

PUBLIC AND AGENCY COMMENTS AND RESPONSES  
APPENDIX H  
FOLLY BEACH, SOUTH CAROLINA

SEPTEMBER 2021



Prepared by:

U.S. Army Corps of Engineers, Wilmington District

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## Tribes

### **Catawba Indian Nation**

Catawba Indian Nation Comment 1: The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.

*US Army Corps of Engineers (USACE) Response1: Noted. Thank you very much for your review. The Catawba will be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.*

## Federal Agencies

### **National Marine Fisheries Service (NMFS)**

NMFS Comment 1. Overall, the Draft Report/EA was comprehensive and complete, and the NMFS has no EFH conservation recommendations for the work.

*US Army Corps of Engineers Response 1: Noted. Thank you very much for your review.*

NMFS Comment 2. The nourishment interval used for evaluating the project is twelve years, a frequency chosen based on the economic analysis (Appendix A, page 49). Given the history of nourishments (Appendix A Table 2-1) occurring six times in the past 20 years, the assumed interval would benefit from additional discussion.

*USACE Response 2: The selection of the nourishment interval is based on the cost of nourishment and the benefits of damages prevented. The updated selected design includes a wider berm than the current project, 5 ft wide versus the 35 and 50 ft wide berm. The previous project also did not include a dune, the new project includes a dune. The engineering and economic analysis included the existing rock revetments and the bulkheads in preventing damages, the periodic nourishments served the purpose of preventing failure from erosion during the 12 year period. The fixed dredge mobilization cost as a percentage of the total project cost has greatly increased in the past 20 years impacting the total 50-year benefit cost analysis. Extending the nourishment cycle was required to increase B/C ratio with the knowledge that the existing armor will protect the inland structures and the beach will be depleted at the end of the cycle.*

NMFS Comment 3. Section 4.07.5 notes long-term adverse impacts to benthic resources would result from limiting the project to non-structural approaches. The rationale provided is beach erosion would continue reducing the amount of sandy habitat available for these benthic communities. The NMFS notes this conclusion assumes structures blocking habitat migration would remain in place.

*USACE Response 3: Concur. The conclusion does assume structures blocking habitat migration would remain in place.*

NMFS Comment 4. The modeling for the Draft Report/EA assumed no future change in storm frequency and an intermediate rate of sea level change (e.g., Section 3.01 and Figure 3-2). The NMFS recommends reevaluating these assumptions based on more recent science (<https://www.gfdl.noaa.gov/global-warming-and-hurricanes/> and <https://doi.org/10.1175/BAMS-D-18-0189.1>).

*USACE Response 4: The selection of the Intermediate sea level change rate follows the USACE guidelines as defined in Engineer Pamphlet EP 1100-2-1 "Procedures to Evaluate Sea Level Change: Impacts, Responses and Adaptation" 30Jun2019 and ER 1100-2-8162 "Incorporating Sea Level Change in Civil Works Programs" 31Dec2013.*

*The USACE tool Sea Level Tracker was used in calculating and comparing the rates, [https://climate.sec.usace.army.mil/slr\\_app/](https://climate.sec.usace.army.mil/slr_app/). The Intermediate rate was selected for the Folly Beach project with guidance and review of the USACE Climate Preparedness and Resilience Community of Practice. Triggers for when planning should begin in adapting the project design or nourishment intervals will be developed and presented in the Operations and Maintenance Manual. Triggers will be based on changing rates of mean sea level at the Charleston NOAA gauge and by evaluating the performance of the Folly Beach CSR.*

*The USACE currently does not have a policy or guidelines for including future changes in storm frequency in project design. From ER-2-8162, "At this time, no certain effects of climate change on tropical cyclone (TC) activity in terms of frequency, intensity, and rainfall across all global basins have been identified as changes to the variability of TC activity expected from natural causes. As a result, the current science related to climate effects on TC activity relevant to the United States (U.S.) has not reached the point of standard consensus necessary to inform a change in storm analysis baselines." Including changing storm frequency would require additional analysis and USACE approvals beyond the current schedule, scope of work and budget.*

NMFS Comment 5. Section 5.06 discusses portions of the study area protected under the Coastal Barrier Resources Act. This section may need updating given the recent proposal by the U.S. Fish and Wildlife Service to expand by 2600 acres the area of Folly Beach and vicinity protected under the Act (Federal Register Number 2020-29403, dated January 4, 2021).

*USACE Response 5: Concur. This section will be updated with the recent proposal by the U.S. Fish and Wildlife Service. The USACE has determined the proposed changes to the CBRS units will have no effect to the project.*

NMFS Comment 6. The USACE discusses risks and uncertainties in Section 6.09. Elsewhere, the Draft Report/EA acknowledges the potential for weakness associated with choices for sea level change and storm frequency and the USACE's commitment to adaptive management during the Preconstruction, Engineering and Design Phase of the study (Appendix A page 17). The NMFS hopes to continue engagement with the USACE in any future adaptive management related to this effort to maximize avoidance and minimization of impacts to natural resources.

