

03050111-01

(Santee River/Lake Marion)

General Description

Watershed 03050111-01 (formerly 03050111-010, 020, 030, 040, 050) is located in Sumter, Clarendon, Calhoun, Orangeburg, and Berkeley Counties and consists primarily of the *Santee River* and its tributaries that flow into *Lake Marion*. The watershed occupies 351,157 acres of the Upper and Lower Coastal Plain regions of South Carolina. Land use/land cover in the watershed includes: 25.1% agricultural land, 24.0% forested land, 22.2% forested wetland, 21.6% water, 5.2% urban land, 1.8% nonforested wetland, and 0.1% barren land.

The Congaree River Watershed and the Wateree River Watershed join to form the headwaters of the Santee River. The Santee River flows through Lake Marion and exits through the Santee Dam to continue the Santee River. Waters from the southeastern corner of Lake Marion are diverted through the Diversion Canal to fill Lake Moultrie. Before entering the impounded Lake Marion, the Santee River receives drainage from Broadwater Creek and the Santee Swamp (Fullers Earth Creek, Tavern Creek, Mill Creek). Streams draining into the upper reaches of Lake Marion include Squirrel Creek, Warley Creek, Spring Grove Creek (Pine Tree Creek, Ballard Creek, Half Way Creek, Duckford Branch), Richardson Branch, and Halfway Swamp Creek (Lake Inspiration, Furlick Branch, Lyons Creek, Antley Springs Branch, Bell Branch, Hutto Pond). Further downlake, Little Poplar Creek enters the lake followed by Big Poplar Creek, Jacks Creek (Belser Creek, Chapel Creek, Sullivans Branch, Big Branch, Spring Branch), Cantey Bay (Oyster Bay, Monkey Bay), Chapel Branch, and Webbs Creek. The downlake region accepts drainage from Mill Creek, Savana Branch, Tawcaw Creek (Little Tawcaw Creek, Penn Branch), Eutaw Creek, and Potato Creek. Potato Creek accepts the drainage of Wyboo Swamp, Church Branch, and Big Branch as it forms an arm of Lake Marion. Wyboo Swamp is formed from the drainage of Dean Swamp, Buckhead Branch, McCoys Branch, Rooty Branch, Bluff Branch, White Oak Branch (Three Hole Swamp), Birch Branch, White Oak Creek, Lizzies Branch (Clubhouse Branch), and Carroll Slough.

Additional natural resources in the watershed include Santee State Park near Big Poplar Creek and the Santee National Wildlife Refuge, which extends over the northern shoreline from Jacks Creek/Cantey Bay area to the Santee Dam. The South Carolina Public Service Authority (Santee Cooper) oversees the operation of the lake with uses that include power generation and numerous forms of recreation (hunting, fishing, boating, swimming). There are a total of 695.4 stream miles and 71,933 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
SC-004	SC	FW	SANTEE RIVER 0.1 MI UPSTR MOUTH OF BROADWATER CREEK
RS-04389	BIO/RS-04	FW	WARLEY CREEK AT S-09-287, 3.4 MI NW OF LONE STAR
SC-006	SC	FW	WARLEY CREEK AT SC 267
ST-034/SC-008	INT	FW	SANTEE RIVER AT RR TRESTLE AT LONE STAR
ST-527	BIO	FW	TAVERN CREEK
SC-056	SC	FW	SURFACE DRAINAGE FROM SAFETY KLEEN HAZARDOUS LANDFILL

