

## 03050205-01

(*Four Hole Swamp - Headwaters*)

### General Description

Watershed 03050205-01 (formerly 03050206-010, 020, 030) is located in Orangeburg and Calhoun Counties and consists primarily of *Four Hole Swamp* and its tributaries from its origin to Cow Castle Creek. The watershed occupies 167,561 acres of the Upper and Lower Coastal Plain regions of South Carolina. Land use/land cover in the watershed includes: 47.9% agricultural land, 28.1% forested land, 15.5% forested wetland (swamp), 8.1% urban land, 0.2% water, and 0.2% nonforested wetland (marsh).

Four Hole Swamp originates near the Town of Cameron and accepts drainage from Bull Pond, Bay Branch, Flea Bite Creek (Cook Branch), Gin Branch, Bull Swamp (Gramling Creek, Little Bull Creek, Little Bull Swamp), Polk Spring Creek, Middle Pen Swamp, Indian Camp Branch, Goodbys Swamp (Keller Branch), Mill Branch, Bush Branch, and Cow Castle Creek (Crum Branch, Buck Branch, Patrick Branch). There are a total of 694.8 stream miles and 641.5 acres of lake waters in this watershed. Four Hole Swamp, Bull Swamp, Gramling Creek, and Middle Pen Swamp are classified FW\* (site specific classification requires DO not less than 4.0 mg/l and pH between 5.0-8.5), and the remaining streams are classified FW.

### Surface Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
E-022	W	FW*	GRAMLING CREEK AT CULVERT ON SC 33, 2 MILES E OF ORANGEBURG
E-076	W	FW	LITTLE BULL CREEK AT SC 33 BELOW UTICA TOOL CO.
E-589	BIO	FW	LITTLE BULL SWAMP AT SR 154
E-059	INT	FW*	FOUR HOLE SWAMP AT S-38-50, 5.2 MILES SE OF CAMERON
RS-04537	RS04/BIO	FW	FOUR HOLE SWAMP TRIBUTARY AT S-38-92, 5.5 MI NE OF BOWMAN
E-111	INT	FW*	FOUR HOLE SWAMP AT SC 210
E-050	INT	FW	COW CASTLE CREEK AT S-38-170

***Gramling Creek (E-022)*** – Aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

***Little Bull Creek (E-076)*** – Aquatic life uses are not supported due to pH excursions. In addition, there is a significant decreasing trend in dissolved oxygen concentration. There is a significant decreasing trend in pH. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

***Little Bull Swamp (E-589)*** – Aquatic life uses are partially supported based on macroinvertebrate community data.

**Four Hole Swamp** – There are two SCDHEC monitoring stations along this section of Four Hole Swamp. This is a blackwater system, characterized by naturally low dissolved oxygen concentrations. At the upstream site (**E-059**), aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. Significant decreasing trends in turbidity and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions. At the downstream site (**E-111**), aquatic life uses are fully supported. Although dissolved oxygen excursions occurred at this site, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Significant decreasing trends in turbidity and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

**Four Hole Swamp Tributary (RS-04537)** – Aquatic life uses are partially supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform excursions.

**Cow Castle Creek (E-050)** – This is a blackwater system, characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported. There are significant increasing trends in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

*A fish consumption advisory has been issued by the Department for mercury and includes the Four Hole Swamp within this watershed (see advisory p.41).*

## Groundwater Quality

<u>Well #</u>	<u>Class</u>	<u>Aquifer</u>	<u>Location</u>
AMB-004	GB	BLACK CREEK	BOWMAN

All water samples collected from ambient monitoring well **AMB-004** met standards for Class GB groundwater.

## NPDES Permitted Activities

### Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME</i>	<i>NPDES# TYPE</i>
GRAMBLING CREEK CWS/ROOSEVELT GARDEN APTS	SC0029645 MINOR DOMESTIC
MIDDLE PEN SWAMP CONNIE MAXWELL CHILDRENS HOME	SC0032671 MINOR DOMESTIC
COW CASTLE CREEK TOWN OF BOWMAN	SC0040037 MINOR DOMESTIC

