring
Increase use of Rapid Bioassessment Protocol & Index of Biological Integrity

Preventive/proactive approach to stormwater inspections
More interagency coordination on the local level
Full interstate cooperation
Open communication between government and the regulated community
Community involvement (How does it affect me?)
Revise forestry BMPs to prohibit harvesting in the riparian zone
Reduction in solids/turbidity
Protect Upper Three Runs
Include educational facilities and environmental groups in these workshops
Keep up with major local issues related to the Savannah River

The LOWER SAVANNAH & SALKEHATCHIE Watersheds Workshop was held in Beaufort on March 25, 1997. The information exchanged will be very useful as we begin the next cycle of the Watershed Water Quality Management Strategy.

Workshop participants identified many water quality issues. Concern for coastal and tidal waters was especially apparent. Agriculture, increased boat use, stormwater, and septic tanks were some of the potential threats to these resources identified by attendees.

Pollutants of concern from bacteria to tritium were identified. Development issues and shellfish concerns were also discussed. Concerns for drinking water supply protection, golf course runoff control, and interstate cooperation were also expressed.

In addition to the problems, several positive activities that are protecting or improving water quality were mentioned. These include efforts by the Clean Water Task Force and Beaufort County. Participants suggested activities that would aid in the protection or correction of water quality problems. Many participants feel septic tank regulations and alternatives need immediate attention. Improved education for all basin stakeholders was encouraged.

A complete listing of the concerns and comments from the workshop follows.

NONPOINT SOURCE CONCERNS

Agricultural runoff
Agriculture impact on watershed
Possible influx of mega-farms (as NC)
Agriculture and silviculture NPS concerns
Prevent degradation from urban runoff, agriculture, forestry
Development
People don't understand NPS problems related to development
New residential development: stormwater, litter, density issues
Development impacts on water quality
Golf course runoff
Nitrogen and pesticide runoff from golf courses
Golf courses
Failing septic systems

Septic tanks
Septic tanks, coliforms - high water table, soil types
Pesticide application
Nutrient and pesticide loading
Illegal dumping
Reducing NPS fecal coliform pollution

OTHER CONCERNS

Proliferation of private docks
Increased boat usage
Recreational and commercial boats -- volume, types, marinas
Bacteria (shellfish harvesting)
Shellfish closures
Elevated fecal coliform levels
Coordinating with GA better
Consistency between GA and SC, esp. for drinking water
Coordination with Federal agencies
Groundwater usage
Aquifer recharge, discharge
Upstream water quality affecting downstream WQ
Difference between fresh- and saltwater streams
Pfiesteria
Savannah River Site
Not enough monitoring
Destruction of nursery habitat and migratory pathways
Mercury levels in fish

Specific Water Quality Concerns

Broad Creek, May River, Okatie River - lack of sufficient flushing out of pollutants
Battery Creek - Beaufort
Broad Creek - Hilton Head
Broad Creek and Okatie, Battery
Okatie, Broad Creek, Chechessee - ID bacteria sources for closed shellfish waters
Okatie River
Maintenance of the Savannah River as potable water supply
SRS impact on drinking water quality
Maintain Savannah River flows - saltwater/drinking water concerns
Tritium levels in Savannah River
Decrease in DO, and increases in turbidity, organic and inorganic pollution in Sav. R.
Sun City, Indigo Plantation, Indian Hill, Union Camp-Palmetto Bluff
Union Camp - lack of enforcement (stormwater management plan)
Salkehatchie fecal coliforms

Salkehatchie/Coosawhatchie/Jasper County point sources impacts downstream
New development on Huspa Creek
Urbanization on Beaufort River
Town of Yemassee WWTP on Combahee
Harbor Island tidal creeks - wildlife waste close to shellfish waters
Septic tanks and runoff threaten water quality in all urbanizing creeks in Beaufort County

IMPROVEMENT EFFORTS UNDERWAY

Clean Water Task Force (2)
Lower Beaufort County land use plan (zero degradation)
BMPs for forestry and agriculture

IMPROVEMENT EFFORTS NEEDED

DHEC needs to support Beaufort County on tighter local septic tank rules
Stricter septic tank regulations and better enforcement
Demonstration of alternatives to septic tanks
Increased public information about septic system alternatives
Use more proactive, education, technical assistance approach
Do more public school education
Educate developers on environmental approaches to land use
New residential development - need educational programs
Agencies need to coordinate more, see what's out there, work together
Coordination among DHEC, EPA, and GA in implementing basin management
DHEC working with Clean Water Task Force to implement recommendations
Comprehensive planning
Issues surrounding TMDLs should be carefully debated and studied
Develop and use TMDLs
Need to monitor for Cryptosporidium
More monitoring of DO in vertical profiles and over extended time periods
Runoff sampling at subdivisions
BMPs should be required of everyone
BMPs - more efforts (row cropping, sedimentation)
Support for OCRM habitat protection in coastal zone
OCRM independent agency status
Need more small scale site specific studies
COG needs support from DHEC (\$) on 208 planning
Integrate source water protection program with watershed water quality mgmt.
Need program to protect New River - promote responsible development
Establishment of water quality baselines for developers
Flexible zoning to accommodate water quality and environment
DHEC enforce its own water quality standards

Appendix B
Water Quality Data

Monitoring Station Descriptions
Dissolved Oxygen, pH, and Bacteria Data
Phosphorus, Nitrogen, and Turbidity Data
Metals Data

ABBREVIATIONS

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
- SS = Special station added for the Savannah-Salkehatchie basin study
- I* = Currently inactive station which had some data within the period reviewed
- 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)	NH3	Ammonia (mg/l)
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	CD	Cadmium (ug/l)
pH	pH (SU)	CR	Chromium (ug/l)
TP	Total Phosphorus (mg/l)	CU	Copper (ug/l)
TN	Total Nitrogen (mg/l)	PB	Lead (ug/l)
TURB	Turbidity (NTU)	HG	Mercury (ug/l)
TSS	Total Suspended Solids (mg/l)	NI	Nickel (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	ZN	Zinc (ug/l)

ABBREVIATIONS

Statistical Abbreviations:

N	For standards compliance, number of surface samples collected between January, 1992 and December, 1996 For trends, number of surface samples collected between January, 1982 and December, 1996
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, 1992 and December, 1996. 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

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

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03060101020					
SV-335	P	LAKE JOCASSEE	TPGT	LK JOCASSEE AT TOXAWAY, HORSE PASTURE, & LAUREL FORK	OCONEE
SV-337	P	LAKE JOCASSEE	TPGT	LK JOCASSEE OUTSIDE COFFER DAM AT BAD CK PROJECT	OCONEE
SV-336	P	LAKE JOCASSEE	TPGT	LK JOCASSEE AT CONFLUENCE OF THOMPSON AND WHITEWATER RVRS	OCONEE
SV-334	P	LAKE JOCASSEE	TPGT	LK JOCASSEE, MAIN BODY	OCONEE
03060101030					
SV-741	BIO	EASTATOE CK	ORW	EASTATOE CREEK AT S-39-237	PICKENS
SV-676	BIO	ROCKY BOTTOM CK	ORW	ROCKY BOTTOM CK AT US 178	PICKENS
SV-230	P	BIG EASTATOE CK	TPGT	BIG EASTATOE CREEK AT S-39-143	PICKENS
SV-341	SS/BIO	LITTLE EASTATOE CK	TPGT	LITTLE EASTATOE CREEK AT S-39-49	PICKENS
SV-338	P	LAKE KEOWEE	FW	LK KEOWEE ABOVE SC ROUTE 130 AND DAM	OCONEE
03060101040					
SV-249	P	SENECA RVR	FW	SENECA RVR AT SC 183 3.8 MI WSW SIX MILE	OCONEE
SV-205	SS/BIO	SIX MILE CK	FW	SIX MILE CREEK AT S-39-160	PICKENS
SV-360	SS	LAKE ISSAQUEENA	FW	LAKE ISSAQUEENA, FOREBAY EQUIDISTANT FROM DAM AND SHORELINE	PICKENS
SV-106	S	LAKE HARTWELL	FW	MARTIN CK ARM OF LAKE HARTWELL AT S-37-85 N OF CLEMSON	OCONEE
SV-236	P	LAKE HARTWELL	FW	LAKE HARTWELL AT S-37-184 6.5 MI SSE OF SENECA	OCONEE
SV-288	P	LAKE HARTWELL	FW	L HARTWELL, SENECA R ARM AT USACE BUOY BTWN S-28A & S-29	ANDERSON
SV-181	S	SIX & TWENTY CK	FW	6 & 20 CK AT S-04-29 8.2 MI SE OF PENDLETON	ANDERSON
SV-339	P	LAKE HARTWELL	FW	LK HARTWELL, SENECA RVR ARM AT USACE BUOY BTWN S-14 AND S-15	ANDERSON
03060101050					
SV-743	BIO	FLAT SHOALS RIVER	FW	FLAT SHOALS RIVER AT S-37-129	OCONEE
SV-742	BIO	OCONEE CK	FW	OCONEE CREEK AT S-37-129	OCONEE
SV-203	S	LITTLE RVR	FW	LITTLE RVR AT S-37-24 7.1 MI NE OF WALHALLA	OCONEE
SV-312	P	LAKE KEOWEE	FW	LK KEOWEE AT SC 188 - CROOKED CK ARM 4.5 MI N SENECA	OCONEE
SV-343	SS/BIO	LITTLE CANE CK	FW	LITTLE CANE CREEK AT S-37-133	OCONEE
SV-342	SS/BIO	CANE CK	FW	CANE CREEK AT S-37-133	OCONEE
SV-311	P	LAKE KEOWEE	FW	LK KEOWEE AT SC 188 - CANE CK ARM 3.5 MI NW SENECA	OCONEE
03060101060					
SV-206	S/BIO	N FORK TWELVE MILE CK	FW	N FORK 12 MI CK AT US 178 2.9 MI N OF PICKENS	PICKENS
SV-282	S	TWELVE MILE CK	FW	12 MI CK AT S-39-273 2.8 MI SSW OF PICKENS	PICKENS
SV-740	BIO	RICES CK	FW	RICES CREEK AT S-39-158	PICKENS
SV-739	BIO	TWELVE MILE CK	FW	TWELVE MILE CREEK AT S-39-137	PICKENS