SC-058	SC	FW	STREAM ORIGINATING UPSTR OF SAFETY KLEEN HAZ LANDFILL
SC-057	SC	FW	SURFACE DRAINAGE FROM SAFETY KLEEN HAZARDOUS LANDFILL
SC-005	SC	FW	UPPER LAKE MARION NEAR PACK'S LANDING
RS-05585	RS-05	FW	DUCKFORD BRANCH AT S-43-52, 3.2 MI SW OF PINWOOD
SC-009	SC	FW	SPRING GROVE CREEK AT SR 26 BRIDGE
SC-039	SC	FW	UPPER LAKE MARION 1.25 MI BELOW RIMINI RR TRESTLE
C-058	W	FW	LAKE INSPIRATION - ST MATTHEWS
C-063	W	FW	HALFWAY SWAMP CREEK AT S-09-43, 3 MI E OF ST MATTHEWS
ST-533	BIO	FW	LYONS CREEK
C-015/SC-007	INT/SC	FW	HALFWAY SWAMP CREEK AT SC 33
CW-241	W	FW	HALFWAY SWAMP CREEK AT S-09-72
SC-038	SC	FW	UPPER LAKE MARION AT MOUTH OF HALFWAY SWAMP CREEK
RL-06422	RL-06	FW	SANTEE RIVER ARM OF LAKE MARION, 6MI NE OF ELLOREE
RL-04388/SC-044	RL-04	FW	LAKE MARION, 0.5 MI NE OF CALHOUN LANDING
SC-010	SC	FW	UPPER LAKE MARION AT CHANNEL MARKER 150
SC-011	SC	FW	BIG POPLAR CREEK AT S-38-105 BRIDGE
RL-06426	RL-06	FW	LAKE MARION, 9.3 MI ESE OF SUMMERTON
ST-017	BIO	FW	JACKS CREEK
CW-244/SC-023	W/INT/SC	FW	JACKS CREEK AT S-14-76
CW-243/SC-047	W/INT/SC	FW	BIG BRANCH AT S-14-41
RL-02306/SC-012	RL-02	FW	LAKE MARION AT JACKS CREEK EMBAYMENT
SC-042	SC	FW	MID LAKE MARION AT NORTH END OF I-95/US 301 BRIDGES
SC-045	SC	FW	STREAM FLOWING THROUGH SANTEE NATL. GOLF COURSE POND AT HWY 6
SC-014	SC	FW	UPPER L. MARION AT HEADWATERS OF CHAPEL BRANCH FLOODED CREEK
ST-025/SC-015	W/SC	FW	LAKE MARION AT OLD US 301/15 BRIDGE AT SANTEE
RL-04382	RL-04	FW	LAKE MARION, 1.0 MI DOWNLAKE OF I-95 BRIDGE IN OLD RIVER CHANNEL
RL-05464	RL-05	FW	LAKE MARION, 4.97 MI SE OF I-95 BRIDGE OVER LAKE
SC-040	SC	FW	MID LAKE MARION AT CHANNEL MARKER 79
SC-041	SC	FW	MID LAKE MARION 2 MI N OF CHANNEL MARKER 79
RL-06424	RL-06	FW	LAKE MARION, 11 MI SSW OF SUMMERTON
RL-04386	RL-04	FW	EUTAW CREEK ARM OF LAKE MARION, NEAR CATHEAD BOAT RAMP
RL-02308/SC-016	RL-02	FW	LAKE MARION AT CHANNEL MARKER 69
ST-018/SC-018	S/INT/SC	FW	TAWCAW CREEK AT S-14-127 3.2 MI S OF SUMMERTON
SC-017	SC	FW	MID LAKE MARION AT TAWCAW CREEK EMBAYMENT
SC-036	SC	FW	MID LAKE MARION AT MOUTH OF TAWCAW CREEK
RL-05406	RL-05	FW	LAKE MARION, 3.25 MI S OF LOG JAM LANDING
SC-021	SC	FW	LOWER LAKE MARION, 0.9 MI NE OF ROCKS POND CAMPGROUND
RL-04384	RL-04	FW	LAKE MARION, 3.8 MI W OF EADYTOWN
RL-08054	RL-08	FW	LAKE MARION, APPROX. 3 MI W OF CENTER OF DAM
RL-06428	RL-06	FW	LAKE MARION, 4.9 MI S OF END OF S-14-64
RL-05402	RL-05	FW	LAKE MARION, 3.5 MI NNW OF BRIDGE OVER DIVERSION CANAL ON SC 45
CL-042/SC-022	INT/SC	FW	LAKE MARION FOREBAY, SPILLWAY MARKER 44
ST-035/SC-020	INT	FW	POTATO CREEK AT S-14-127, 3.2 MI S OF SUMMERTON
SC-019	SC	FW	LOWER LAKE MARION AT POTATO CREEK FLOODED EMBAYMENT
ST-036/SC-023A	INT/SC	FW	L. MARION, WYBOO SWAMP ARM DOWNSTREAM OF CLUBHOUSE BRANCH
RL-01011/SC-035	RL-01	FW	LAKE MARION, 1.1 MI SSE OF SANTEE NWR & 1MI S OF EAGLE POINT

Santee River – There are two monitoring sites along the Santee River before it is impounded. At the upstream site (**SC-004**), aquatic life and recreational uses are fully supported. At the downstream site (**ST-034**), aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported.

