03050206-04

(North Edisto River)

General Description

Watershed 03050206-04 (formerly 03050205-070) is located in Charleston County and consists primarily of the ***North Edisto River*** and its tributaries. The watershed occupies 111,800 acres of the Coastal Zone region of South Carolina. Land use/land cover in the watershed includes: 29.6% forested land, 25.5% nonforested wetland (marsh), 17.1% agricultural land, 13.0% water, 12.1% forested wetland (swamp), 2.5% urban land, and 0.2% barren land.

The Dawho River (ORW) joins the Wadmalaw River to form the North Edisto River (ORW), which drains into the Atlantic Ocean. There are a total of 12.6 stream miles, 0.5 acres of lake waters, and 12,419.8 acres of estuarine areas in this watershed. The Dawho River accepts drainage from the South Edisto River Watershed, as does its tributaries Fishing Creek and North Creek, before merging with the Wadmalaw River.

Upstream from the confluence, Church Creek (Raven Point Creek, New Cut) flows into Wadmalaw Sound along with the Stono River and Oyster House Creek. New Cut connects the Stono River to Church Creek. The Wadmalaw River flows out of Wadmalaw Sound and accepts drainage from Gibson Creek, Toogoodoo Creek (Lower Toogoodoo Creek, Swinton Creek), and Tom Point Creek (also known as McLeod Creek) before merging with the Dawho River. Tom Point Creek is connected to Toogoodoo Creek through Garden Creek. Lower Toogoodoo Creek is classified SFH from its headwaters to a point 3 miles from its mouth, and ORW from that point to its confluence with Toogoodoo Creek. Church Creek is classified ORW from Wadmalaw Sound to Raven Point Creek, and SFH from Raven Point Creek to Hoopstick Island.

Downstream from the confluence, the North Edisto River accepts drainage from Steamboat Creek (Whooping Island Creek, Sand Creek, Russel Creek, Long Creek), Westbank Creek, Leadenwah Creek, Bohicket Creek (Fickling Creek, Adams Creek), Privateer Creek, and South Creek (Ocella Creek). South Creek drains to the Atlantic Ocean as well as to the North Edisto River. A portion of the Townsend River (the other half of the river is in 03050206-03 and drains to the ocean via Frampton Inlet) drains directly into the Atlantic Ocean. The Atlantic Intracoastal Waterway runs through Watts Cut and North Creek, along the Dawho River, up into the Wadmalaw River, through Wadmalaw Sound, and into the Stono River and the Santee River Basin. Church Creek and Bohicket Creek meet and exchange waters near Hoopstick Island. The North Edisto River is classified ORW from its headwaters to the AIWW, SFH from the AIWW to Steamboat Creek, and ORW again from Steamboat Creek to the Atlantic Ocean. All remaining streams are classified ORW. An additional natural resource in the watershed includes a portion of Botany Bay, a state Heritage Preserve, at the base of the watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-195	W	SFH	CHURCH CREEK AT SC 700, 1 MILE SW OF CEDAR SPRINGS
MD-261	INT	ORW	YONGES ISLAND CREEK; MARKER #90
RT-042075	RT04	ORW	WADMALAW RIVER TRIB OPPOSITE YONGES ISLAND & END OF SC 165
RO-036039	RO03	ORW	WADMALAW RIVER, 0.5 MI S OF YONGES ISLAND
RO-056091	RO05	ORW	WADMALAW RIVER, 4.4 MI S OF MEGGETT
RT-02005	RT02	ORW	FISHING CREEK NEAR JEHOSSEE ISLAND
MD-120	INT	ORW	DAWHO RIVER AT SC 174, 9 MILES N OF EDISTO BEACH STATE PARK
RT-02021	RT02	ORW	SAND CREEK, 0.1 MI E OF SC 174
RO-02013	RO02	ORW	WESTBANK CREEK NEAR CONFLUENCE WITH NORTH EDISTO RIVER
RT-042077	RT04	ORW	LEADENWAH CREEK TRIBUTARY, 3.3 MI NNW OF ROCKVILLE
RO-06315	RO06	ORW	LEADENWAH CREEK, 2.7 MI NNW OF ROCKVILLE
MD-262	INT	ORW	NORTH EDISTO RIVER AT LEADENWAH CREEK
RO-036041	RO03	ORW	BOHICKET CREEK, 3 MI SW OF SC700 BRIDGE
MD-209	INT	ORW	BOHICKET CREEK AT FICKLING CREEK
RT-052095	RT05	ORW	ADAMS CK, 0.9 MI E OF CONFL OF LEADENWAH CK AND N. EDISTO R.
MD-210	W	ORW	BOHICKET CREEK MOUTH AT NORTH EDISTO RIVER
RO-056093	RO05	ORW	OCELLA CREEK, 0.7 MI NW OF CONFLUENCE WITH TOWNSEND RIVER