*USACE Response 6: Concur. The USACE will continue to coordinate and engage with the NMFS.*

## **US Fish and Wildlife Service (FWS)**

Your agency is planning to defer preparing a biological assessment and initiating consultation until closer to the completion of the final plans and specifications. The Service agrees with this timeline and we look forward to working with you to minimize impacts to federally listed species.

*USACE Response 7: Thank you. The USACE will continue to coordinate and engage with the FWS.*

## State Agencies

### **South Carolina Department of Natural Resources (SCDNR)**

SCDNR Comment 1. The SCDNR understands that the Corps will be initiating a formal consultation with the US Fish and Wildlife Service (FWS) and obtain a new biological opinion (BiOp) that will address the potential impacts of the proposed project on the above-listed species. This BiOp will include specific terms and conditions as well as conservation measures that will address the protection of these species and their critical habitat. The SCDNR recommends that the project adheres to all terms and conditions outlined in the BiOp.

*USACE Response 1: Concur. USFWS has agreed that with the exception of the seasonal window in terms and condition #1, the 2018 biological opinion is applicable for the current study. USFWS has requested, and USACE agrees, with performing additional consultation during PED prior to initial construction of the project.*

SCDNR Comment 2. To avoid adverse impacts to nesting turtles, SCDNR recommends that every effort is made to conduct nourishment activities outside of turtle nesting season.

*USACE Response 2: Concur. The USACE will conduct nourishment activities outside of turtle nesting season to the maximum extent practicable.*

SCDNR Comment 3. Changes in benthic community composition occurred primarily at the species level and reflected recolonization by and turnover of opportunistic taxa within the disturbed seafloor. Monitoring results clearly show that previous dredging practices in offshore borrow sites off the north end of Folly Island can produce significant and consistent changes in soft-bottom habitats, affecting both the ability to reuse the area for future nourishment projects and the ecological characteristics of the system. To minimize these impacts and speed recovery, hydrologic and sediment transport modeling studies should be conducted to determine the appropriate borrow pit depth to minimize the accumulation of fine sediments. Dredging should be limited to those depths where beach compatible sands re-accumulate. Consideration should also be given to identifying borrow areas further from

*USACE Response 3: An integrated coastal modeling system composed of a spectral wave model and a 2-D depth-averaged hydrodynamic and sediment transport model was applied to Stono Inlet, Folly River, Folly Beach, Kiawah Island and the nearshore areas to calculate sediment movement under the combined influence of waves and current. The Coastal Modeling System (CMS) was used in the study by the Coastal and Hydraulics Laboratory (CHL) of the US Army Corps Engineer Research and Development Center (ERDC). The field data collection program was completed by USACE Field Data Collection & Analysis Branch of CHL. A summary report (Dec 2020) provides the details of these tasks and the results and major findings of the study. CMS*

*was used to evaluate the impacts of borrowing material from the Folly River and the Stono Inlet shoal complex. A second steady-state wave model using (STWAVE) was also used to evaluate the impacts of borrow areas in the nearshore area and of Stono Inlet. The results included changes to currents, wave heights and sediment transport rates with the use of the proposed sand borrow areas. The model looked at a single storm event (Hugo) and a year-long model simulation. Results of the modeling analysis resulted in the elimination of the borrow area within the nearshore Stono Inlet ebb shoal adjacent to Kiawah Island. The CMS model confirmed the use of the Folly River and offshore areas. The model confirmed the rapid recharge rate of the Folly River prior to the next nourishment cycle, 35% the first year with complete recharge within six years.*

SCDNR Comment 4. Additionally, given the distance between the Folly River borrow site and the beach proposed for nourishment, it is likely that the proposed plan requires pumping of spoil materials for a significant distance, and across a substantial acreage of estuarine habitat, thus creating the potential for impacts to estuarine resources associated with dredge-pipe placement and dredge-pipe failure and inadvertent discharge. The SCDNR recommends a detailed spoil disposal plan be submitted for review, including the proposed dredge-pipe alignment and measures to be taken to avoid and minimize disturbance to estuarine resources.

*USACE Response 4: The USACE allows the dredging contractor to determine the dredge pipe alignment and requires them to perform magnetometer and side-scan sonar surveys of their selected alignment path prior to construction. The purpose of these surveys is to ensure there are no cultural resources nor sensitive estuarine resources within the proposed pipeline path. These surveys will be shared with SCDNR. A detailed spoil-disposal plan is not considered necessary for a beach nourishment project.*

#### **South Carolina Department of Archives and History/ State Historic Preservation Office (SHPO)**

SHPO Comment 1. We have reviewed the above project document and have a few recommendations. As noted in the document Section 5.07 Cultural Resources (p.96) there is mention of a planned submerged cultural resource survey in Borrow Areas E and F along with attendant dredging infrastructure areas to be conducted in coordination with the SHPO and SC Office of State Archaeology. The main survey device is listed as a magnetometer to detect shipwrecks. But we recommend that in addition to using a magnetometer that the survey specifications also include a side-scan sonar and sub-bottom profiler, to not only detect ferromagnetic materials, but also subsurface prehistoric features, as past dredging activities have kicked up remnants of Archaic-period points on the beach, along with other submerged cultural resource industry standards. Additionally, the coordinating entity is the Maritime Research Division of the South Carolina Institute of Archaeology and Anthropology.