Warley Creek - There are two monitoring sites along Warley Creek. At the upstream site (**RS-04389**), aquatic life uses are partially supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform excursions. At the downstream site (**SC-**

006), aquatic life uses are not supported due to total nitrogen excursions. Recreational uses are fully supported.

Lake Marion - There are fourteen SCDHEC monitoring sites in the open waters of Lake Marion and there are nine South Carolina Public Service Authority - Santee Cooper (SCPSA) monitoring sites, many overlapping to provide greater coverage of a site. All lake sites are fully supported for recreational uses.

In the upper lake region, *SC-005* is not supported for aquatic life uses due to total phosphorus and dissolved oxygen excursions. *SC-039, SC-038, RL-04388, SC-010, and SC-042* are not supported for aquatic life uses due to total phosphorus excursions. Aquatic life uses are fully supported at *RL-06426*. At *ST-025*, near the I-95 crossing, aquatic life uses are partially supported due to occurrences of zinc in excess of the aquatic life criterion. In addition, there is a significant decreasing trend in dissolved oxygen concentration. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus, total nitrogen, and fecal coliform bacteria suggest improving conditions for these parameters at this site.

In the mid-lake region, aquatic life uses are fully supported at *RL-04382, RL-05464, and RL-06424*. Aquatic life uses are not supported at *SC-040, SC-041, and RL-02308* due to total phosphorus excursions.

In the downlake region, aquatic life uses are fully supported at *RL-05406, RL-08054, RL-06428, SC-021, RL-04384, RL-05402, and CL-042*. There is also a significant decreasing trend in total nitrogen concentration at CL-042, suggesting improving conditions for this parameter at this site. Aquatic life uses are partially supported at *SC-036* due to pH excursions and not supported at *RL-01011* due to total phosphorus and pH excursions.

Lake Inspiration (C-058) – Aquatic life uses are not supported due to turbidity, total phosphorus, chlorophyll, and pH excursions. This is compounded by significant increasing trends in pH, turbidity, and total phosphorus concentration. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. Recreational uses are fully supported.

Lyons Creek (ST-533) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Halfway Swamp Creek – There are three monitoring sites along Halfway Swamp Creek. At the upstream site (*C-063*), aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions. At the mid-stream site (*C-015*), aquatic life uses are fully supported. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter at this site. Recreational uses are partially supported due to fecal coliform bacteria excursions. At the downstream site (*CW-241*), aquatic life and recreational uses are fully supported. There is a significant increasing trend in pH. A significant

decreasing trend in total phosphorus concentration suggests improving conditions for this parameter at this site.

Halfway Swamp Creek arm of Lake Marion (RL-06422) – Aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported.

Tavern Creek (ST-527) – Aquatic life uses are fully supported based on macroinvertebrate community data.

Upper Lake Marion upstream of Safety Kleen Pinewood (SC-058) – Aquatic life uses are not supported due to occurrences of nickel in excess of the aquatic life criterion. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standard violations.

Surface Drainage to Upper Lake Marion from Safety Kleen – There are two drainages monitored from Safety Kleen. At ***SC-056***, aquatic life uses are not supported due to pH and total nitrogen excursions and for occurrences of nickel in excess of the aquatic life criterion. Aquatic life uses are fully supported at ***SC-057***.

Spring Grove Creek (SC-009) – Aquatic life uses are not supported due to total nitrogen excursions and recreational uses are partially supported due to fecal coliform bacteria excursions.

Duckford Branch (RS-05585) - Aquatic life uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standard violations. Recreational uses are not supported due to fecal coliform bacteria excursions.

Big Poplar Creek (SC-011) – Aquatic life uses are not supported due to dissolved oxygen and total nitrogen excursions. Recreational uses are fully supported.

Jacks Creek – There are two monitoring stations along Jacks Creek. At the upstream site (***ST-017***), aquatic life uses are partially supported based on macroinvertebrate community data. At the downstream site (***CW-244***), aquatic life uses are fully supported; however, there are significant increasing trends in five-day biological oxygen demand and total phosphorus concentration. Significant decreasing trends in turbidity suggest improving conditions for this parameter. Recreational uses are fully supported.

Jacks Creek arm of Lake Marion (RL-02306) - Aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported.