Church Creek (MD-195) – Aquatic life uses are partially supported due to dissolved oxygen excursions. There is a significant increasing trend in pH. Significant increasing trends in dissolved oxygen concentration and decreasing trends in total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are fully supported.

Yonges Island Creek (MD-261) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter.

Wadmalaw River Tributary (RT-042075) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Wadmalaw River **–** There are two SCDHEC monitoring stations along the Wadmalaw River and aquatic life and recreational uses are fully supported at both sites ***(RO-036039, RO-056091)***. This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations.

Fishing Creek (RT-02005) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered

natural, not standards violations. Aquatic life uses are not supported due to turbidity excursions. Recreational uses are fully supported.

Dawho River (MD-120) - Aquatic life uses are not supported due to dissolved oxygen excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Sand Creek (RT-02021) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Westbank Creek (RO-02013) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Leadenwah Creek Tributary (RT-042077) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Leadenwah Creek (RO-06315) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

North Edisto River (MD-262) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported. A significant decreasing trend in total nitrogen suggests improving conditions for this parameter.

Bohicket Creek - There are three SCDHEC monitoring stations along Bohicket Creek and recreational uses are fully supported at all sites. At the upstream site ***(RO-036041)***, aquatic life uses are not supported due to dissolved oxygen excursions. At the midstream site ***(MD-210)***, aquatic life uses are again not supported due to dissolved oxygen excursions. In addition, there are significant increasing trends in five-day biochemical oxygen demand and turbidity. There is a significant decreasing trend in pH. A significant decreasing trend in total nitrogen suggests improving conditions for this parameter. At the downstream site ***(MD-210)***, aquatic life and recreational uses are fully supported.

Adams Creek (RT-052095) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Ocella Creek (RO-056093) – This is a tidally influenced system with significant marsh drainage, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported.

Shellfish Monitoring Stations

Station #	Description
11-15	Stono River (AIWW) at Marker #63
12A-09	Adams Creek at Bohicket Creek
12A-10	Rockville Boat Landing
12A-11	Adams Creek between Adams Creek Marina and Shrimp Dock
12A-13	Bohicket Creek at Fickling Creek
12A-14	S.C. 700 bridge over Bohicket Creek
12A-20	Bohicket Creek opposite hoopstick Island
12A-21	Opposite old dam behind Rast House Restaurant
12A-22	Opposite Boy Scout Camp
12A-29	Raven Point Creek at confluence with Church Creek
12A-31	Southwest boundary of Prohibited Area at Bohicket Marina
12A-32	Privateer Creek up mile at fork
12A-38	Drainage discharge 1/8 mi E of power lines, N bank of Church Creek
12A-39	Confl. of Church Ck and small tidal Ck – 350 yds W S.C. 700 bridge, N side of Church Ck
12A-40	Pine Creek at first fork
12A-41	Confluence of Church Creek and New Cut
12A-46	Bohicket Creek midway between Sta.. 21 and 22 at small unnamed tributary on west bank
12B-01	Mouth of Church Creek, Marker #77
12B-02	Goshen Point, Marker #69
12B-03	Yonges Island Creek, at center of metal trade dock
12B-04	Toogoodoo Creek at confluence with AIWW, Marker #102
12B-05	Dawho Creek, Marker #110
12B-06	Steamboat Creek, Marker #2
12B-07	Westbank Creek at North Edisto River, opposite Leadenwah Creek
12B-08	Leadenwah Creek at North Edisto River
12B-09	Dawho Creek, Marker #119
12B-10	South boundary of Protected Area at Metal Trades Dock

