

**INTEGRATED  
GENERAL REEVALUATION REPORT  
AND  
ENVIRONMENTAL ASSESSMENT  
FOR  
COASTAL STORM DAMAGE  
REDUCTION PROJECT**

**FOLLY BEACH SOUTH CAROLINA**

**APPENDIX G  
SECTION 111 FOLLY BEACH**

## Section 111 Appendix

### Section 111 Authority

Section 111 of the River and Harbor Act of 1968, as amended, (Section 111) authorizes the Secretary of the Army to “investigate, study, plan, and implement structural and nonstructural measures for the prevention or mitigation of shore damages attributable to Federal navigation works.” 33 U.S.C. § 426i. Implemented prevention or mitigation measures are cost-shared “in the same proportion as the cost-sharing provisions applicable to construction of the project causing the shore damage.” Further, the Secretary shall integrate Section 111 mitigation measures with specifically-authorized Federal Coastal Storm Risk Management (CSRM) studies or projects in the same geographic area for a complete solution to shore damages. 33 U.S.C. § 426i(d); ER 1105-2-100, ¶F-26.b. Under USACE policy, it is appropriate to exercise Section 111 authority to mitigate or prevent shore damages when equitable and in the public interest. EP 1165-2-1, ¶12-24.

### Folly Beach Section 111 History and Development of Mitigation Measures

USACE recognition of the relationship between the Federal navigation jetties for Charleston Harbor and shoreline damages at Folly Beach has a long history. A Federal project for the construction of two jetties to protect the Charleston Harbor entrance channel was adopted in 1878; subsequent projects provided for increasing the lengths and heights of the jetties and deepening of the entrance channel. In conjunction with the ongoing deepening of Charleston Harbor (including the entrance channel), USACE continues to perform maintenance on the Federal jetties. The Federal navigation jetties have been constructed and maintained at 100% Federal expense.

As early as 1935, USACE reported to Congress on a cooperative study with the State of South Carolina pursuant to Section 2 of the River and Harbor Act of 1930 regarding Beach Erosion at Folly Beach, SC. H.R. Doc. No. 156, 74<sup>th</sup> Cong., 1<sup>st</sup> Sess. (1935). At the time, the shoreline at Folly Beach was observed to be a comparatively flat beach of fine sand, with a line of sand dunes immediately shoreward ranging in height from 12 to 18 feet above mean low water. Among other things, the report concluded that “[l]ittle if any of the littoral drift from the coast north of Charleston Harbor reaches Folly Island because of the large volume of flow in and out of that entrance [channel].” [Report, at 12]

In 1987, USACE completed a Section 111 study (Folly Beach Section 111 Study) to “define any damages to adjacent shores that may be attributable to the Federal navigation project for Charleston Harbor, and to determine the most efficient methods of alleviating identified damages.” The study reach included the entire Atlantic frontage of Folly Island, extending from Dewees Inlet on the northeast to Stono Inlet on the southwest, and from the front beach to the - 30 feet MLW ocean depth. Below (Figure 1) is the location map of the Section 111 study area. Figure 1 also depicts the location of the entrance channel jetties in relation to Folly Beach (the north jetty is 15,443 feet long and the south jetty is 19,104 feet long).

