Edisto Basin Overview

**Basin Description:**
- 3,120 sq. mi. (10% of SC).
- 250 miles in length → over 6800 miles of perennial and intermittent streams.
  - One of the longest freely flowing blackwater streams in the U.S.
- Upper extent approximates the Fall Line.
- Upper Coastal Plain:
  - High local relief with incised streams.
  - Elevations ranging 500-600 ft. on hills to 325 ft. along the rivers.
  - Topography flattens out towards Middle and Lower Coastal Plain.
- No large impoundments (ponds on tributary headwaters prevalent).
- Characterized by extensive swamplands and flood plains.
Edisto Basin – Surface Water Resources

4 major subbasins:
- **South Fork (870 mi²)** and **North Fork (750 mi²)** subbasins:
  - Strong surface-groundwater interactions.
  - High baseflow contribution leads to well sustained flows.
- **Four Hole Swamp (650 mi²)**
  - Heavily braided, undeveloped.
- **Lower Edisto (850 mi²)**
  - Basin narrows before dividing into North and South Edisto at the coast.
Historical Rainfall

- Average annual rainfall varies from 46” in the upper basin to 48” near the coast.
- Parts of basin have experienced annual rainfalls as little as 27” (1954) and as much as 71” (1964) over period of record.
Edisto Basin Rainfall Patterns

Central Climate Division – Average Annual Rainfall and 5-year Running Average

Green → Wetter Periods
Brown → Drier Periods
Surface Water Monitoring Network

Historic and real-time data available on the SC USGS website: https://waterwatch.usgs.gov/?m=real&r=sc&w=real%2Cmap
Edisto near Givhans (2175000)  
DA = 2,730 mi²

South Fork Edisto near Denmark (2173000)  
DA = 720 mi²

North Fork Edisto at Orangeburg (2173500)  
DA = 683 mi²

<table>
<thead>
<tr>
<th>Stream Gage</th>
<th>Period of Record</th>
<th>Mean (cfs)</th>
<th>Minimum (cfs)</th>
<th>Maximum (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Fork Edisto (2173500)</td>
<td>1938-2020</td>
<td>718</td>
<td>113 (2002)</td>
<td>8,850 (1945)</td>
</tr>
</tbody>
</table>
Monthly Streamflow Statistics

South Fork Edisto near Denmark (2173000) Average Monthly Flows

Average Monthly Streamflow (cfs)

Month

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

Average  Dry Year (2002)  Wet Year (1964)
Notable Droughts/Dry Periods:
1954-1957, Late 1980s, 1998-2002,
Flow Duration Curve

South Fork Edisto near Denmark (2173000) Flow Duration Curve

Percent Exceedance – percentage of time or days, a given daily average flow was exceeded

Mean Daily Flow = 713 cfs

Median Flow = 600 cfs

90% Exceedance = 293 cfs

Minimum Flow = 110 cfs

90% Exceedance = 293 cfs
New USGS Surface Water Monitoring Sites

- Upper South Fork Edisto River
- Upper North Fork Edisto River
- North Fork Edisto River Above North, 2173299
- Edisto River near Branchville, 2174000
- Shaw Creek
- Rocky Swamp Creek

Legend

- Active Gage
- Newly Active or Planned Gage
- Inactive Gage

Edisto Subbasins

- Lower Edisto
- Four Hole Swamp
- North Fork Edisto
- South Fork Edisto
Edisto Surface Water Model (SWAM)

- Simplified Water Allocation Model (SWAM)
- Originally completed in 2017
- Updated in 2020:
  - Inflow period of record extended through 2018.
  - Added new permits and registrations.
  - Removed inactive users.
- RBC will evaluate 4 scenarios:
  - Current Water Use
  - Maximum Permitted and Registered Use
  - Business-As-Usual Water Demand
  - High Water Demand
- 2017 model is available on the SCDNR website
  - Updated model will be posted soon

http://hydrology.dnr.sc.gov/surface-water-models.html
Groundwater Resources

Coastal Plain Aquifer System

- Fall Line (Aiken Co.)
- Aiken State Park (Aiken Co.)
- Cope Power Plant (Orangeburg Co.)
- St. George (Dorchester Co.)
- Coastline (Colleton Co.)

- Gordon aquifer
- Middle Floridan aquifer
- Surficial aquifer
- Crouch Branch aquifer
- McQueen Branch aquifer
- Charleston aquifer
- Gramling aquifer

Map inset showing the locations and scale of the aquifer system.
Aquifer Extents and Recharge Areas

Well Yields:
- Middle Floridan: 600-800 gpm
- Crouch Branch: 1000-2000 gpm
- Gordon: 600-800 gpm
- McQueen Branch: 1000-2000 gpm
Groundwater Monitoring

• Period of Record: 1 to 30+ years.
• SCDNR Data Reports available.
Groundwater-Level Data for McQueen Branch

Aiken County

Aquifer: McQueen Branch
- Elevation: 295 ft
- Depth: 500 ft
- Screen: 485-495 ft

BRN-0349 (C-6) Daily Average and Manual Water Levels

Barnwell County

Aquifer: McQueen Branch
- Elevation: 208.6 ft
- Depth: 1045 ft
- Screen: 1030-1040 ft
Groundwater-Level Data for Crouch Branch

### Aiken County

**AIK-0847 (C3) Daily Average and Manual Water Levels**
- **Aquifer:** Crouch Branch
- **Elevation:** 298 ft
- **Depth:** 193 ft
- **Screen:** 178-188 ft

### Barnwell County

**BRN-0353 (C-6) Daily Average and Manual Water Levels**
- **Aquifer:** Crouch Branch
- **Elevation:** 208 ft
- **Depth:** 588 ft
- **Screen:** 573-583 ft
Groundwater Data Viewer

View and download groundwater data

http://hydrology.dnr.sc.gov/groundwater-data/
Potentiometric Mapping

Maps showing groundwater elevations of the major aquifers.
Groundwater Model

- Developed by the USGS, 4-year project (2016-2019).
- Update of a 2010 groundwater flow model.
- Final report in review.
- Model is a decision-making tool used to assess groundwater availability and management strategies and will support the development of River Basin Plans.
• Planning Framework calls for permanent Groundwater and Surface Water Technical Advisory Committees.

• Purpose: to provide the State agencies and River Basin Councils with technical assistance and support during the development of River Basin Plans and the new State Water Plan.
  • Advise state agencies on any new data, model revisions or extensions, and alternative modeling platforms that could be used for planning purposes.
  • Approve the use of supplemental modeling platforms in the planning process.
  • Advise RBCs on model scenarios and assist in the interpretation of modeling results.

• Primarily serves as a “reactive” body as opposed to “proactive”.
  • TACs respond to technical questions/issues that arise in the planning process as needed.