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03060101070					
SV-239	S	GOLDEN CK	FW	GOLDEN CK AT S-39-222 1.2 MI NW OF LIBERTY	PICKENS
SV-738	BIO	GOLDEN CK	FW	GOLDEN CREEK AT GOLDEN CK RD.	PICKENS
SV-015	S	TWELVE MILE CK	FW	TWELVE MI CK AT S-39-51 N OF NORRIS	PICKENS
SV-137	S	TWELVE MILE CK	FW	12 MI CK AT S-39-337	PICKENS
SV-136	S	UNNAMED	FW	FIRST CK AFTER LEAVING CENTRAL AT CLVT ON MAW BRDGD RD	PICKENS
SV-107	S	TWELVE MILE CK	FW	TWELVE MI CK AT SC 133	PICKENS
03060101080					
SV-333	P	CONERROSS CK	FW	CONERROSS CK AT S-37-13	OCONEE
SV-004	P	CONERROSS CK	FW	CONERROSS CK AT SC 59	OCONEE
SV-322	I*	CONERROSS CK	FW	CONERROSS CK AT S-37-54 (LAKE HARTWELL)	OCONEE
03060101090					
SV-017	S	EIGHTEEN MILE CK	FW	18 MI CK AT UNNUMBERED CO RD 2.25 MI SSW OF EASLEY	PICKENS
SV-241	S	WOODSIDE BRANCH	FW	WOODSIDE BR AT US 123 1.5 MI E OF LIBERTY	PICKENS
SV-245	S	EIGHTEEN MILE CK	FW	18 MI CK AT S-39-27 3.3 MI S OF LIBERTY	PICKENS
SV-135	P/BIO	EIGHTEEN MILE CK	FW	18 MI CK AT S-39-93 SW OF CENTRAL	ANDERSON
SV-268	P	EIGHTEEN MILE CK	FW	EIGHTEEN MILE CK AT 2-04-1098	ANDERSON
03060101100					
SV-735	BIO	THREE AND TWENTY CK	FW	THREE AND TWENTY CREEK AT S-04-29	ANDERSON
SV-111	S	THREE & TWENTY CK	FW	THREE & TWENTY CREEK AT S-04-280	ANDERSON
03060102030					
SV-308	S/BIO	E FORK CHATTOOGA RVR	ORW	E FK OF CHATTOOGA RVR AT SC 107 2 MI S OF ST LINE	OCONEE
SV-227	P/BIO	CHATTOOGA RVR	ORW	CHATTOOGA RVR AT SC 28 3.5 MI NW MT REST	OCONEE
03060102060					
SV-199	P	CHATTOOGA RVR	ORW	CHATTOOGA RVR AT US ROUTE 76	OCONEE
SV-359	SS	TUGALOO LAKE	FW	TUGALOO LAKE, FOREBAY EQUIDISTANT FROM SPILLWAY & SHORELINE	OCONEE
SV-358	SS	LAKE YONAH	FW	LAKE YONAH, 50% BTWN CENTER OF SPILLWAY AND OPPOSITE SHORE	OCONEE
SV-673	BIO	BRASSTOWN CK	FW	BRASSTOWN CK AT S-37-48	OCONEE
SV-200	S	LAKE HARTWELL	FW	TUGALOO RVR ARM OF LAKE HARTWELL AT US 123	OCONEE
03060102120					
SV-675	BIO	CHAUGA RVR	ORW	CHAUGA RVR AT S-37-193	OCONEE
SV-344	SS	CHAUGA RVR	FW	CHAUGA RIVER AT S-37-34	OCONEE
SV-225	BIO	TOXAWAY CK	FW	TOXAWAY CK AT S-37-34	OCONEE
03060102130					
SV-301	S	NORRIS CK	FW	NORRIS CK AT S-37-435 1 MI S OF WESTMINSTER	OCONEE
SV-108	SS/BIO	CHOESTOE CK	FW	CHOESTOE CREEK AT S-37-49	OCONEE

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03060102150					
SV-345	SS/BIO	BEAVERDAM CK	FW	BEAVERDAM CREEK AT S-37-66	OCONEE
03060103020					
SV-340	P	LAKE HARTWELL	FW	LK HARTWELL, MAIN BODY AT USACE WQ BUOY BTWN MRKRS 11 & 12	ANDERSON
03060103030					
SV-316	S	BIG GENEROSTEE CK	FW	BIG GENEROSTEE CK AT CO RD 104	ANDERSON
SV-101	BIO	BIG GENEROSTEE CK	FW	BIG GENEROSTEE CK AT SC 187	ANDERSON
SV-100	P	LAKE RUSSELL	FW	LAKE RUSSELL AT SC 181 6.5 MI SW STARR	ANDERSON
SV-109	BIO	LITTLE GENEROSITEE CK	FW	LITTLE GENEROSITEE CREEK AT SC 184	ANDERSON
SV-357	SS	LAKE RUSSELL	FW	L RUSSELL, ROCKY RVR ARM BETWEEN MARKERS 48 & 49, DS FELKEL	ABBEVILLE
SV-098	P	LAKE RUSSELL	FW	LAKE RUSSELL AT SC 72 3.1 MI SW CALHOUN FALLS	ABBEVILLE
03060103070					
SV-031	P	ROCKY RVR	FW	ROCKY RVR AT S-04-263 2.7 MI SE ANDERSON AT STP	ANDERSON
SV-041	S	ROCKY RVR	FW	ROCKY RVR AT S-04-152 BL ROCKY RVR STP	ANDERSON
SV-139	S	CUPBOARD CK	FW	CUPBOARD CK AT S-04-733 AB BREAZEALE ST PLANT & BL BLAIR HILL	ANDERSON
SV-140	S	CUPBOARD CK	FW	CUPBOARD CK AT S-04-209 BL EFF FROM BELTON 2 PLANT	ANDERSON
SV-141	S/BIO	BROADWAY CK	FW	BROADWAY CK AT US 76 BTWN ANDERSON & BELTON	ANDERSON
SV-319	SS	BROADWAY LAKE	FW	BROADWAY LAKE, BROADWAY CK ARM UPSTREAM OF PUBLIC ACCESS	ANDERSON
SV-258	SS	BROADWAY LAKE	FW	BROADWAY LAKE, NEALS CK ARM 50% BTWN BANKS AT GOLF COURSE	ANDERSON
SV-321	SS	BROADWAY LAKE	FW	BROADWAY LAKE FOREBAY, 50% BTWN SPILLWAY & OPPOSITE LAND	ANDERSON
SV-346	SS	ROCKY RVR	FW	ROCKY RIVER AT S-04-244	ANDERSON
SV-037	S	BETSY CK	FW	BETSY CK AT S-04-259 BL FIBERGLAS OUTFALL	ANDERSON
SV-650	BIO	ROCKY RVR	FW	ROCKY RVR AT SC 413	ANDERSON
SV-043	S	CHEROKEE CK	FW	CHEROKEE CK AT S-04-318 4 MI S OF BELTON	ANDERSON
SV-044	BIO	HEN COOP CK	FW	HEN COOP CREEK AT S-04-244	ANDERSON
SV-331	P	LAKE SECESSION	FW	LK SECESSION, 1 1/4 MI BELOW SC ROUTE 28	ANDERSON
SV-332	P	LAKE SECESSION	FW	LK SECESSION APPROX 400 YDS ABOVE DAM	ABBEVILLE
03060103080					
SV-185	BIO	WILSON CK	FW	WILSON CREEK AT SC 413	ANDERSON
SV-347	SS	WILSON CK	FW	WILSON CREEK AT S-04-294	ANDERSON
03060103100					
CL-040	SS	CLARKS HILL RESERVOIR	FW	CLARKS HILL RESERVOIR HEADWATERS (SAVANNAH RVR)	MCCORMICK
SV-291	P	CLARKS HILL RESERVOIR	FW	CLARKS HILL RESERVOIR AT US 378 7 MI SW MCCORMICK	MCCORMICK
CL-039	SS	CLARKS HILL RESERVOIR	FW	LITTLE RIVER ARM OF CLARKS HILL RESERVOIR	MCCORMICK
CL-041	SS	CLARKS HILL RESERVOIR	FW	CLARKS HILL RESERVOIR IN FOREBAY NEAR DAM	MCCORMICK
SV-294	P	CLARKS HILL RESERVOIR	FW	CLARKS HILL RESERVOIR AT DAM AT US 221 SW CLARKS HILL	MCCORMICK