Big Branch (CW-243) – Aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biological oxygen demand. Although dissolved oxygen excursions

occurred, they were typical of values seen in blackwater systems and were considered natural, not standard violations. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria concentration.

Chapel Branch - There are two monitoring sites along Chapel Branch. The upstream site (**SC-045**) monitors the stream as it flows through the Santee National Golf Course Pond and the downstream site (**SC-014**) monitors the impounded portion of the stream. Aquatic life and recreational uses are fully supported at **SC-045**. Aquatic life uses are not supported at **SC-014** due to total phosphorus and pH excursions. Recreational uses are fully supported.

Eutaw Creek Arm of Lake Marion (RL-04386) – Aquatic life and recreational uses are fully supported.

Tawcaw Creek – There are two monitoring sites along Tawcaw Creek. At the upstream site (**ST-018**), aquatic life uses are not supported due to total nitrogen and dissolved oxygen excursions. In addition, there are significant increasing trends in five-day biological oxygen demand and total phosphorus concentration. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the downstream site in the impounded waters of the creek (**SC-017**), aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported.

Potato Creek (ST-035) – Aquatic life uses are partially supported due to dissolved oxygen excursions. In addition, there is a significant increasing trend in five-day biological oxygen demand. There is a significant increasing trend in pH. Significant increasing trends in dissolved oxygen concentration suggest improving conditions for this parameter. Recreational uses are partially supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Potato Creek Arm of Lake Marion (SC-019) - Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

Wyboo Swamp (ST-036) - Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the entire Lake Marion. For more information and the most current advisory visit <http://www.scdhec.gov/fish>

Natural Swimming Areas

FACILITY NAME
RECEIVING STREAM

PERMIT #
STATUS

CAMP MAC BOYKIN
LAKE MARION

43-N04
ACTIVE

ROCKS POND LAKE MARION	38-N06 ACTIVE
SPIERS LANDING LAKE MARION	08-N05 ACTIVE
SANTEE STATE PARK LAKE MARION	38-N04 ACTIVE
RM COOPER 4H CENTER LAKE MARION	14-N01 ACTIVE
BIG WATER RESORT LAKE MARION	14-1009N ACTIVE

Groundwater Quality

<u>Well #</u>	<u>Class</u>	<u>Aquifer</u>	<u>Location</u>
AMB-025	GB	BLACK MINGO	ST. MATTHEWS
AMB-003	GB	BLACK CREEK	ELLOREE

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME</i>	<i>NPDES# TYPE</i>
LAKE MARION TRIBUTARY KESTREL HORIZONS LLC (TRUSTEE OF PINEWOOD SITE/HILLS LABRUCE MINE)	SCG730026 MINOR INDUSTRIAL
LAKE MARION TRIBUTARY KESTREL HORIZONS LLC (TRUSTEE OF PINEWOOD SITE)	SC0042170 MINOR INDUSTRIAL
LAKE MARION TRIBUTARY MARTIN MARIETTA/BERKELEY QUARRY	SCG730058 MINOR INDUSTRIAL
BALLARD CREEK TOWN OF PINEWOOD WWTP	SC0046868 MINOR DOMESTIC
ANTLEY SPRINGS BRANCH TOWN OF ST MATTHEWS/SOUTH PLANT	SC0028801 MINOR DOMESTIC
JACKS CREEK STUKES MINING CO./STUKES MINE	SCG730457 MINOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

<i>RECEIVING STREAM MUNICIPALITY RESPONSIBLE PARTY IMPLEMENTING PARTY</i>	<i>NPDES# MS4 PHASE MS4 SIZE</i>
LAKE MARION-SANTEE RIVER ----- RICHLAND COUNTY RICHLAND COUNTY	SCS400001 PHASE I MEDIUM MS4

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
SC SCA SERVICES, INC.	-----
INDUSTRIAL	INACTIVE
JF CLECKLEY & CO./PLT #2, #3	-----
INDUSTRIAL	INACTIVE
GODWIN JOHURIE JR	-----
MUNICIPAL	INACTIVE