GRAMBLING CREEK KOYO CORP. OF USA	SCG250073 MINOR INDUSTRIAL
FOUR HOLE SWAMP LAFARGE BUILDING MATERIALS/FELKEL MINE	SCG730212 MINOR INDUSTRIAL
BULL SWAMP TRIBUTARY LAFARGE BUILDING MATERIALS/JAMISON PIT	SCG730303 MINOR INDUSTRIAL
GRAMBLING CREEK T&N ENTERPRISES/ELLOREE MINE	SCG730634 MINOR INDUSTRIAL
LITTLE BULL SWAMP TILLS LANDSCAPING/TILLS MINE #1	SCG731013 MINOR INDUSTRIAL

***Municipal Separate Storm Sewer Systems (MS4)***

<b><i>RECEIVING STREAM</i></b>	<b><i>NPDES#</i></b>
<b><i>MUNICIPALITY</i></b>	<b><i>MS4 PHASE</i></b>
<b><i>RESPONSIBLE PARTY</i></b>	<b><i>MS4 SIZE</i></b>
<b><i>IMPLEMENTING PARTY</i></b>	<b><i>COUNTY</i></b>
UPPER FOUR HOLE SWAMP CITY OF ORANGEBURG CITY OF ORANGEBURG CITY OF ORANGEBURG	----- PHASE II SMALL MS4

**Nonpoint Source Permitted Activities**

***Land Disposal Activities***

**Landfill Facilities**

<b><i>LANDFILL NAME</i></b>	<b><i>PERMIT #</i></b>
<b><i>FACILITY TYPE</i></b>	<b><i>STATUS</i></b>
EDISTO ASPHALT INC. INDUSTRIAL	----- INACTIVE
JF CLECKLEY & CO. PLANT #4 INDUSTRIAL	----- INACTIVE
ORANGEBURG COUNTY C&D C&D	381001-1201 ACTIVE
ORANGEBURG COUNTY COMPOSTING FACILITY COMPOSTING	381001-3001 INACTIVE
ORANGEBURG COUNTY MUNICIPAL SW MUNICIPAL	381001-1101 INACTIVE
ORANGEBURG COUNTY SANITARY LANDFILL #1 MUNICIPAL	----- INACTIVE
ORANGEBURG COUNTY SW TRANSFER STATION TRANSFER STATION	381001-6001 ACTIVE
ORANGEBURG COUNTY CC LANDFILL INDUSTRIAL	----- INACTIVE