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
		03060103140			
SV-164	SS/BIO	LITTLE RVR	FW	LITTLE RIVER AT S-01-24	ABBEVILLE
SV-733	BIO	HOGSKIN CK	FW	HOGSKIN CREEK AT SC 184	ABBEVILLE
SV-348	SS/BIO	LITTLE RVR	FW	LITTLE RIVER AT S-01-32	ABBEVILLE
SV-644	BIO	GILL CK	FW	GILL CK AT S-01-32	ABBEVILLE
SV-052	P	SAWNEY CK	FW	SAWNEY CK AT CO RD 1.5 MI SE OF CALHOUN FALLS	ABBEVILLE
SV-171	BIO	CALHOUN CK	FW	CALHOUN CK AT S-01-40	ABBEVILLE
SV-192	SS	LITTLE RVR	FW	LITTLE RIVER AT S-33-19	MCCORMICK
		03060103150			
SV-349	SS/BIO	LONG CANE CK	FW	LONG CANE CREEK AT S-01-159	ABBEVILLE
SV-734	BIO	JOHNS CK	FW	JOHNS CREEK AT S-01-159	ABBEVILLE
SV-053B	S	BLUE HILL CK	FW	BLUE HILL CK ON S MAIN ST ABBEVILLE	ABBEVILLE
SV-054	BIO	DOUBLE BR	FW	DOUBLE BR AT S-01-33	ABBEVILLE
SV-732	BIO	BIG CURLY TAIL CK	FW	BIG CURLY TAIL CREEK AT US FOREST RD 509	ABBEVILLE
SV-318	P/BIO	LONG CANE CK	FW	LONG CANE CK AT S-33-117 7.0 MI NW MCCORMICK	MCCORMICK
		03060107010			
SV-151	P/BIO	HARD LABOR CK	FW	HARD LABOR CREEK AT S-24-164 BRIDGE	GREENWOOD
SV-731	BIO	HARD LABOR CK	FW	HARD LABOR CREEK AT S-33-23	MCCORMICK
SV-351	SS/BIO	CUFFYTOWN CK	FW	CUFFYTOWN CREEK AT S-33-138	MCCORMICK
SV-730	BIO	ROCKY CK	FW	ROCKY CK AT S-33-87	MCCORMICK
SV-330	P	STEVENS CK	FW	STEVENS CREEK AT S-33-21	MCCORMICK
		03060107020			
SV-729	BIO	TURKEY CK	FW	TURKEY CREEK AT S-19-100	EDGEFIELD
SV-728	BIO	LOG CK	FW	LOG CREEK AT S-19-315	EDGEFIELD
SV-727	BIO	ROCKY CK	FW	ROCKY CK AT S-19-61	EDGEFIELD
SV-352	SS	TURKEY CK	FW	TURKEY CREEK AT S-33-227/S-19-68	EDGEFIELD
		03060107030			
SV-068	S	BEAVERDAM CK	FW	BEAVERDAM CK AT S-19-35 3.8 MI NW OF EDGEFIELD	EDGEFIELD
SV-353	SS/BIO	BEAVERDAM CK	FW	BEAVERDAM CREEK AT FOREST SERVICE ROAD 621 OFF S-19-68	EDGEFIELD
		03060107040			
SV-063	BIO	STEVENS CK	FW	STEVENS CK AT SC 23	MCCORMICK
SV-354	SS	STEVENS CK	FW	STEVENS CREEK AT S-33-88/S-19-143	EDGEFIELD
SV-726	BIO	HORN CK	FW	HORN CREEK AT S-19-143	EDGEFIELD
SV-725	BIO	CHEVES CK	FW	CHEVES CREEK AT S-19-34	EDGEFIELD
		03060106030			
SV-251	P	SAVANNAH RVR	FW	SAVANNAH RVR AT US 1 1.5 MI SW N. AUGUSTA	AIKEN

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03060106050					
CL-067	SS	VAUCLUSE POND	FW	VAUCLUSE POND IN FOREBAY NEAR DAM	AIKEN
SV-686	SS	FLAT ROCK POND	FW	FLAT ROCK POND IN FOREBAY NEAR DAM	AIKEN
SV-722	SS	GRANITEVILLE POND #2	FW	GRANITEVILLE POND #2 IN FOREBAY NEAR DAM	AIKEN
SV-329	P	HORSE CK	FW	HORSE CREEK AT ASCAUGA LAKE RD (S-02-33) IN GRANITEVILLE	AIKEN
SV-071	P	HORSE CK	FW	HORSE CK AT S-02-104 0.6 MI SW GRANITEVILLE	AIKEN
SV-069	P/BIO	SAND RVR	FW	SAND RVR AT OLD US 1 1.2 MI SE WARRENVILLE	AIKEN
CL-069	SS	LANGLEY POND	FW	LANGLEY POND IN FOREBAY NEAR DAM	AIKEN
SV-096	P	HORSE CK	FW	HORSE CK BELOW LANGLEY POND AT S-02-254	AIKEN
SV-724	BIO	LITTLE HORSE CK	FW	LITTLE HORSE CK AT S-02-104	AIKEN
SV-073	S	LITTLE HORSE CK	FW	LITTLE HORSE CK AT SC 421 BL EFF OF CLEARWTR FIN	AIKEN
SV-072	S	HORSE CK	FW	HORSE CK AT S-02-145	AIKEN
SV-250	P	HORSE CK	FW	HORSE CK AT SC 125 1.5 MI SW CLEARWATER	AIKEN
03060106060					
SV-252	P	SAVANNAH RVR	FW	SAVANNAH RVR AT SC 28 1.6 MI NNW OF BEECH ISLAND	AIKEN
SV-323	P	SAVANNAH RVR	FW	SAVANNAH RVR AT LOCK AND DAM	AIKEN
SV-350	SS/BIO	HOLLOW CK	FW	HOLLOW CREEK AT S-02-5	AIKEN
03060106100					
SV-680	BIO	UPPER THREE RUNS CK	FW	UPPER THREE RUNS CK AT S-02-113	AIKEN
SV-723	BIO	CEDAR CK	FW	CEDAR CK AT S-02-79	AIKEN
SV-324	P	TIMS BRANCH	FW	TIMS BR AT SRP ROAD C	AIKEN
SV-325	P	UPPER THREE RUNS CK	FW	UPPER THREE RUNS CK AT SRP ROAD A	AIKEN
03060106110					
SV-326	P	FOUR MILE CK	FW	FOUR MILE CK AT SRP ROAD A-7	BARNWELL
SV-327	P	STEEL CK	FW	STEEL CK AT SRP ROAD A	BARNWELL
03060106130					
SV-328	P	LOWER THREE RUNS CK	FW	LOWER THREE RUNS CK AT S-06-20 7.5 MI SW BARNWELL	BARNWELL
SV-175	S	LOWER THREE RUNS CK	FW	LOWER THREE RUNS CK AT SC 125 11 MI NW OF ALLENDALE	ALLENDALE
03060106140					
SV-118	P	SAVANNAH RVR	FW	SAVANNAH RVR AT US 301 12.5 MI SW ALLENDALE	ALLENDALE
SV-745	BIO	BRIER CK	FW	BRIER CK AT S-03-102	ALLENDALE
03060109020					
SV-355	SS	SAVANNAH RVR	FW	SAVANNAH RIVER AT STOKES BLUFF LANDING OFF S-25-461	HAMPTON
03060109050					
SV-744	BIO	CYPRESS BRANCH	FW	CYPRESS BRANCH AT US 321	JASPER
SV-356	SS	CYPRESS CK	FW	CYPRESS CREEK AT S-27-119	JASPER

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03060109060					
SV-191	P	SAVANNAH RVR	SB*	SAVANNAH RVR AT US 17 8.9 MI SSW OF HARDEEVILLE	JASPER
03050207010					
CSTL-578	BIO	BUCK CK	FW	BUCK CREEK AT S-06-167	BARNWELL
CSTL-028	P	SALKEHATCHIE RVR	FW	SALKEHATCHIE RVR AT SC 64 2 MI W OF BARNWELL	BARNWELL
03050207020					
CSTL-056	BIO	TURKEY CK	FW	TURKEY CREEK AT S-06-169	BARNWELL
CL-064	SS	LAKE EDGAR BROWN	FW	LAKE EDGAR BROWN IN FOREBAY NEAR DAM	BARNWELL
CSTL-001B	S	TURKEY CK	FW	TURKEY CK 1 MI BL MILLIKEN BARNWELL OUTFALL AT CLINTON ST.	BARNWELL
03050207030					
CSTL-003	P	SALKEHATCHIE RVR	FW	SALKEHATCHIE RVR AT SC 278 2.5 MI S BARNWELL	BARNWELL
CSTL-577	BIO	TOBY CK	FW	TOBY CREEK AT S-06-29	BARNWELL
CSTL-579	BIO	BIRDS BRANCH	FW	BIRDS BRANCH AT S-05-567	BAMBERG
CSTL-048	SS	SALKEHATCHIE RVR	FW	SALKEHATCHIE RIVER AT U.S. 301 & 321	ALLENDALE
03050207040					
CSTL-053	BIO	SAVANNAH CK	FW	SAVANNAH CREEK AT S-05-87	BAMBERG
CSTL-006	P	SALKEHATCHIE RVR	FW	SALKEHATCHIE RVR AT 601 9 MI NE HAMPTON	COLLETON
CSTL-104	SS	SALKEHATCHIE RVR	FW	SALKEHATCHIE RIVER AT SC 63	COLLETON
03050207050					
CSTL-051	BIO	JACKSON CK	FW	JACKSON CK AT S-03-18	ALLENDALE
CSTL-076	SS	WHIPPY SWAMP	FW	WHIPPY SWAMP AT S-25-13	HAMPTON
03050207060					
CSTL-566	BIO	LITTLE SALKEHATCHIE RIVE	FW	LITTLE SALKEHATCHIE RIVER AT SC 70	BAMBERG
CSTL-115	SS	LITTLE SALKEHATCHIE RVR	FW	LITTLE SALKEHATCHIE RIVER AT U.S. 601	BAMBERG
03050207070					
CSTL-576	BIO	LEMON CK	FW*	LEMON CREEK AT S-05-74	BAMBERG
CSTL-116	SS	LEMON CK	FW*	LEMON CREEK AT S-05-541	BAMBERG
03050207080					
CSTL-117	SS	LITTLE SALKEHATCHIE RVR	FW	LITTLE SALKEHATCHIE RIVER AT SC 64	COLLETON
03050207090					
CSTL-119	SS	BUCKHEAD CK	FW	BUCKHEAD CREEK AT SC 212	COLLETON
03050207100					
CSTL-118	SS	WILLOW SWAMP	FW	WILLOW SWAMP AT S-15-27	COLLETON
03050207110					
CSTL-120	SS	LITTLE SALKEHATCHIE RVR	FW	LITTLE SALKEHATCHIE RIVER AT SC 63	COLLETON

