



PAT MCCRORY  
*Governor*

DONALD R. VAN DER VAART  
*Secretary*

BRAXTON DAVIS  
*Director*

July 12, 2016

**MEMORANDUM**

**CRC-16-29**

**TO:** Coastal Resources Commission  
**FROM:** Ken Richardson, *Shoreline Management Specialist*  
**SUBJECT:** Science Panel Scope of Work: Inlet Shoreline Change Rate Methodology

The 2012 N.C. General Assembly directed the CRC to “study the feasibility of creating a new Area of Environmental Concern for the lands adjacent to the mouth of the Cape Fear River.” Session Law 2012-202 required the CRC to consider the unique coastal morphologies and hydrographic conditions of the Cape Fear River and to determine if action is necessary to preserve, protect, and balance the economic and natural resources of this region through the elimination of current overlapping AECs by incorporating appropriate development standards into one single AEC unique to this location.

During the course of this study, the CRC found that while the Cape Fear River Inlet did present a unique set of challenges, other inlets may have similar issues. The Commission therefore decided to undertake a comprehensive review of inlet-related issues, with the expectation of developing additional management tools that will allow the CRC to more proactively address the issues confronted by local governments in these dynamic areas.

Over the course of the study, the Commission reviewed existing shoreline management strategies, inlet dynamics, erosion rates and setback factors, as well as CRC development standards adjacent to inlets. The study also considered how historical and ongoing beach and inlet management techniques, including dredging, beach fill, beneficial use of dredged material, and engineered structures such as groins and jetties can be incorporated into a management strategy.

The Commission sought input on inlet management from a wide array of stakeholders that included sand managers, engineers, dredging industry representatives, the US Army Corps of Engineers and those with an interest in environmental impacts associated with inlet management. Stakeholders provided the Commission with an overview of their concerns and ideas regarding inlet management, including in-water issues (dredging), erosion control alternatives, and development standards on adjacent lands.

The Commission utilized the information gathered from the regional meetings, stakeholders and public comments to develop a list of short-term priorities, identifying erosion rate calculations for Inlet Hazard Areas as “number two” on the Commission’s short-term inlet management priority

list. The Science Panel was asked to develop a methodology for calculating shoreline erosion rates adjacent to inlets for the purpose of better understanding changes over time, in order to update and improve inlet management alternatives. However, the Science Panel's priority at that time was on finalizing the 2015 Sea-Level Rise Assessment Report, and the CRC did not issue a formal scope of work to the Panel. Now that the Sea-Level Rise Update report has been completed, staff recommend that the CRC consider developing a scope of work for the Science Panel to finalize their inlet shoreline change rate methodology, to include:

- 1) **Develop inlet shoreline change rate calculation methodology:** The Science Panel has considered inlet shoreline change rates throughout their inlet studies for the Commission. The Panel most recently utilized a linear regression method that incorporates multiple shorelines, versus the end-point method currently used to calculate rates on the oceanfront which only uses two shorelines (early and current). To date, inlet shoreline change rates have not been used for the purpose of determining construction setbacks at inlets.
- 2) **Re-evaluate points along the oceanfront shoreline where inlet processes no longer influence shoreline position:** When the Science Panel first started working on updating Inlet Hazard Area boundaries in 2005, the Panel evaluated changes in shoreline position over time to determine the location along the shoreline where inlet-related processes no longer have a dominant influence on the shoreline's position. Data collected after 2005 have not been included in this analysis, thus establishing a need to utilize newer data sets.
- 3) **Present results at a CRC Meeting:** The inlet shoreline change rate calculation methodology and study results will be presented at a late spring or early summer 2017 CRC meeting. At that time, and at the desire of the Commission, alternatives for updating and improving inlet management strategies can be pursued.

As recommended in the 2014 Inlet Management Issues Study, staff proposes to work with the Science Panel to utilize newer data and the Panel's methodology to re-analyze inlet shoreline change rates, and to re-evaluate the transition point along the oceanfront shoreline where inlet-related processes no longer have a dominant effect on the shoreline. Staff will present findings to the Commission at a late spring/early summer 2017 meeting.

**North Carolina  
Coastal Resources Commission**

July 12, 2016



**TO:** Margery Overton, Chair, CRC Science Panel  
**FROM:** Frank Gorham, Chairman, Coastal Resources Commission  
**SUBJECT:** Scope of Work: Inlet Erosion Rate Calculation Methodology

**PAT McCRORY**  
GOVERNOR

**FRANK GORHAM**  
CHAIRMAN

**RENEE CAHOON**  
VICE CHAIR

**NEAL ANDREW**

**GWEN BAKER**

**LARRY BALDWIN**

**DENISE GIBBS**

**MARC HAIRSTON**

**GREG LEWIS**

**PHIL NORRIS**

**RUSSELL RHODES**

**BEN "JAMIN" SIMMONS**

**JOHN SNIPES**

**BILL WHITE**

**BRAXTON C. DAVIS**  
EXECUTIVE SECRETARY

At the Coastal Resources Commission meeting on May 14, 2014 in Atlantic Beach, the Commission noted that just as every inlet is different, so are shoreline change rates along their beaches. During that meeting, the Commission identified erosion rate calculations for Inlet Hazard Areas as the second-highest priority on the Commission's short-term inlet management priority list, and asked the Panel to develop a methodology for calculating shoreline erosion rates adjacent to inlets for the purpose of better understanding changes over time.

At that time, priority was placed on finalizing the 2015 Sea-Level Rise Assessment Report, and the CRC did not issue a formal scope of work to the Panel. Now that the Sea-Level Rise Update report has been completed, the CRC is asking the Science Panel to finalize your proposed inlet shoreline change rate methodology and provide the Commission with results listed under the following scope of work:

**Scope of Work:**

- 1) Develop inlet shoreline change rate calculation methodology;
- 2) Re-evaluate points along the oceanfront shoreline where inlet processes are no longer the dominant influence over shoreline position; and
- 3) Present results at late spring/early summer 2017 CRC meeting

The CRC is very appreciative of your dedication to helping decision-makers and the general public better understand coastal processes in North Carolina.