## Land Application Sites

*LAND APPLICATION SYSTEM  
FACILITY NAME*

*ND#  
TYPE*

TILE FIELD  
EASTWOOD SD

ND0067288  
DOMESTIC

## Mining Activities

*MINING COMPANY  
MINE NAME*

*PERMIT #  
MINERAL*

LAFARGE MATERIALS, INC.  
JAMISON PIT

0206-75  
CLAY

T&N ENTERPRISES  
ELLOREE MINE

0942-75  
CLAY

LAFARGE MATERIALS, INC.  
FELKEL MINE

0939-75  
CLAY

## Growth Potential

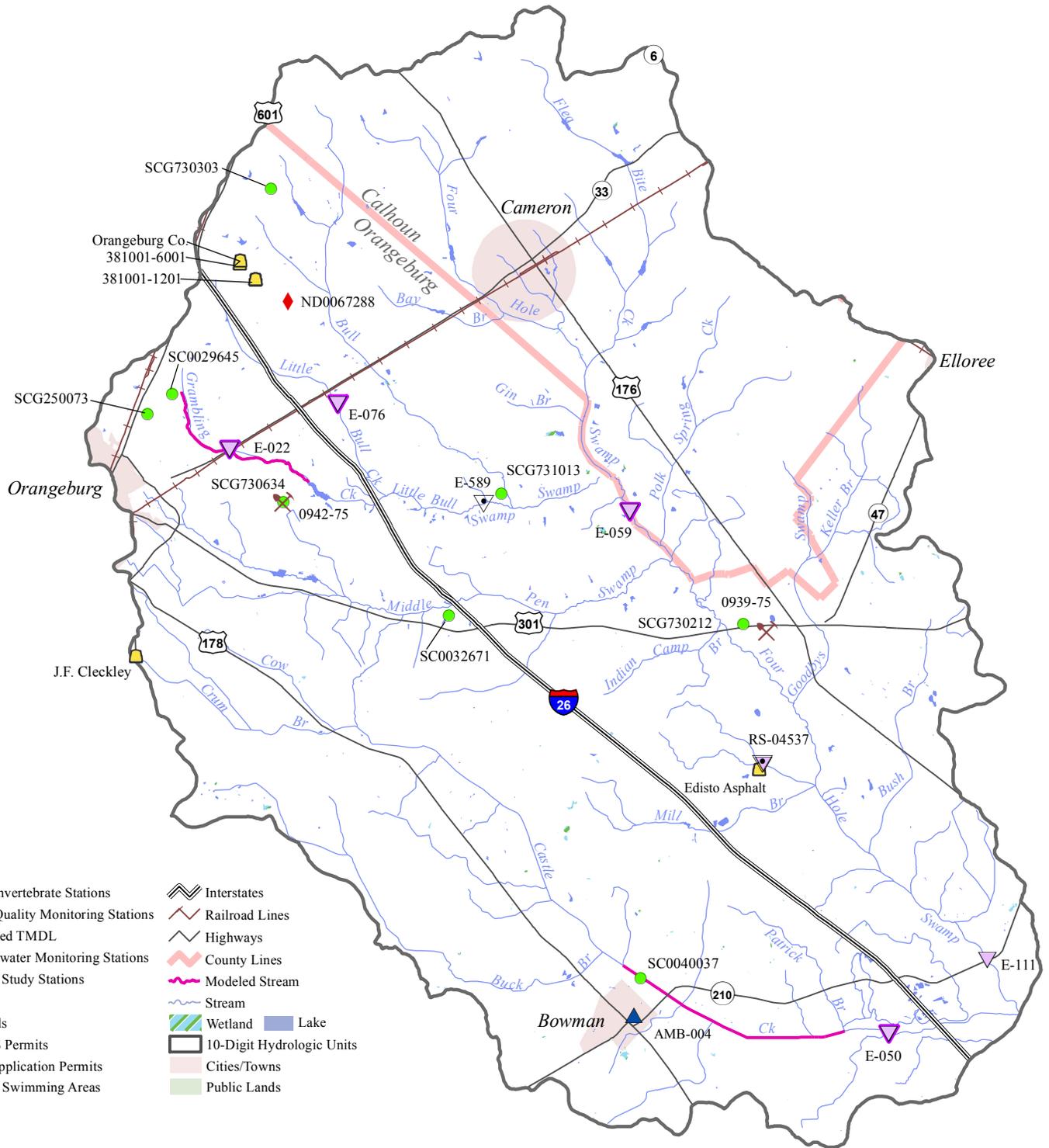
There is a low to moderate potential for growth in this watershed, which contains the Towns of Cameron and Bowman, and portions of the City of Orangeburg and the Town of Elloree. Interstate 26 bisects the watershed at US 601, US 301, SC 33, and SC 210 and should encourage some growth around the interchanges. Rail lines parallel US 601 and SC 33, which run out of the City of Orangeburg. US 176 parallels I-26 and runs through the Town of Cameron.

## Watershed Protection and Restoration Strategies

### *Total Maximum Daily Loads (TMDLs)*

TMDLs were developed for SCDHEC and approved by EPA for **Four Hole Swamp** and tributaries **Gramling Creek, Cow Castle Creek**, Providence Swamp, Horse Range Swamp, and **Little Bull Creek** at water quality monitoring sites E-022, E-050, E-051, E-052, E-059, and E-076. TMDLs determine the maximum amount of fecal coliform bacteria waterbodies can receive from pollution sources and still meet water quality standards. There are two minor permitted wastewater treatment facilities in the watershed. Orangeburg, located in western part of the watershed is considered as a potential small MS4. Probable sources of fecal coliform bacteria that were identified in the watershed are grazing animals, especially cattle with access to streams, land application of litter, failing septic systems, urban runoff, and wildlife. The TMDLs state that reductions of 4% to 73% in fecal coliform loading are necessary for the streams to meet the recreational use standard.

# (Upper) Four Hole Swamp Watershed (03050205-01)



- |  |                                   |  |                           |
|--|-----------------------------------|--|---------------------------|
|  | Macroinvertebrate Stations        |  | Interstates               |
|  | Water Quality Monitoring Stations |  | Railroad Lines            |
|  | Approved TMDL                     |  | Highways                  |
|  | Groundwater Monitoring Stations   |  | County Lines              |
|  | Special Study Stations            |  | Modeled Stream            |
|  | Mines                             |  | Stream                    |
|  | Landfills                         |  | Wetland                   |
|  | NPDES Permits                     |  | Lake                      |
|  | Land Application Permits          |  | 10-Digit Hydrologic Units |
|  | Natural Swimming Areas            |  | Cities/Towns              |
|  |                                   |  | Public Lands              |