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03050208010					
CSTL-585	BIO	SANDY RUN CK	FW	SANDY RUN CREEK AT US 21	COLLETON
CSTL-583	BIO	BLACK CK	FW	BLACK CREEK AT US 21	COLLETON
CSTL-111	S	COMBAHEE RVR	FW	COMBAHEE RVR BL YEMASSEE SEWAGE OUTFALL	COLLETON
CSTL-584	BIO	REMICK SWAMP CK	FW	REMICK SWAMP CK AT S-15-41	COLLETON
CSTL-098	P	COMBAHEE RVR	SFH	COMBAHEE RVR AT US 17 10 MI ESE YEMASSEE	BEAUFORT
CSTL-098*	P	COMBAHEE RVR	FW	COMBAHEE RVR AT US 17 10 MI ESE YEMASSEE	BEAUFORT
03050208020					
CSTL-044	S/BIO	IRELAND CK	FW	IRELAND CK AT S-15-116 5 1/2 MI N OF WALTERBORO	COLLETON
CSTL-068	P	ASHEPOO RVR	SFH	ASHEPOO RVR AT SC 303 10 MI SSW OF WALTERBORO	COLLETON
CSTL-068*	P	ASHEPOO RVR	FW	ASHEPOO RVR AT SC 303 10 MI SSW OF WALTERBORO	COLLETON
03050208030					
CSTL-581	BIO	FULLER SWAMP CK	FW	FULLER SWAMP CK AT US 17A	COLLETON
CSTL-580	BIO	CHESSEY CK	FW	CHESSEY CREEK AT S-15-45	COLLETON
CSTL-071	SS	HORSESHOE CK	FW	HORSESHOE CREEK AT SC 64	COLLETON
03050208040					
CSTL-069	S	ASHEPOO RVR	SFH	ASHEPOO RVR AT US 17 3.4 MI ESE OF GREEN POND	COLLETON
MD-251	SS	ASHEPOO RVR	SFH	ASHEPOO RIVER AT S-15-26	COLLETON
03050208050					
CSTL-110	P	COOSAWHATCHIE RVR	FW	COOSAWHATCHIE RVR AT S-03-47	ALLENDALE
CSTL-540	BIO	COOSAWATCHIE RIVER	FW	COOSAWATCHIE RIVER AT S-03-350	ALLENDALE
CSTL-121	SS	COOSAWHATCHIE RVR	FW	COOSAWHATCHIE RIVER AT SC 363	HAMPTON
03050208060					
CSTL-075	S	LAKE WARREN	FW	LAKE WARREN, BLACK CK ARM, AT S-25-41 5 MI SW OF HAMPTON	HAMPTON
CL-062	SS	LAKE WARREN	FW	LAKE GEORGE WARREN IN FOREBAY NEAR DAM	HAMPTON
03050208070					
CSTL-108	S	SANDERS BRANCH	FW*	SANDERS BRANCH AT SC RD 363	HAMPTON
CSTL-010	S	SANDERS BRANCH	FW*	SANDERS BR AT SC 278	HAMPTON
CSTL-011	S/BIO	SANDERS BRANCH	FW*	SANDERS BR AT S-25-50	HAMPTON
CSTL-109	P	COOSAWHATCHIE RVR	FW	COOSAWHATCHIE RVR AT S-25-27 2.5 MI SW CUMMINGS	HAMPTON
03050208080					
CSTL-582	BIO	CYPRESS CK AT SC 3	FW	CYPRESS CREEK AT SC 3	JASPER
CSTL-122	SS	CYPRESS CK	FW	CYPRESS CREEK AT S-27-108	JASPER

MONITORING STATION DESCRIPTIONS, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	STATION DESCRIPTION	COUNTY
03050208090					
CSTL-107	P	COOSAWHATCHIE RVR	SFH	COOSAWHATCHIE RVR AT US 17 AT COOSAWHATCHIE	JASPER
CSTL-107*	P	COOSAWHATCHIE RVR	FW	COOSAWHATCHIE RVR AT US 17 AT COOSAWHATCHIE	JASPER
MD-128	S	BEEES CK	SB	BEEES CK AT SC 462 5.9 MI NE OF RIDGELAND	JASPER
MD-007	P	POCOTALIGO RVR	SFH	POCOTALIGO RVR AT US 17 AT POCOTALIGO	BEAUFORT
MD-116	P	BROAD RVR	SFH	BROAD RVR AT SC 170 7.5 MI SW OF BEAUFORT	BEAUFORT
MD-172	S	BROAD RVR	SFH	BROAD RVR AT MOUTH OF ARCHER CK ON SW SIDE OF USMC	BEAUFORT
MD-117	S	CHECHESSEE RVR	SFH	CHECHESSEE RVR AT SC 170 10.5 MI SW OF BEAUFORT	BEAUFORT
MD-176	SS	COLLETON RVR	ORW	COLLETON RVR AT COLLETON NECK-AT JCT WITH CHECHESSEE RV	BEAUFORT
MD-245	P	COLLETON RVR	ORW	COLLETON RVR NEAR MOUTH (SHELLFISH STATION 18-5)	BEAUFORT
MD-006	S	PORT ROYAL SOUND	SFH	PORT ROYAL BTWN BUOY 25 & 24 W OF BAY PT ISLAND	BEAUFORT
03050208100					
MD-194	S	WHALE BRANCH	SFH	WHALE BR AT JCT WITH CAMPBELL'S CK-3/4 MI W OF MD-010	BEAUFORT
MD-168	P	COOSAW RVR	SFH	COOSAW RVR AT CONFL OF COMBAHEE RVR, NEAR BUOY 186	BEAUFORT
MD-001	S	BEAUFORT RVR	SA	BEAUFORT RVR AB BEAUFORT AT CHANNEL MARKER 231	BEAUFORT
MD-002	S	BEAUFORT RVR	SA	BEAUFORT RVR AT DRAWBRDG ON US 21	BEAUFORT
MD-003	P	BEAUFORT RVR	SA	BEAUFORT RVR BL BEAUFORT AT CHANNEL MARKER 244	BEAUFORT
MD-004	S	BEAUFORT RVR	SFH	BEAUFORT RVR AT JCT WITH BATTERY CK NR MARKER 42	BEAUFORT
MD-005	P	BEAUFORT RVR	SFH	BEAUFORT RVR BL OUTFALL OF PARRIS ISL MB AT BUOY 29	BEAUFORT
03050208110					
MD-013	S	SKULL CK	SFH	MOUTH OF SKULL CK BTWN CHANNEL MARKERS 3 & 4 NEAR REDBO	BEAUFORT
MD-016	SS	MAY RVR	ORW/SFH	MOUTH OF MAY RVR 1.0 MI W OF CHANNEL MARKER 29	BEAUFORT
MD-174	P	BROAD CK	SFH	BROAD CK OPPOSITE END OF S-07-80	BEAUFORT
MD-175	P	CALIBOGUE SOUND	SFH	CALIBOGUE SD AT MOUTH OF COOPER RVR NR RED BUOY 32	BEAUFORT
03050208120					
MD-129	SS	GREAT SWAMP	FW	GREAT SWAMP AT U.S. 17	JASPER
03050208130					
MD-118	P	NEW RVR	SA	NEW RVR AT SC 170 9 MI W OF BLUFFTON	JASPER

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO				TRENDS				pH				TRENDS				BACTERIA				MEAN BACT TRENDS				
		N	EXC.	%	MEAN	DO	MAG	BOD	N	MAG	N	EXC.	%	MEAN	PH	N	EXC.	%	MEAN	N	EXC.	%	MEAN	N	MAG	
3060101020																										
SV-335	LAKE JOCASSEE	61	0	0		I	75	0.06	*	69				58	0	0			*	73						
SV-337	LAKE JOCASSEE	62	0	0		*	76		*	69				58	0	0			I	74	0.03					
SV-336	LAKE JOCASSEE	60	0	0		*	73		*	68				56	0	0			*	71						
SV-334	LAKE JOCASSEE	62	0	0		I	75	0.05	*	69				58	0	0			*	72						
3060101030																										
SV-230	BIG EASTATOE CK	56	0	0		I	78	0.08	*	78				56	0	0			*	78						
SV-341	LITTLE EASTATOE CK	12	0	0										12	0	0										
SV-338	LAKE KEOWEE	62	0	0		I	75	0.17	D	70	-0.05			58	0	0			I	75	0.05					
3060101040																										
SV-249	SENECA RVR	58	1	2	2.7	D	147	-0.03	D	170	-0.06			56	1	2	5.95	*	164							
SV-205	SIX MILE CK	12	0	0										12	0	0										
SV-360	LAKE ISSAQUEENA	6	0	0										6	0	0										
SV-106	LAKE HARTWELL	24	0	0		D	67	-0.05	D	68	-0.08			24	0	0			D	69	-0.06					
SV-236	LAKE HARTWELL	31	0	0		D	73	-0.08	D	72	-0.10			31	0	0			D	75	-0.09					
SV-288	LAKE HARTWELL	57	0	0		D	152	-0.03	D	170	-0.07			56	1	2	9.75	*	174							
SV-181	SIX & TWENTY CK	24	0	0		*	69		*	71				24	0	0			*	71						
SV-339	LAKE HARTWELL	57	0	0		*	68		D	69	-0.06			55	0	0			*	67						
3060101050																										
SV-203	LITTLE RVR	29	0	0		*	72		D	74	-0.06			29	0	0			*	73						
SV-312	LAKE KEOWEE	62	0	0		*	146		D	168	-0.07			58	0	0			*	164						
SV-343	LITTLE CANE CK	12	0	0										12	0	0										
SV-342	CANE CK	12	0	0										12	0	0										
SV-311	LAKE KEOWEE	65	0	0		D	158	-0.03	D	168	-0.06			60	0	0			*	177						
3060101060																										
SV-206	N FORK 12 MILE CK	23	0	0		*	68		D	68	-0.06			23	0	0			D	69	-0.02					
SV-282	TWELVE MILE CK	1	0	0		*	58		D	49	-0.15			1	0	0			*	60						
3060101070																										
SV-239	GOLDEN CK	23	0	0		*	67		*	67				23	0	0			D	69	-0.02					
SV-015	TWELVE MILE CK	13	0	0		*	58		D	60	-0.07			13	0	0			*	57						
SV-137	TWELVE MILE CK	13	0	0		*	58		D	60	-0.06			13	0	0			*	58						
SV-136	UNNAMED	22	0	0		D	67	-0.03	D	68	-0.05			22	0	0			*	67						
SV-107	TWELVE MILE CK	13	0	0		D	65	-0.04	D	58	-0.10			12	0	0			*	63						