12B-12	LEADENWAH CREEK 1 MILE FROM CONFLUENCE WITH NORTH EDISTO RIVER
12B-30	TOM POINT CREEK AT PARK ISLAND
12B-33	CONFLUENCE OF OCELLA CREEK AND SOUTH CREEK
12B-34	TOOGOODOO CREEK SSG AT LAST CREEK BEFORE FORK
12B-35	PUBLIC BOAT RAMP, LOWER TOOGOODOO CREEK
12B-36	CONFLUENCE OF TOM POINT CREEK AND NORTH EDISTO RIVER
12B-37	CONFLUENCE OF STEAMBOAT CREEK AND RUSSELL CREEK
12B-42	HEADWATERS OF OCELLA CREEK
12B-43	RUSSELL CREEK AT ESTUARY ENTERING SUNBELT CLAM FARMS
12B-44	TOOGOODOO CREEK MIDWAY BETWEEN STATIONS 4 AND 34
12B-45	TOOGOODOO CREEK AT THE SECOND BEND PAST THE CONFLUENCE WITH LOWER TOOGOODOO CREEK
12B-47	SAND CREEK BRIDGE AT HWY 174
12B-48	FIRST STORMWATER OUTFALL IN HTWTRS OF SAND CR (1998-98)
12B-49	DOCK MIDWAY STATIONS 48&50 (1996-96)
12B-50	SAND CREEK AT INTAKE TO WESTENDORF CLAM FARM
12B-51	WADMALAW SOUND AT DAY BEACON #80
12B-52	CONFLUENCE OF WHOOPING ISLAND CREEK AND STEAMBOAT CREEK
12B-53	DAWHO RIVER, MARKER #126
12B-54	TOM POINT CREEK, 3 BENDS UPSTREAM OF STATION #30
13-16	HIGHWAY 174 BRIDGE OVER NORTH CREEK (1993-98)
13-19	RUSSELL CREEK AT AREA 12/13 BOUNDARY (1993-98)

Station locations can be found at http://www.scdhec.gov/environment/water/docs/SFMA_12A.pdf, http://www.scdhec.gov/environment/water/docs/SFMA_12B.pdf, and http://www.scdhec.gov/environment/water/docs/SFMA_13.pdf. Information from the Shellfish Annual Reports for Sections 12A, 12B, and a portion of 13 can be found at http://www.scdhec.gov/environment/water/sfreports.htm.

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME***	***NPDES#*** ***TYPE***
BOHICKET CREEK TRIBUTARY CHARLES HILLS/NICHOLS POND MINE	SCG731064 MINOR INDUSTRIAL
WEE CREEK BEARS BLUFF NATIONAL FISH HATCHERY	SC0047848 MINOR INDUSTRIAL
NORTH EDISTO RIVER LCP MINING CO. LLC/LEGARE CREEK PLANTATION MINE	SC0048488 MINOR INDUSTRIAL
CHURCH CREEK TRIBUTARY ISLAND CONSTR. CO./TREMONT MINE	SCG730128 MINOR INDUSTRIAL
CHURCH CREEK TRIBUTARY DIRT SUPPLY LLC/BLUEMEL MINE	SCG731001 MINOR INDUSTRIAL
LOWER TOOGOODOO CREEK L. DEAN WEAVER/VANNESS MINE	SCG730436 MINOR INDUSTRIAL

LOWER TOOGOODOO CREEK TRIBUTARY RENTZ LANDCLEARING/RENTZ MINE	SCG730114 MINOR INDUSTRIAL

Nonpoint Source Permitted Activities

Land Disposal Activities

Land Application Sites

LAND APPLICATION SYSTEM FACILITY NAME	***ND# TYPE***
SPRAY IRRIGATION ON GOLF COURSES TOWN OF SEABROOK ISLAND	ND0063347 DOMESTIC
LAND APPLICATION BP FARMS LLC	ND0087807 INDUSTRIAL
LAND APPLICATION BRABHAM DIRT PIT/HOLLYWOOD	ND0087131 INDUSTRIAL