Land Application Sites

<i>LAND APPLICATION SYSTEM</i>	<i>ND#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
SPRAYFIELD	ND0067628
TOWN OF ELLOREE WWTP	DOMESTIC
TILEFIELD	ND0067610
LAKE MARION RESORT & MARINA	DOMESTIC
SPRAY ON GOLF COURSE	ND0065676
SANTEE PSD	DOMESTIC
ABSORPTION FIELD	ND0067652
LENORA'S SANTEE RESORT LLC	DOMESTIC
ADJACENT TILEFIELD	ND0067326
SANTEE LAKES CAMPGROUND	DOMESTIC
SPRAYFIELD	ND0062227
CYPRESS POINT CONDO HOMEOWNERS ASSOC.	DOMESTIC
LOW PRESSURE IRRIGATION SITE	ND0067920
SCDPRT/SANTEE STATE PARK	DOMESTIC
SPRAYFIELD	ND0063401
TOWN OF SUMMERTON	DOMESTIC
SPRAYFIELD	ND0067318
GOAT ISLAND W&S	DOMESTIC
AERATED TREATMENT LAGOON	ND0066117
SIGFIELD/FOXBORO GOLF COURSE	DOMESTIC
SPRAY ON GOLF COURSE	ND0072427
CLARENDEN COUNTY/WYBOO PLANTATION WWTP	DOMESTIC

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
KESTREL HORIZONS (SAFETY KLEEN)	1014-27
HILLS-LABRUCE MINE	CLAY

LAFORGE MATERIALS, INC. MCCURRY PIT	1069-17 CLAY
STUKES MINING STUKES MINE	0990-27 SAND/CLAY
GIANT CEMENT CO. ST. MATTHEWS CLAY MINE	1429-17 CLAY

Water Quantity

<i>WATER USER STREAM</i>	<i>REG. CAPACITY (MGD) PUMPING CAPACITY (MGD)</i>
LAKE MARION REGIONAL WATER AUTHORITY	12.1
LAKE MARION	18.1

Growth Potential

There is a moderate potential for growth in this watershed, which contains portions of the Towns of Pinewood, Elloree, Santee, Vance, and Eutawville due primarily to Lake Marion related factors of fishery tourism, new lakeside subdivisions, marinas, landings, and camping facilities. There is also a potential for residential, commercial, and industrial growth around the interchanges of I-95 at the Town of Santee and with US Hwy. 301 and US Hwy. 15. US Hwy 601 from the Orangeburg County line to downtown St. Matthews may provide future growth to that area..

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC using the load duration methodology and approved by the EPA for **Big Branch** in Clarendon County (monitoring site CW-243). The TMDL determines the maximum amount of fecal coliform bacteria that Big Branch at CW-243 can receive from pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted continuous dischargers of fecal coliform in the watershed. At that time the only non-continuous discharger in the watershed with potential to discharge fecal coliform was SCDOT. Probable potential sources of fecal coliform pollution in the watershed contributing to the impairment of Big Branch include direct loading by livestock, failing septic systems, and wildlife. The TMDL requires a reduction of 75% in the current load to the creek to meet standards.

A TMDL was also developed by SCDHEC using the load duration methodology and approved by the EPA for **Potato Creek** in Clarendon County (monitoring sites: ST-035 and RS-03501). The TMDL determines the maximum amount of fecal coliform bacteria that Potato Creek at the two sites can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted continuous dischargers of fecal coliform in the watershed. At that time the only non-continuous discharger in the watershed with potential to discharge fecal coliform was SCDOT. Probable potential sources of fecal coliform pollution in the watershed contributing to the impairment of Potato Creek include wildlife, agricultural runoff, failing septic systems, and domestic animals. The TMDL requires a 34% reduction of fecal coliform loading at ST-035 and 31% at RS-03501 for the stream to meet the recreational uses standard. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