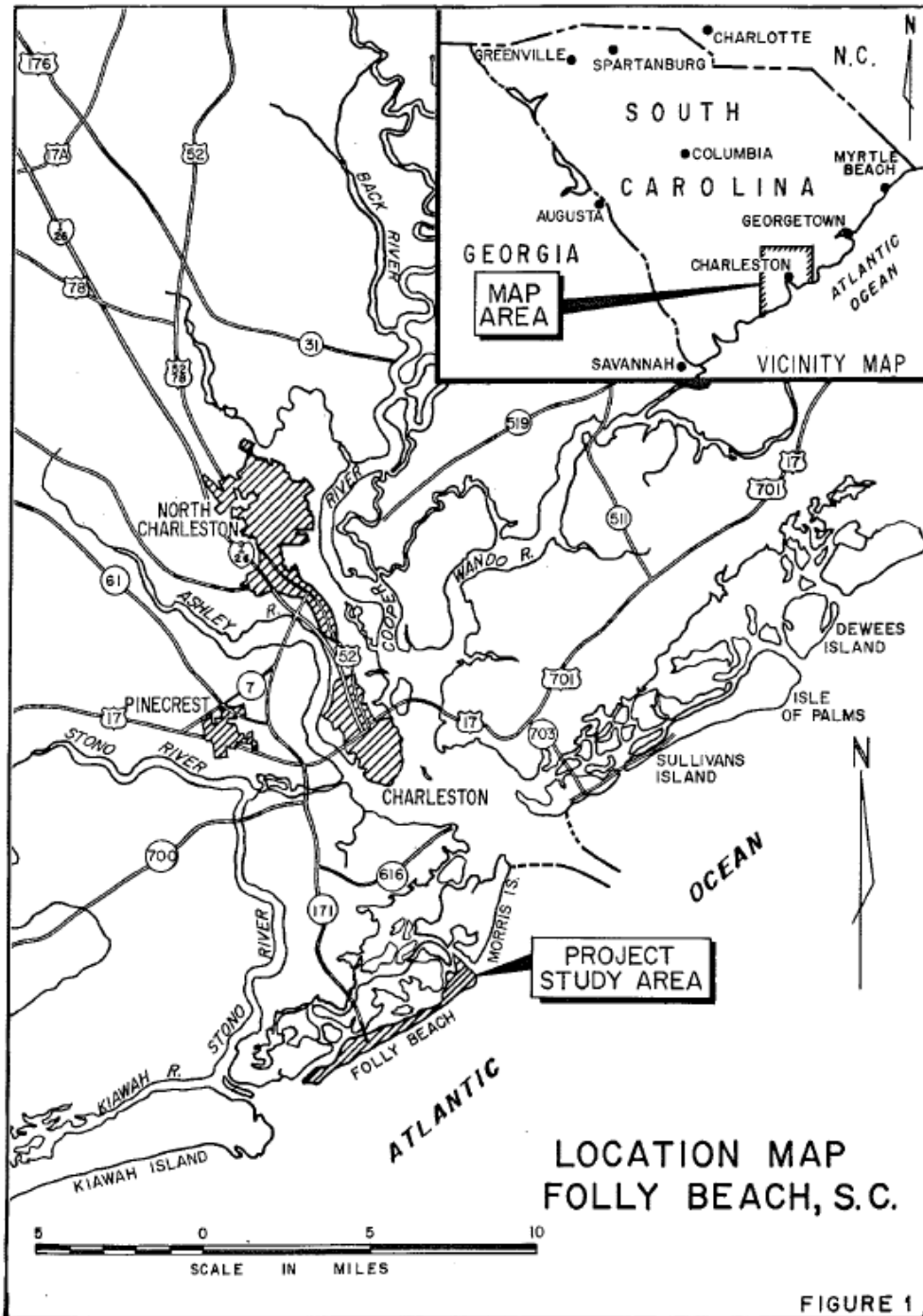


FIGURE 1

Contained in the Folly Beach Section 111 Study was both (1) findings on how much erosion on the front beach of Folly Island was attributable to the Charleston Harbor Navigation Project and (2) a selected plan for mitigating the Charleston Harbor Project's impact.

The Folly Beach Section 111 Study first found that the navigation works at Charleston Harbor were responsible for about fifty-seven percent (57%) of the erosion that had occurred along the

front beach at Folly Island. Shown below is page 20 of the Section 111 study, which summarized the technical investigations leading to the study findings.

