

**Paper No. 13-19****Presentation Time:** 1:00 PM-5:00 PM***NITRATE AND SULFATE RETENTION BY WETLANDS  
IN THE CORONACA AND BROAD MOUTH CREEK  
WATERSHEDS, SOUTH CAROLINA***

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Through process such as denitrification, sulfate reduction, sedimentation and plant uptake, wetlands can improve the water quality of streams by removing excess nutrients from streams such as nitrate and sulfate. This study was conducted on four wetlands, three relatively small wetlands located on the Broad Mouth creek that are associated with small ponds and one large wetland located on the Coronaca Creek. Water samples were collected during the summers of 2001 and 2002 both at the upstream and downstream ends of the wetlands and from other sites not associated with the wetland systems.

The general water chemistry of both watersheds is a mixed-cation bicarbonate system. Nitrate and sulfate concentrations decreased after the stream flowed through the wetland. The average concentrations flowing into the wetlands were 1.4 mg/L nitrate and 1.4 mg/L sulfate for the Broad Mouth Creek, and 1.0 mg/L nitrate and 2.6 mg/L sulfate for the Coronaca Creek. Exiting the wetlands, these concentrations decreased to 0.41 mg/L nitrate and 0.65mg/L sulfate for the Broad Mouth Creek and 0.46mg/L nitrate and 1.25 mg/L sulfate for Coronaca Creek. On average, dissolved oxygen was also found to be lower both in and after the wetland than the average stream concentration. Silicon and dissolved organic carbon did not show any significant decreases after the wetland. Phosphorus concentrations were below the detection limit for all samples. Total dissolved nitrogen (TDN) concentrations were lower both in and at the downstream end of wetlands, due to a decrease in dissolved inorganic nitrogen (DIN). TDN concentrations dropped from approximately 10-40 percent after wetlands in the Broad Mouth and approximately 80 percent following the Coronaca wetland. The percent of TDN that is DIN ranged from 11 to 24 percent when associated with a wetland and increased to a range of from 42 to 62 percent when the sample site was not associated with a wetland.

Decreases in the concentrations of nitrate and sulfate suggest that these nutrients were retained in the wetland.

[South-Central Section \(37th\) and Southeastern Section \(52nd\), GSA Joint Annual Meeting \(March 12–14, 2003\)](#)

[General Information for this Meeting](#)

Session No. 13--Booth# 19

[Undergraduate Research Session \(Posters\)](#)

University of Memphis Conference Center: Holiday Inn, Ballroom 2/3

1:00 PM-5:00 PM, Thursday, March 13, 2003

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