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS				TRENDS		pH		pH MEAN		TRENDS		BACTERIA		MEAN		BACT TRENDS				
		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	PH	N	EXC.	%	EXC.	N	EXC.	%	EXC.	N	MAG	N	MAG		
3060101080																										
SV-333	CONEROSS CK	58	0	0		I	69	0.05	*	69			58	0	0		D	70	-0.03	57	11	19	866	*	69	
SV-004	CONEROSS CK	53	0	0		*	98		D	96	-0.09		53	1	2	8.7	*	101		53	9	17	858	I	96	14.55
SV-322	CONEROSS CK	45	0	0		*	146		D	160	-0.05		45	2	4	8.65	*	167		45	5	11	894	I	162	2.25
3060101090																										
SV-017	EIGHTEEN MILE CK	24	0	0		I	73	0.10	D	70	-0.40		24	0	0		*	75		24	15	63	876	D	69	-270.0
SV-241	WOODSIDE BRANCH	24	0	0		I	69	0.15	D	70	-0.43		24	0	0		*	71		24	10	42	3339	D	69	-427.14
SV-245	EIGHTEEN MILE CK	24	0	0		*	73		D	71	-0.09		24	0	0		*	73		24	11	46	1702	D	69	-25.98
SV-135	EIGHTEEN MILE CK	53	0	0		*	101		D	99	-0.04		53	1	2	10.8	D	101	-0.02	53	28	53	1852	I	98	20.0
SV-288	EIGHTEEN MILE CK	58	0	0		I	70	0.26	*	70			57	0	0		*	69		58	17	29	2099	*	70	
3060101100																										
SV-111	THREE & TWENTY CK	30	0	0		I	68	0.05	D	68	-0.08		30	0	0		D	68	-0.03	30	16	53	1105	I	67	33.88
3060102030																										
SV-308	E FORK CHATTOOGA R	23	0	0		*	67		D	69	-0.03		23	0	0		I	68	0.05	23	1	4	1300	*	68	
SV-227	CHATTOOGA RVR	58	0	0		*	144		D	168	-0.05		58	0	0		I	164	0.03	57	1	2	2800	*	168	
3060102060																										
SV-199	CHATTOOGA RVR	58	0	0		*	69		*	68			58	0	0		I	69	0.03	57	3	5	7653	*	68	
SV-359	TUGALOO LAKE	6	0	0									6	0	0					6	0	0				
SV-358	LAKE YONAH	6	0	0									6	0	0					6	0	0				
SV-200	LAKE HARTWELL	28	0	0		*	71		D	72	-0.04		28	1	4	5.65	*	74		28	1	4	1100	*	73	
3060102120																										
SV-344	CHAUGA RVR	12	0	0									12	0	0					12	1	8	1600			
3060102130																										
SV-301	NORRIS CK	22	0	0		*	65		D	68	-0.05		22	0	0		D	69	-0.03	22	17	77	868	*	68	
SV-108	CHOESTOE CK	11	0	0									11	0	0					11	6	55	4253			
3060102150																										
SV-345	BEAVERDAM CK	13	0	0									13	0	0					13	5	38	3820			
3060103020																										
SV-340	LAKE HARTWELL	57	0	0		*	69		*	69			55	0	0		*	68		55	0	0		*	69	
3060103030																										
SV-316	BIG GENEROSTEE CK	24	0	0		I	63	0.20	D	63	-0.46		24	0	0		D	61	-0.02	24	15	63	4315	I	62	87.75
SV-100	LAKE RUSSELL	58	6	10	4.567	D	146	-0.03	D	172	-0.05		57	1	2	5.8	I	166	0.01	58	0	0		D	171	-0.2
SV-357	LAKE RUSSELL	6	0	0									6	0	0					6	0	0				
SV-098	LAKE RUSSELL	61	0	0		*	151		D	172	-0.07		56	0	0		*	168		56	1	2	800	D	171	-0.17

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS				pH		pH MEAN		TRENDS		BACTERIA		MEAN BACT TRENDS						
		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	N	MAG	
3060103070																								
SV-031	ROCKY RVR	58	0	0		*	150		D	172	-0.05				*	171		58	17	29	2022	*	171	
SV-041	ROCKY RVR	29	1	3	4.5	I	76	0.15	D	75	-0.26				*	77		29	8	28	4215	I	74	16.4
SV-139	CUPBOARD CK	23	11	48	4.159	D	73	-0.16	D	70	-0.20				D	74	-0.07	23	19	83	125599	I	75	90.0
SV-140	CUPBOARD CK	24	12	50	4.079	*	75		*	71					D	75	-0.01	24	18	75	2487	I	75	46.33
SV-141	BROADWAY CK	41	0	0		*	85		*	71					D	87	-0.02	24	12	50	1712	I	70	24.0
SV-319	BROADWAY LAKE	6	0	0														6	0	0				
SV-258	BROADWAY LAKE	6	0	0														6	0	0				
SV-321	BROADWAY LAKE	8	0	0														8	0	0				
SV-346	ROCKY RVR	12	0	0														12	1	8	9000			
SV-037	BETSY CK	11	1	9	1.3	*	56		D	53	-0.15				*	58		4	1	25	640	I	52	25.86
SV-043	CHEROKEE CK	23	0	0		I	68	0.05	D	70	-0.07				*	68		23	5	22	528	*	67	
SV-331	LAKE SECESSION	61	0	0		*	69		D	62	-0.10				D	68	-0.06	55	6	11	1158	I	62	4.6
SV-332	LAKE SECESSION	57	1	2	4.35	*	65		*	62					*	67		53	1	2	630	*	62	
3060103080																								
SV-347	WILSON CK	12	0	0														12	3	25	523			
3060103100																								
SV-291	THURMOND RESERVOIR	56	0	0		*	154		D	171	-0.05				D	182	-0.08	57	0	0		*	171	
SV-294	THURMOND RESERVOIR	56	0	0		*	146		D	171	-0.06				D	172	-0.05	57	1	2	600	*	170	
3060103140																								
SV-164	LITTLE RVR	12	0	0														12	2	17	540			
SV-348	LITTLE RVR	12	0	0														12	3	25	787			
SV-052	SAWNEY CK	52	4	8	3.975	I	96	0.08	D	99	-0.26				D	96	-0.04	53	14	26	1636	I	98	19.8
SV-192	LITTLE RVR	12	0	0														12	1	8	600			
3060103150																								
SV-349	LONG CANE CK	12	0	0														12	10	83	673			
SV-053B	BLUE HILL CK	23	0	0		I	68	0.03	D	69	-0.25				D	68	-0.03	23	20	87	12226	I	69	126.67
SV-318	LONG CANE CK	56	0	0		*	147		D	171	-0.06				D	173	-0.04	57	10	18	939	D	171	-11.43
3060107010																								
SV-151	HARD LABOR CK	54	0	0		I	87	0.29	D	87	-0.45							55	21	38	1087	D	88	-180.0
SV-351	CUFFYTOWN CK	12	0	0														12	2	17	575			
SV-330	STEVENS CK	56	0	0		*	97		D	96	-0.05				D	97	-0.07	57	9	16	713	I	100	4.25
3060107020																								
SV-352	TURKEY CK	12	0	0														12	0	0				

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS			pH		pH MEAN		TRENDS		BACTERIA		MEAN BACT TRENDS											
		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	N	EXC.	%	N	MAG								
3060107030																												
SV-068	BEAVERDAM CK	24	0	0		I	64	0.13	D	69	-0.18					24	2	8	505	*	70							
SV-353	BEAVERDAM CK	12	0	0												12	2	17	1615									
3060107040																												
SV-354	STEVENS CK	11	0	0												11	1	9	510									
3060106030																												
SV-251	SAVANNAH RVR	58	0	0		*	149		D	170	-0.05				58	0	0				D	169	-22.86					
3060106050																												
SV-329	HORSE CK	58	0	0		*	92		*	91					58	8	14	6.382	*	92		59	1	2	600	*	90	
SV-071	HORSE CK	58	0	0		*	150		D	171	-0.04				58	7	12	5.807	D	174	-0.02	59	5	8	490	*	169	
SV-069	SAND RVR	58	0	0		*	147		D	170	-0.03				58	29	50	5.742	*	171		59	9	15	823	*	167	
SV-096	HORSE CK	58	0	0		*	115		D	119	-0.10				58	8	14	5.865	D	121	-0.06	59	7	12	590	I	116	15.71
SV-073	LITTLE HORSE CK	24	0	0		*	66		*	71					24	2	8	5.925	D	71	-0.03	24	2	8	900	I	72	3.93
SV-072	HORSE CK	24	0	0		*	66		D	72	-0.06				24	3	13	5.853	D	72	-0.03	24	3	13	600	*	71	
SV-250	HORSE CK	59	0	0		I	155	0.05	D	171	-0.05				59	16	27	5.819	D	177	-0.02	59	2	3	510	*	169	
3060106060																												
SV-252	SAVANNAH RVR	58	0	0		I	147	0.04	D	168	-0.04				58	1	2	10	D	172	-0.04	58	7	12	691	*	168	
SV-323	SAVANNAH RVR	57	0	0		*	155		D	168	-0.05				57	1	2	11	D	180	-0.03	57	0	0		D	167	-3.09
SV-350	HOLLOW CK	12	0	0											12	4	33	5.787				12	1	8	840			
3060106100																												
SV-324	TIMS BRANCH	58	0	0		*	146		*	144					58	0	0		*	148		58	12	21	660	I	144	7.86
SV-325	UPPER THREE RUNS CK	59	0	0		*	146		D	144	-0.04				59	4	7	5.712	*	148		59	8	14	640	*	144	
3060106110																												
SV-326	FOUR MILE CK	58	0	0		*	146		D	144	-0.05				58	2	3	5.925	*	148		58	5	9	592	*	143	
SV-327	STEEL CK	57	1	2		*	144		D	144	-0.09				57	0	0		D	148	-0.03	57	0	0		D	144	-2.5
3060106130																												
SV-328	LOWER THREE RUNS CK	57	0	0		*	145		D	148	-0.08				57	1	2	10.2	D	149	-0.05	57	2	4	600	*	147	
SV-175	LOWER THREE RUNS CK	29	0	0		*	69		D	76	-0.09				29	0	0		D	77	-0.05	29	3	10	600	I	75	6.89
3060106140																												
SV-118	SAVANNAH RVR	57	0	0		I	157	0.03	D	171	-0.07				57	1	2	10.6	D	183	-0.01	57	1	2	600	D	169	-6.88
3060109020																												
SV-355	SAVANNAH RVR	11	0	0											11	0	0					11	1	9	620			
3060109050																												
SV-356	CYPRESS CK	11	6	55											11	7	64	5.583				11	1	9	1730			
3060109060																												
SV-191	SAVANNAH RVR	57	4	7		*	142		D	163	-0.06				57	11	19	6.274	D	167	-0.03	56	10	18	758	*	165	

