

# MONITORING VARIABILITY IN MARSH VEGETATION AND SALINITY PRIOR TO DREDGING THE SAVANNAH RIVER INNER HARBOR

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The Savannah Harbor Expansion Project (SHEP) was implemented to allow better traffic flow for large-draft ships, primarily obtained through dredging the shipping channel, which will affect the estuarine dynamics within the Savannah National Wildlife Refuge and adjacent landholdings. Agreed upon in 2013 and moving forward on-the-ground in 2015, SHEP is nearly poised to dredge the inner harbor that extends from the mouth of the river up to the ports. Clemson University has been monitoring surface and sub-surface salinities, as well as seasonal marsh vegetation characteristics and tidal forest tree growth since 2014. Marsh vegetation communities have undergone change unrelated to SHEP, generally reflecting lower salinity conditions that have existed through the pre-construction monitoring; abundant rain in the upstate was sufficient to allow relatively high discharge further into the historically dry months at the three dams that govern flow into the estuary. Water levels and salinity impacts from Hurricane Matthew were captured throughout the monitoring area. Maximum surface salinities reached 16.89 psu at one monitoring station in the estuary, and maximum salinities recorded throughout the monitoring area were interesting spatially. Our monitoring will go forward as SHEP progresses. Major SHEP construction aspects currently underway include two oxygen injection systems and removal of pre-SHEP river tide gate artifacts. Future construction aspects of SHEP include increased flow through the Back River, part of the Savannah 3-river braided network at this point in the estuary. Anticipated effects of flow diversion include a decrease in site salinity and corresponding response in the marsh vegetation along the Back River, and is expected to ameliorate the anticipated loss of freshwater marsh communities along the main stem of the Savannah River upstream of the harbor.

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