Mining Activities

MINING COMPANY MINE NAME	***PERMIT # MINERAL***
GUY L. BUCKNER JOHNS ISLAND #1 MINE	0122-19 SAND
RENTZ LANDCLEARING RENTZ MINE	0994-19 SAND; SAND/CLAY
LAFARGE MATERIALS, INC. JAMISON MINE	0206-19 CLAY
D&S CONSTRUCTION OF PINEVILLE CEDAR HILL MINE	1694-19 SAND/TOP SOIL
MASSENBURG CONSTRUCTION, INC. BED ROCK II MINE	1644-19 SAND/CLAY

Growth Potential

There is a low potential for growth in this rural agricultural-based watershed, which contains the Towns of Rockville, Seabrook Island, and Meggett, and portions of the Town of Hollywood and the City of Charleston. Much of this area is outside of Charleston County's Urban Growth Boundary, as delineated in Charleston County comprehensive plan and therefore designated for agricultural and resource management uses. The ORW classification of most of the waters in this watershed prohibits new point source discharges of wastewater to surface waters. Growth that occurs will have to rely on septic tanks and/or land application (ND) systems. There are two recent developments identified – Part of the proposed East Edisto development is located on the north-western edge of this watershed (450 units), and residential/retail developments in Angel Oak area of Johns Island (640 residential units with 80,000 square feet of retail/commercial).

Watershed Protection and Restoration Strategies

Special Studies

Toogoodoo Creek Study

Toogoodoo Creek and a portion of Lower Toogoodoo Creek have been of considerable interest due to their classification as ORW waters with restricted shellfish harvesting status. Several special studies have been undertaken to study the degree and extent of impairment as well as the sources and loadings of fecal coliform bacteria. The National Oceanic and Atmospheric Administration (NOAA) conducted a study, funded through SCDHEC, which used a variety of novel techniques attempting to differentiate the source category (human, wildlife, and domestic animal) of the bacteria. The three methods employed were ribotyping (analysis of E. coli DNA), Microbial Antibiotic Resistance, and RNA coliphage typing (Viral RNA).