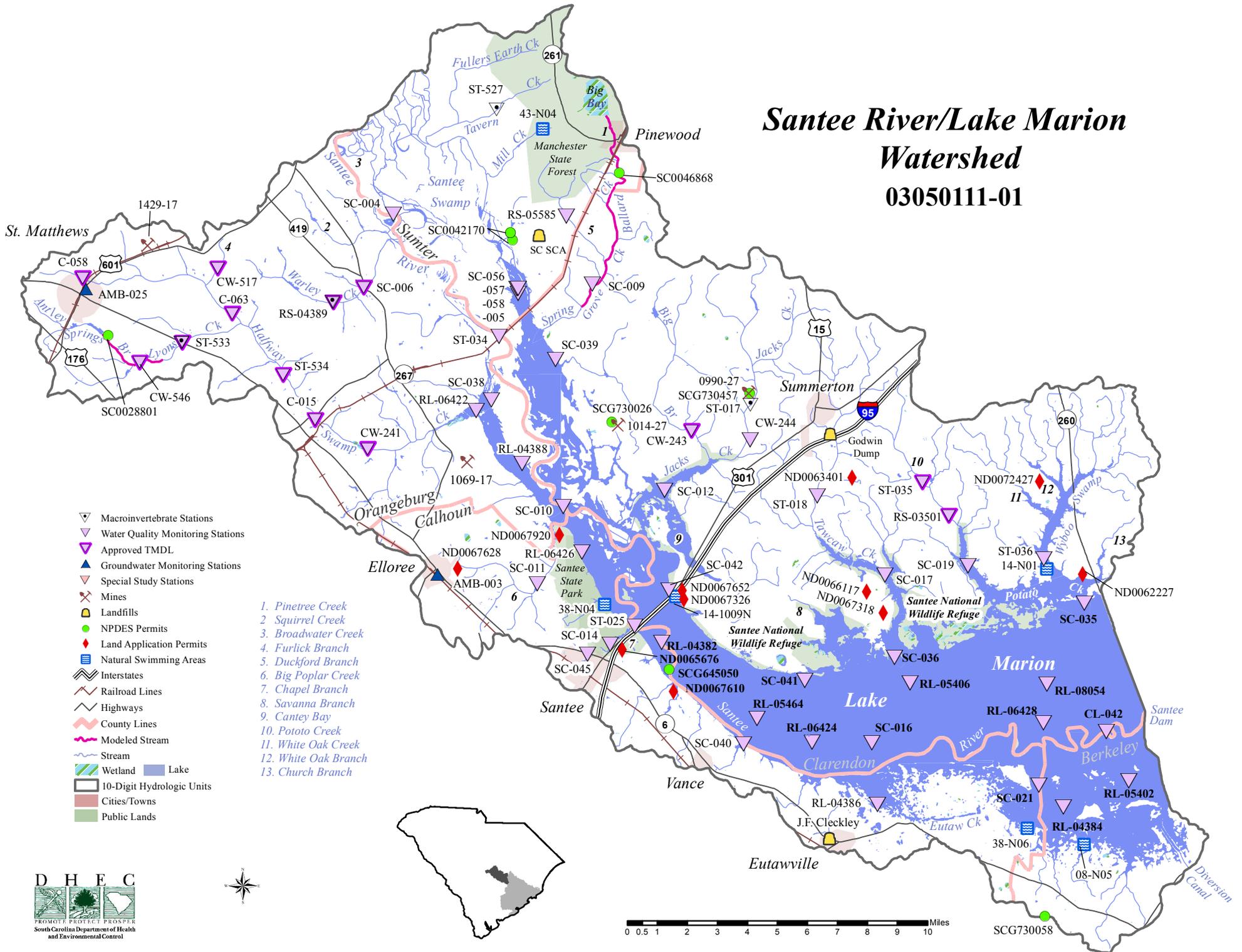
Special Projects

Santee Cooper FERC Relicensing

Hydroelectric projects require licenses issued by the Federal Energy Regulatory Commission in order to operate. These licenses require re-evaluation periodically in order to incorporate new information for the protection of the common good and typically last from 30 to 50 years. In addition to economic factors, a wide variety of natural resource elements can be considered including: reservoir water quality, downstream water quality, fisheries issues, flow issues, and shoreline management issues. State and federal agencies as well as citizens and nonprofit groups have been meeting to discuss these issues in the Santee Cooper re-licensing process. All federal permits, which have any bearing on waters of the state, must first receive a §401 water quality certification. The §401 water quality certification will be SCDHEC's main responsibility in the process. Santee Cooper is presently operating under an annual renewal of the existing license until a final assessment of the application filed with the FERC is completed. For more information on Santee Cooper's re-licensing, view their website at: <http://www.santecooper.com/environment/ferc/index.html>.

Santee River/Lake Marion Watershed

03050111-01



1. Pinetree Creek
2. Squirrel Creek
3. Broadwater Creek
4. Furlick Branch
5. Duckford Branch
6. Big Poplar Creek
7. Chapel Branch
8. Savanna Branch
9. Cantey Bay
10. Pototo Creek
11. White Oak Creek
12. White Oak Branch
13. Church Branch