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS			TRENDS			pH		pH MEAN		TRENDS			BACTERIA		MEAN		BACT TRENDS			
		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	N	MAG		
3050207010	SALKEHATCHIE RVR	57	0	0		*	146	D	171	-0.04			57	2	4	5.6	*	172			56	2	4	880	*	170
3050207020	LAKE EDGAR BROWN	7	0	0		*	38						7	5	71	8.966	I	75	0.16							
CSTL-001	TURKEY CK	28	0	0		I	69	D	77	-0.05			28	1	4	5.8	D	77	-0.05		28	3	11	527	*	77
3050207030	SALKEHATCHIE RVR	57	3	5	4.167	*	147	D	173	-0.05			57	2	4	5.6	D	173	-0.03		56	14	25	1069	D	170
CSTL-048	SALKEHATCHIE RVR	11	0	0									11	0	0						11	4	36	665		
3050207040	SALKEHATCHIE RVR	57	3	5	4.117	*	142	D	166	-0.03			57	3	5	5.857	D	166	-0.04		57	14	25	1244	I	166
CSTL-104	SALKEHATCHIE RVR	10	1	10	4.3								10	0	0						10	2	20	770		
3050207050	WHIPPY SWAMP	10	2	20	3.85								10	1	10	5.57					10	3	30	537		
3050207060	LITTLE SALKEHATCHIE R	12	0	0									12	0	0						12	2	17	600		
3050207070	LEMON CK	12	0	0									12	0	0						12	3	25	563		
3050207080	LITTLE SALKEHATCHIE R	10	0	0									10	1	10	5.91					10	4	40	1555		
3050207090	BUCKHEAD CK	9	3	33	2.293								9	6	67	5.605					9	4	44	2482		
3050207100	WILLOW SWAMP	9	1	11	4.7								9	1	11	5.85					10	5	50	912		
3050207110	LITTLE SALKEHATCHIE R	10	2	20	4.35								10	1	10	5.66					10	2	20	545		
3050208010	COMBAHEE RVR	22	6	27	4.575								22	3	14	5.917					22	0	0			
CSTL-098	COMBAHEE RVR	54	15	28	4.145	*	144	D	161	-0.07			54	16	30	6.19	D	170	-0.03		53	0	0		D	163
CSTL-098	COMBAHEE RVR	54	15	28	4.145	*	144	D	161	-0.07			54	1	2	4.6	D	170	-0.03		53	0	0		D	163
3050208020	IRELAND CK	24	11	46	2.815	*	63	*	67				24	14	58	5.199	*	69			24	6	25	1488	*	68
CSTL-068	ASHEPOO RVR	51	23	45	3.497	*	88	*	93				51	46	90	5.742	*	94			50	7	14	851	*	93
CSTL-068	ASHEPOO RVR	51	23	45	3.497	*	88	*	93				51	33	65	5.55	*	94			50	7	14	851	*	93
3050208030	HORSESHOE CK	9	5	56	3.53								9	3	33	5.69					8	2	25	900		

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS			pH		pH MEAN		TRENDS		BACTERIA		MEAN BACT TRENDS		
		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	N	EXC.	%	EXC.
3050208040																			
CSTL-069	ASHEPOO RVR	24	21	88	3.764	*	62	*	68		24	19	79	6.096	*	68	23	0	0
MD-251	ASHEPOO RVR	10	2	20	4.75					10	2	20	6.23			10	1	10	1600
3050208050																			
CSTL-110	COOSAWHATCHIE RVR	57	6	11	3.9	D	68	-0.25	67	57	2	4	8.505	*	68	57	3	5	713
CSTL-121	COOSAWHATCHIE RVR	11	2	18	3.2					11	0	0				11	2	18	475
3050208060																			
CSTL-075	LAKE WARREN	29	13	45	2.34	*	68	*	73	29	10	34	5.651	*	74	29	0	0	
3050208070																			
CSTL-108	SANDERS BRANCH	23	0	0		*	61	D	66	23	0	0		*	66	23	6	26	1958
CSTL-010	SANDERS BRANCH	24	0	0		*	62	*	68	24	0	0		*	68	23	4	17	1125
CSTL-011	SANDERS BRANCH	25	8	32	3.244	D	65	-0.07	71	25	0	0		*	71	25	12	48	2004
CSTL-109	COOSAWHATCHIE RVR	57	24	42	3.815	*	152	D	167	57	10	18	5.29	D	177	57	6	11	873
3050208080																			
CSTL-122	CYPRESS CK	11	4	36	1.525					11	5	45	5.564			11	2	18	510
3050208090																			
CSTL-107	COOSAWHATCHIE RVR	57	11	19	4.311	*	142	D	165	57	28	49	6.15	D	168	57	4	7	611
CSTL-107	COOSAWHATCHIE RVR	57	11	19	4.311	*	142	D	165	57	7	12	5.851	D	168	57	4	7	611
MD-128	BEES CK	24	5	21	3.962	*	61	*	68	24	6	25	5.99	D	68	24	5	21	1240
MD-007	POCOTALIGO RVR	57	26	46	3.576	*	141	D	163	57	16	28	6.142	D	167	56	28	50	1088
MD-116	BROAD RVR	52	1	2	4.4	*	91	*	83	54	0	0		D	96	51	0	0	
MD-172	BROAD RVR	24	7	29	4.614	D	62	-0.08	56	25	0	0		D	67	24	0	0	
MD-117	CHECHESSEE RVR	23	8	35	4.325	D	64	-0.08	62	24	1	4	9.35	D	69	23	0	0	
MD-176	COLLETON RVR	6	0	0		*	49	*	42	6	0	0		D	54	4	0	0	
MD-245	COLLETON RVR	52	1	2	4.55	*	49		47	54	0	0		*	52	51	0	0	
MD-006	PORT ROYAL SOUND	23	0	0		*	66	*	62	24	0	0		*	70	22	0	0	
3050208100																			
MD-194	WHALE BRANCH	11	5	45	4.26	D	50	-0.09	50	12	0	0		D	54	8	0	0	
MD-168	COOSAW RVR	52	7	13	4.557	*	53	*	52	53	0	0		*	58	47	0	0	
MD-001	BEAUFORT RVR	24	11	46	4.309	D	74	-0.07	64	25	0	0		D	78	23	0	0	
MD-002	BEAUFORT RVR	24	10	42	4.445	D	75	-0.04	64	25	0	0		D	79	22	0	0	
MD-003	BEAUFORT RVR	53	10	19	4.455	D	103	-0.06	90	55	0	0		D	108	49	0	0	
MD-004	BEAUFORT RVR	25	7	28	4.65	D	76	-0.05	64	25	0	0		*	77	23	0	0	
MD-005	BEAUFORT RVR	55	1	2	4.6	D	107	-0.04	89	55	0	0		D	110	51	0	0	

DISSOLVED OXYGEN, pH, AND BACTERIA DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	DO		DO MEAN		TRENDS			TRENDS			pH		pH MEAN		TRENDS		BACTERIA		MEAN BACT TRENDS				
		N	EXC.	%	EXC.	DO	MAG	BOD	N	MAG	PH	N	EXC.	%	EXC.	PH	N	EXC.	N	EXC.	%	N	MAG	
3050208110																								
MD-013	SKULL CK	25	5	20	4.15	*	68	*	63				26	1	4	6.24	D	73	-0.02	25	0	0	*	66
MD-016	MAY RVR	7	0	0		*	51	*	42			7	0	0			D	54	-0.01	6	0	0	*	39
MD-174	BROAD CK	49	9	18	4.406	*	46		44			51	1	2	2.35	*		48		50	0	0	I	46
MD-175	CALIBOGUE SOUND	53	3	6	4.917	*	92	*	83			55	1	2	8.71	D	97	-0.01	51	0	0	*	82	2.67
3050208120																								
MD-129	GREAT SWAMP	11	6	55	3.033							11	9	82	4.964					11	3	27		
3050208130																								
MD-118	NEW RVR	57	27	47	3.926	*	142		166		D	56	54	96	5.554	D	168	-0.07	57	32	56	I	167	18.0