#### TECHNICAL INVESTIGATIONS

The Charleston District requested the U. S. Army Corps of Engineers' Waterways Experiment Station (WES) to have its Coastal Engineering Research Center (CERC) evaluate the Charleston Harbor Navigation Project and determine if the construction of that project had any impact on the erosion at Folly Island. CERC's findings are presented in a report entitled "Evaluation of the Impact of Charleston Harbor Jetties on Folly Island, South Carolina". CERC's analysis is intended to document the historic bathymetric changes and shoreline movements, and to calculate volumetric changes between time periods. The study also included a limited regional shoreline movement assessment, a wave transformation analysis, and a literature search of publications relating to coastal processes and morphology near the study area. CERC's study concluded that:

"Construction of the Federal navigation project at Charleston Harbor resulted in diversion of the main ebb-tidal channel and landward migration of ebb-tidal shoals offshore of Morris Island. Littoral sediment transport from the north has been effectively blocked by the jetties, causing a decreased sediment supply to Folly Island and offshore areas. This reduction of sediment supply has decreased the volume of material in the Folly Island shoal and steepened offshore contours, ultimately increasing wave energy potential along Folly Island. Non-federal factors such as sea level rise and erosion mitigation efforts by local interests have also played roles in shoreline behavior on Folly Island. An evaluation of the various study results, including shoreline evolution, change in wave energy potential, and a sediment balance assessment has resulted in the identification of 57 percent of the average volumetric loss rate from Folly Island attributed to the non-mitigated effects of the Federal navigation project."

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In sum, the jetties that stabilize the Charleston Harbor entrance channel also block the southward littoral transport of sediment to Folly Beach. This decrease in sediment supply also resulted in steepened offshore contours, increasing wave energy potential along the Atlantic frontage of Folly Island.

The Folly Beach Section 111 Study then determined that the best solution at that time to prevent shore damage and mitigate this direct impact on the Folly Island front beach shoreline was the construction and periodic nourishment of a project previously-authorized in the 1986 Water

Resources Development Act (WRDA)—the restoration of 16,860 linear feet of Folly Island beachfront. As discussed in further detail in the main report, this project was later modified to provide for nourishment of 28,200 linear feet (1991 GDM) and again later increased to 28,890 linear feet (2005 EDR).

In the current reassessment of the authorized Folly Beach project under the Bipartisan Budget Act of 2018 (P.L. 115-123), USACE has determined that Section 111 measures continue to be merited as part of the recommended construction and periodic nourishment of the complete solution recommended in the main report. These Section 111 measures are both equitable and in the public interest, and remain necessary to address the 57 percent of Folly Island’s front beach erosion attributable to the Charleston Harbor navigation jetties.

The need for Section 111 measures applies to all reaches within the reformulated project area. The complete solution identified in the recommended plan includes the construction of an enlarged berm as well as a dune to address shoreline damages. The proposed berm and dune system constitute the best comprehensive solution to the problem of shoreline damage at Folly Beach. Among other things, a dune provides stability to the shoreline, protects against elevated water levels resulting from storm surge, and serves as a “reservoir” of sand, feeding the beach during erosive events.<sup>1</sup> The integrated berm and dune system addresses shoreline erosion and storm risk due to natural processes and the impact of the navigation jetties.

#### Reformulated Project Cost-sharing

The usual CSRSM construction cost-sharing will be modified for the recommended project in accordance with Section 111. Section 111 provides that the cost of mitigating the shore damage caused by the Charleston Harbor jetties is to be shared in the same proportion as the cost sharing provisions applicable to the construction of the Charleston Harbor jetties. Since the construction and maintenance of the Charleston Harbor jetties has been 100 percent Federally-funded, the cost of the Section 111 mitigation measures for Folly Beach is likewise a 100 percent Federal responsibility. Shoreline damages not caused by the Federal navigation project will continue to be apportioned in accordance with the provisions of WRDA 1986.

As previously noted, the 1987 Folly Beach Section 111 Study found the Charleston Harbor navigation jetties responsible for 57 percent of the erosion in this study’s project area. As a result, 57 percent of the total project cost will be 100 percent Federally funded, with the remaining 43 percent to be cost-shared at 65 percent Federal and 35 percent non-Federal in line with Section 103(c)(5) of WRDA 1986. The net cost sharing for the entire recommended project will be 85 percent Federal and 15 percent non-federal.

<sup>1</sup> Berms and dunes are typically viewed as related parts of a unified system providing CSRSM benefits. E.g., Final Report: An Analysis of the U.S. Army Corps of Engineers Shore Protection Program, IWR REPORT 96-PS-1, Ch.3, ¶G.