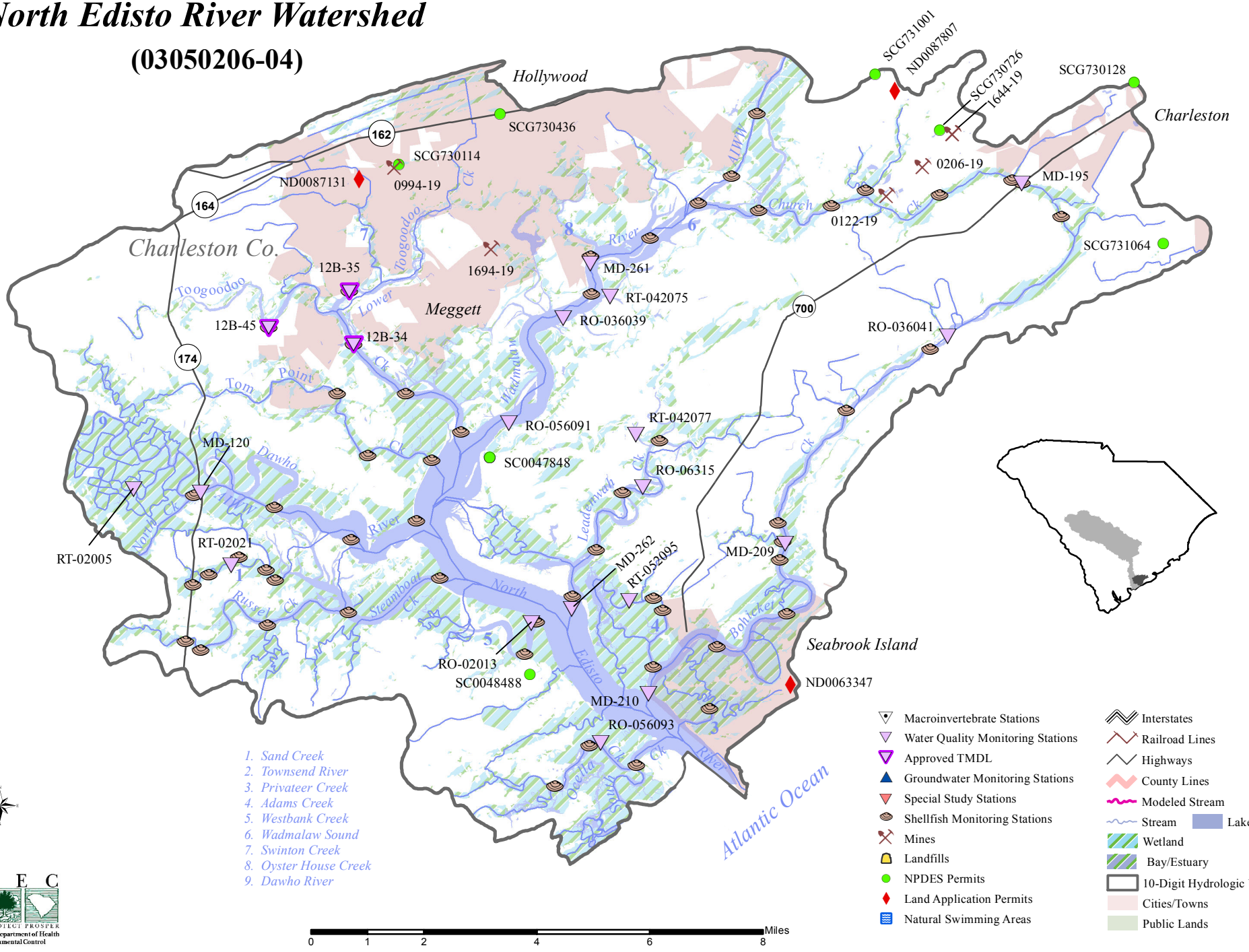
Scat samples from various livestock and wildlife species were collected at various locations around the watershed, as well as sewer samples from a pump station, for source comparison purposes. Each source (cow, raccoon, human) was differentiated or ribotyped using DNA typing techniques. Toogoodoo Creek water samples were analyzed and compared to the known sources. Although some uncertainty remains due to limited sampling size and frequency, and the limited number of sources ribotyped, the study suggests that a majority of the sources of in stream contamination were of wildlife origin, primarily raccoon and some deer. However, E. coli bacteria originating from cattle had a significant number of positive IDs and there was one in stream isolate of human origin. The other two methods were less effective in allowing differentiation of fecal bacteria sources. This study has shed considerable light on the challenges that confront restoration of the shellfish beds of Toogoodoo Creek. The EPA also chose Toogoodoo Creek for a cooperative sampling event using another alternative sampling method called Petrifilm. Petrifilm is a proprietary bacterial sampling and enumeration kit supplied by the 3M Company. Toogoodoo Creek was sampled at nine different areas on an outgoing tide. Results ranged from 0 to 725 bacteria per 100/ml (43 is the standard). High counts were only observed in upper Toogoodoo Creek. Visual surveys suggested livestock and pet waste to be potential sources. Inputs of bacteria from wildlife were likely and from mal-functioning septic tanks were a possibility.

Total Maximum Daily Loads (TMDLs)

A TMDL for stations 12B-34, 12B-35, and 12B-45 along Toogoodoo Creek and Lower Toogoodoo Creek has been developed, and in September of 2010 the TMDL was approved by EPA. The TMDL sets targets of between 30 and 66 percent reduction in fecal coliform bacteria from specific sections of Toogoodoo Creek. The TMDL can be found online at the following link: http://www.scdhec.gov/environment/water/tmdl/docs/tmdl_tgd%20.pdf . There has been much interest in a comprehensive plan to implement BMPs in the watershed to restore water quality. Proposals have been developed for §319 funding of an array of measures designed to reduce the nonpoint source loads of bacteria to the watershed.

North Edisto River Watershed

(03050206-04)



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