PHOSPHORUS, NITROGEN, AND TURBIDITY DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	TRENDS												NH3			
		JP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG	N	EXC.		
3060101080																	
SV-333	CONEROSS CK	*	74		*	62		*	70							55	0
SV-004	CONEROSS CK	D	106	-0.01	*	44		*	95							49	0
SV-322	CONEROSS CK	D	159	-0.01	*	128		*	160							40	0
3060101090																	
SV-017	EIGHTEEN MILE CK	D	75	-0.01				*	71								
SV-241	WOODSIDE BRANCH	D	73	-0.07				D	71	-0.5							
SV-245	EIGHTEEN MILE CK	D	76	-0.01				*	70								
SV-135	EIGHTEEN MILE CK	D	105	0.0	*	51		I	99	1.13					53	0	
SV-268	EIGHTEEN MILE CK	*	72		I	67	0.05	I	70	1.83					56	0	
3060101100																	
SV-111	THREE & TWENTY CK	*	67					*	68						12	0	
3060102030																	
SV-308	E FORK CHATTOOGA R	D	71	0.0				*	68								
SV-227	CHATTOOGA RVR	D	173	0.0	D	113	-0.01	I	167	0.03					55	0	
3060102060																	
SV-199	CHATTOOGA RVR	I	72	0.0	*	36		*	69						54	0	
SV-359	TUGALOO LAKE														6	0	
SV-358	LAKE YONAH														6	0	
SV-200	LAKE HARTWELL	D	75	0.0				*	72						11	0	
3060102120																	
SV-344	CHAUGA RVR														11	0	
3060102130																	
SV-301	NORRIS CK	D	69	0.0				*	67								
SV-108	CHOESTOEA CK														10	0	
3060102150																	
SV-345	BEAVERDAM CK																
3060103020																	
SV-340	LAKE HARTWELL	*	73		*	57		*	69						52	0	
3060103030																	
SV-316	BIG GENEROSTEE CK	D	65	-0.05													
SV-100	LAKE RUSSELL	D	173	0.0	D	129	-0.02	*	171						54	0	
SV-357	LAKE RUSSELL														6	0	
SV-098	LAKE RUSSELL	D	170	0.0	D	135	-0.02	D	171	-0.08					55	0	

PHOSPHORUS, NITROGEN, AND TURBIDITY DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	TRENDS												NH3				
		TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG	N	EXC.			
3050208040																		
CSTL-069	ASHEPOO RVR	*	67								*						8	0
MD-251	ASHEPOO RVR																	
3050208050																		
CSTL-110	COOSAWHATCHIE RVR	*	72		*	63					*						53	0
CSTL-121	COOSAWHATCHIE RVR																9	0
3050208060																		
CSTL-075	LAKE WARREN	D	73	0.0								74	0.15				9	0
3050208070																		
CSTL-108	SANDERS BRANCH	D	65	0.0								67	0.14					
CSTL-010	SANDERS BRANCH	D	66	0.0							*	68						
CSTL-011	SANDERS BRANCH	*	68									71	0.28					
CSTL-109	COOSAWHATCHIE RVR	D	166	0.0	*	134						167	0.3		151	0.19	51	0
3050208080																		
CSTL-122	CYPRESS CK																7	0
3050208090																		
CSTL-107	COOSAWHATCHIE RVR	D	165	0.0	D	136	-0.02					164	0.28				53	0
CSTL-107	COOSAWHATCHIE RVR	D	165	0.0	D	136	-0.02					164	0.28				53	0
MD-128	BEES CK	*	71									68	0.39					
MD-007	POCOTALIGO RVR	D	165	-0.01	*	135						163	0.5				56	0
MD-116	BROAD RVR	D	88	0.0		46	0.1				D	85	-0.13				50	0
MD-172	BROAD RVR	*	61								*	57						
MD-117	CHECHESSEE RVR	D	64	0.0							*	63						
MD-176	COLLETON RVR	*	44								*	43					4	0
MD-245	COLLETON RVR		48	0.0		45	0.14				*	48					51	0
MD-006	PORT ROYAL SOUND	D	65	0.0							*	62						
3050208100																		
MD-194	WHALE BRANCH	*	53									51	0.43				5	0
MD-168	COOSAW RVR	*	50			44	0.06				*	53					49	0
MD-001	BEAUFORT RVR	D	65	0.0								64	0.42					
MD-002	BEAUFORT RVR	*	66									64	0.32					
MD-003	BEAUFORT RVR	D	89	0.0		47	0.11				*	92					50	0
MD-004	BEAUFORT RVR	D	66	0.0							*	64					1	0
MD-005	BEAUFORT RVR	D	90	0.0		43	0.14				*	92					47	0

METALS DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	CD		CR		CU		PB		HG		NI		ZN	
		N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.
3060101020															
SV-335	LAKE JOCASSEE	18	0	DL	DL	18	2	18	1	DL	DL	18	0	18	2
SV-337	LAKE JOCASSEE	16	0	DL	DL	17	0	17	1	DL	DL	17	0	17	1
SV-336	LAKE JOCASSEE	16	0	DL	DL	16	2	16	0	DL	DL	16	0	16	0
SV-334	LAKE JOCASSEE	18	0	DL	DL	18	1	18	0	DL	DL	18	0	18	0
3060101030															
SV-230	BIG EASTATOE CK	18	0	DL	DL	18	0	18	0	DL	DL	18	0	18	2
SV-341	LITTLE EASTATOE CK	3	0	DL	DL	3	1	3	0	DL	DL	3	0	3	0
SV-338	LAKE KEOWEE	19	0	DL	DL	19	2	19	0	DL	DL	19	0	19	0
3060101040															
SV-249	SENECA RVR	20	0	DL	DL	20	1	20	0	DL	DL	20	0	20	0
SV-205	SIX MILE CK	4	0	DL	DL	4	0	4	0	DL	DL	4	0	4	1
SV-360	LAKE ISSAQUEENA	2	0	DL	DL	2	0	2	0	DL	DL	2	0	2	1
SV-106	LAKE HARTWELL	1	0	DL	DL	1	0	1	0	DL	DL	1	0	1	0
SV-236	LAKE HARTWELL	2	0	SL	DL	2	0	2	0	DL	DL	2	0	2	0
SV-288	LAKE HARTWELL	18	0	DL	DL	18	3	18	0	DL	DL	18	0	18	0
SV-339	LAKE HARTWELL	19	0	DL	DL	19	3	19	1	DL	DL	19	0	19	0
3060101050															
SV-203	LITTLE RVR	3	0	DL	DL	3	0	3	0	DL	DL	3	0	3	0
SV-312	LAKE KEOWEE	19	0	DL	DL	19	0	19	0	DL	DL	19	0	19	0
SV-343	LITTLE CANE CK	3	0	DL	DL	3	0	3	0	DL	DL	3	0	3	0
SV-342	CANE CK	3	0	DL	DL	3	0	3	0	DL	DL	3	0	3	0
SV-311	LAKE KEOWEE	20	0	DL	DL	20	1	20	0	DL	DL	20	0	20	2
3060101070															
SV-015	TWELVE MILE CK	4	0	DL	DL	4	0	4	0	DL	DL	4	0	4	0
SV-137	TWELVE MILE CK	4	0	DL	DL	4	0	4	0	DL	DL	4	0	4	0
SV-107	TWELVE MILE CK	3	0	DL	DL	3	0	3	0	DL	DL	3	0	3	0
3060101080															
SV-333	CONEROSS CK	19	0	DL	DL	19	0	19	0	DL	DL	19	0	19	0
SV-004	CONEROSS CK	16	0	DL	DL	16	0	16	0	DL	DL	16	0	16	0
SV-322	CONEROSS CK	15	0	DL	DL	15	0	15	0	DL	DL	15	0	15	1
3060101090															
SV-135	EIGHTEEN MILE CK	17	0	DL	DL	17	0	17	0	DL	DL	17	0	17	2
SV-268	EIGHTEEN MILE CK	19	0	DL	DL	19	1	19	0	DL	DL	19	0	19	0
3060101100															
SV-111	THREE & TWENTY CK	4	0	DL	DL	4	0	4	0	DL	DL	4	0	4	0
3060102030															
SV-227	CHATTOOGA RVR	19	0	DL	DL	19	1	19	0	DL	DL	19	0	19	2

METALS DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	CD		CR		CU		PB		HG		NI		ZN	
		N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.	N	EXC.
3060102060															
SV-199	CHATTOOGA RVR	19	0	DL		19	0	DL		19	0	DL		19	0
SV-359	TUGALOO LAKE	2	0	DL		2	0	DL		2	0	DL		2	0
SV-358	LAKE YONAH	2	0	DL		2	0	DL		2	0	DL		2	0
SV-200	LAKE HARTWELL	7	0	DL		7	0	DL		7	0	DL		7	0
3060102120															
SV-344	CHAUGA RVR	4	0	DL		4	0	DL		4	0	DL		4	0
3060102130															
SV-108	CHOESTOEA CK	3	0	DL		3	0	DL		3	0	DL		3	0
3060102150															
SV-345	BEAVERDAM CK	3	0	DL		3	0	DL		3	0	DL		3	0
3060103020															
SV-340	LAKE HARTWELL	17	0	DL		17	0	DL		17	0	DL		17	0
3060103030															
SV-100	LAKE RUSSELL	20	0	DL		20	0	DL		20	0	DL		20	0
SV-357	LAKE RUSSELL	2	0	DL		2	0	DL		2	0	DL		2	0
SV-098	LAKE RUSSELL	20	0	DL		20	0	DL		20	0	DL		20	0
3060103070															
SV-031	ROCKY RVR	19	0	DL		19	0	DL		19	0	DL		19	0
SV-041	ROCKY RVR	4	0	DL		4	0	DL		4	0	DL		4	0
SV-319	BROADWAY LAKE	1	0	DL		1	0	DL		1	0	DL		1	0
SV-258	BROADWAY LAKE	1	0	DL		1	0	DL		1	0	DL		1	0
SV-321	BROADWAY LAKE	1	0	DL		1	0	DL		1	0	DL		1	0
SV-346	ROCKY RVR	3	0	DL		3	0	DL		3	0	DL		3	0
SV-037	BETSY CK	6	0	DL		6	0	DL		6	0	DL		6	0
SV-331	LAKE SECESSION	19	0	DL		19	0	DL		19	0	DL		19	0
SV-332	LAKE SECESSION	19	0	DL		19	0	DL		19	0	DL		19	0
3060103080															
SV-347	WILSON CK	3	0	DL		3	0	DL		3	0	DL		3	0
3060103100															
SV-291	THURMOND RESERVOIR	20	0	DL		20	0	DL		20	0	DL		20	0
SV-294	THURMOND RESERVOIR	20	0	DL		20	0	DL		20	0	DL		20	0
3060103140															
SV-164	LITTLE RVR	3	0	DL		3	0	DL		3	0	DL		3	0
SV-348	LITTLE RVR	4	0	DL		4	0	DL		4	0	DL		4	0
SV-052	SAWNEY CK	17	0	DL		17	0	DL		17	0	DL		17	0
SV-192	LITTLE RVR	4	0	DL		4	0	DL		4	0	DL		4	0

METALS DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	CD		CR		CU		PB		HG		NI		ZN	
		N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC.
3060103150															
SV-349	LONG CANE CK	3	0 DL	3	0 DL	3	0	3	0 DL	3	0 DL	3	0	3	0
SV-318	LONG CANE CK	19	0 DL	19	0 DL	19	0	19	1 DL	18	0 DL	19	0	19	0
3060107010															
SV-151	HARD LABOR CK	17	0 DL	17	0 DL	17	4	17	0 DL	16	0 DL	17	0	17	1
SV-351	CUFFYTOWN CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
SV-330	STEVENS CK	19	0 DL	19	0 DL	19	0	19	0 DL	18	0 DL	19	0	19	0
3060107020															
SV-352	TURKEY CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	1
3060107030															
SV-353	BEAVERDAM CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3060107040															
SV-354	STEVENS CK	2	0 DL	2	0 DL	2	0	2	0 DL	2	0 DL	2	0	2	0
3060106030															
SV-251	SAVANNAH RVR	20	0 DL	20	0 DL	20	1	20	0 DL	19	0 DL	20	0	20	1
3060106050															
SV-329	HORSE CK	20	0 DL	20	0 DL	20	2	20	0 DL	19	0 DL	20	0	20	0
SV-071	HORSE CK	21	0 DL	21	0 DL	21	1	21	0 DL	20	0 DL	21	0	21	1
SV-069	SAND RVR	20	0 DL	20	2 DL	20	4	20	1 DL	19	0 DL	20	0	20	4
SV-096	HORSE CK	20	0 DL	20	0 DL	20	3	20	0 DL	19	0 DL	20	0	20	1
SV-250	HORSE CK	20	0 DL	20	0 DL	20	0	20	0 DL	19	0 DL	20	0	20	1
3060106060															
SV-252	SAVANNAH RVR	20	0 DL	20	0 DL	20	0	20	0 DL	19	0 DL	20	0	20	1
SV-323	SAVANNAH RVR	19	0 DL	19	0 DL	19	1	19	0 DL	18	0 DL	19	0	19	0
SV-350	HOLLOW CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3060106100															
SV-324	TIMS BRANCH	19	0 DL	19	0 DL	19	1	19	0 DL	18	0 DL	19	0	19	1
SV-325	UPPER THREE RUNS CK	19	0 DL	19	0 DL	19	1	19	0 DL	18	0 DL	19	0	19	1
3060106110															
SV-326	FOUR MILE CK	18	0 DL	18	0 DL	18	0	18	0 DL	17	0 DL	18	0	18	0
SV-327	STEEL CK	19	0 DL	19	0 DL	19	0	19	0 DL	18	0 DL	19	0	19	1
3060106130															
SV-328	LOWER THREE RUNS CK	20	0 DL	20	0 DL	20	2	20	0 DL	19	0 DL	20	0	20	1
SV-175	LOWER THREE RUNS CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3060106140															
SV-118	SAVANNAH RVR	20	0 DL	20	0 DL	20	1	20	0 DL	19	0 DL	20	0	20	4
3060109020															
SV-355	SAVANNAH RVR	3	0 DL	3	0 DL	3	0	3	0 DL	3	0 DL	3	0	3	0

METALS DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	CD		CR		CU		PB		HG		NI		ZN	
		N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC.
3060109050	CYPRESS CK	2	0 DL	2	0 DL	2	0	2	0 DL	2	0 DL	2	0	2	0
3060109060	SAVANNAH RVR	19	0 DL	19	0 DL	19	1	19	0 DL	19	0 DL	19	0	19	1
3050207010	SALKEHATCHIE RVR	20	0 DL	20	0 DL	20	3	20	0 DL	19	0 DL	20	0	20	1
3050207020	TURKEY CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3050207030	SALKEHATCHIE RVR	18	0 DL	18	0 DL	18	2	18	0 DL	18	0 DL	18	0	18	1
3050207040	SALKEHATCHIE RVR	3	0 DL	3	0 DL	3	0	3	0 DL	3	0 DL	3	0	3	0
3050207050	SALKEHATCHIE RVR	20	0 DL	20	0 DL	19	0	20	0 DL	20	0 DL	20	0	18	0
3050207060	WHIPPY SWAMP	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3050207070	LITTLE SALKEHATCHIE R	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	0
3050207080	LEMON CK	4	0 DL	4	0 DL	4	0	4	0 DL	4	0 DL	4	0	4	1
3050207090	LITTLE SALKEHATCHIE R	3	0 DL	3	0 DL	3	0	3	0 DL	3	0 DL	3	0	3	0
3050207100	BUCKHEAD CK	2	0 DL	2	0 DL	2	0	2	0 DL	2	0 DL	2	0	2	1
3050207110	WILLOW SWAMP	3	0 DL	3	0 DL	3	0	3	0 DL	3	0 DL	3	0	3	0
3050208010	LITTLE SALKEHATCHIE R	3	0 DL	3	1 DL	3	0	3	0 DL	3	0 DL	3	0	3	0
3050208020	COMBAHEE RVR	18	0 DL	18	0 DL	18	0	18	0 DL	18	0 DL	18	0	18	0
3050208020	COMBAHEE RVR	18	0 DL	18	0 DL	18	0	18	0 DL	18	0 DL	18	0	18	1
3050208020	ASHEPOO RVR	16	0 DL	16	0 DL	16	0	16	0 DL	16	0 DL	16	0	16	0
3050208020	ASHEPOO RVR	16	0 DL	16	0 DL	16	0	16	0 DL	16	0 DL	16	0	16	0

METALS DATA, SAVANNAH AND SALKEHATCHIE RIVER BASINS

STATION NUMBER	WATERBODY NAME	CD		CR		CU		PB		HG		NI		ZN	
		N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC. MED.	N	EXC. MED.	N	EXC.	N	EXC.
3050208030															
CSTL-071	HORSESHOE CK	2	0	DL	2	0	DL	2	0	DL	2	0	DL	2	0
3050208040															
MD-251	ASHEPOO RVR	3	0	DL	3	0	DL	3	0	DL	3	0	DL	3	0
3050208050															
CSTL-110	COOSAWHATCHIE RVR	20	0	DL	20	1	DL	20	1	DL	19	0	DL	20	0
CSTL-121	COOSAWHATCHIE RVR	4	0	DL	4	0	DL	4	0	DL	4	0	DL	4	0
3050208060															
CSTL-075	LAKE WARREN	4	0	DL	4	1	DL	4	0	DL	4	0	DL	4	0
3050208070															
CSTL-010	SANDERS BRANCH	5	0	DL	4	0	DL	5	0	DL	5	0	DL	5	0
CSTL-109	COOSAWHATCHIE RVR	19	0	DL	19	0	DL	19	0	DL	19	0	DL	19	0
3050208080															
CSTL-122	CYPRESS CK	3	0	DL	3	0	DL	3	0	DL	3	0	DL	3	0
3050208090															
CSTL-107	COOSAWHATCHIE RVR	17	0	DL	17	0	DL	16	0	DL	17	0	DL	17	0
CSTL-107*	COOSAWHATCHIE RVR	17	0	DL	17	0	DL	16	0	DL	17	0	DL	17	0
MD-007	POCOTALIGO RVR	19	0	DL	19	0	DL	19	1	DL	19	0	DL	19	0
MD-116	BROAD RVR	18	0	DL	18	0	DL	18	0	DL	17	0	DL	18	0
MD-176	COLLETON RVR	4	0	DL	4	0	DL	4	0	DL	4	0	DL	4	0
MD-245	COLLETON RVR	18	0	DL	18	0	DL	18	0	DL	17	0	DL	18	0
3050208100															
MD-194	WHALE BRANCH	6	0	DL	6	0	DL	6	0	DL	6	0	DL	6	0
MD-168	COOSAW RVR	19	0	DL	19	0	DL	19	0	DL	18	0	DL	19	0
MD-003	BEAUFORT RVR	19	0	DL	19	0	DL	19	2	DL	18	0	DL	19	0
MD-004	BEAUFORT RVR	5	0	DL	5	0	DL	5	0	DL	5	0	DL	5	0
MD-005	BEAUFORT RVR	18	0	DL	18	0	DL	18	0	DL	16	0	DL	18	0
3050208110															
MD-016	MAY RVR	5	0	DL	5	0	DL	5	0	DL	5	0	DL	5	0
MD-174	BROAD CK	18	0	DL	18	0	DL	18	0	DL	17	0	DL	18	0
MD-175	CALIBOGUE SOUND	18	0	DL	18	0	DL	18	0	DL	17	0	DL	18	0
3050208120															
MD-129	GREAT SWAMP	3	0	DL	3	0	DL	3	0	DL	3	0	DL	3	0
3050208130															
MD-118	NEW RVR	18	0	DL	18	0	DL	18	0	DL	18	0	DL	18	0