*USACE Response 1: Concur. The survey specifications will also include a side-scan sonar and sub-bottom profiler. The USACE will coordinate with the Maritime Research Division of the South Carolina Institute of Archaeology and Anthropology.*



## **Individuals, Associations and Organizations (IAO)**

**Coastal Conservation League, Save Folly Beach, South Carolina Environmental Law Project, C.T. Lowndes & Company, Heather Braucher, Napier, Jackie and Matt Napier, Holly Sergent.**

IAO Comment 1. USACE received multiple comments regarding Folly Beach's super beachfront lots. These lots, located in front of existing front beach houses, were deeded and platted in the mid-1900s. Approximately 15 of these lots have been developed, with approximately 17 more that could possibly be built upon in the future. When the City delineated the Perpetual Easement Line (PEL) in 1992, these super beachfront lots were above water and developable. Since 1992, severe erosion has at times resulted in the ocean claiming portions of these lots. Periodic nourishments over the past decade though have re-emerged this land above the PEL line, restoring the possibility of development.

Several commenters averred that super beachfront development hinders public beach use, in addition to increasing future storm protection costs due to the lots' ocean proximity. These commenters asked how USACE could prevent development of these lots or remove development on these lots. Some suggested USACE explore an alternative involving both (1) super beachfront lot buyouts and (2) a beach nourishment project beginning at the erosion line that existed prior to the most recent 2018 renourishments. In essence, commenters asked what USACE could do to move the current PEL landward in response to erosion since the line was set in 1992.

*IAO Response 1: The Federal objective of water and related land resources project planning is to contribute to national economic development (NED) consistent with protecting the Nation's environment. In consequence, USACE must select the alternative plan that reasonably maximizes net economic benefits consistent with protecting the Nation's environment (the NED plan). The only exception is where there are overriding reasons for the non-NED plan sufficient for the Assistant Secretary of the Army for Civil Works to agree to allow selection of the non-NED plan—an atypical occurrence. Although USACE understands that some believe that a plan with dunes further back would be more effective or ideal, the USACE determined, based on its policies and expertise, that the selected plan best protected the project area from hurricane and storm damages while maximizing net benefits.*

*USACE evaluated the option of funding structure removal and/or buying out property interests, either alone or in combination with a structural solution. USACE carried forward an alternative that involved buyout and demolition of structures in approximately the first three rows from the shoreline. This would remove vulnerable properties instead of spending funding continuing to protect those locations. USACE determined the costs well exceeded the benefits in hurricane and storm damage reduction. In addition, USACE also considered an alternative that consisted of a combination of structural measures with buyout and removal. Analysis of options under this alternative, however,*

*failed to yield a combination that exceeded the net benefits of a structural plan by itself. Shifting the PEL landward equates to high real estate costs as private land is taken for public use. Ultimately, USACE determined that placing dunes landward of the PEL, without any property removal or buyouts, provided the most net benefits for Folly Beach and the nation.*

*USACE also believes the selected dune and berm placement and renourishment interval is ideal taking into account the costs and benefits of various alternatives. One commenter asserted that the dunes constructed per the current Folly Beach project are improperly placed and therefore less effective. Another noted that placing the dunes out past the PEL line would result in the dunes eroding immediately. USACE notes that the current Folly Beach Project (1991) does not include a dune within the design template. The current project includes a 15' wide protective berm only. The proposed plan includes a dune to provide protection from storm surge events. The detail design and placement of the dunes will be performed during the Planning, Engineering and Design Phase of the project using the most recent beach surveys. The dunes serve a critical roll in storm surge protect and feeding sand to the beach during storm events. Alternatives with the berm only and no dune did not provide sufficient benefits. The dunes will be placed within existing project boundaries. The dunes are expected to erode and likely be removed in locations and will be rebuilt during the next beach nourishment cycle.*

*For the proposed beach project, responsibility for acquiring further perpetual easements, if needed, rests with the City of Folly Beach. The easements required depend on the location USACE selects for the project under its recommended plan. After much engineering, economic, and environmental analysis, USACE has selected the recommended plan as indicated in the report. The project location remains seaward of the PEL set in 1992. There is therefore no basis—to allow the recommended Federal project to proceed—for USACE to require the City of Folly Beach to acquire further perpetual easements landward of the current PEL line.*

## **Billy Grooms**

Billy Grooms Comment 1. Would recommend more frequent renourishment than the 12 year span. Folly Beach needs renourishment every 4 to 5 years.

Would recommend Folly Beach be allowed in writing to charge for parking on the island to allow funds be raised to pay for the city's 15% liability of each project. This also allows critical public services for users of beach access to include Police, Fire, Medical, water, maintenance of beach access, trash pickup, restrooms, landscaping and all associated costs pertaining to public beach access.

Allow access to recover sand from the Stono inlet as that is where most of the eroded sand goes. It clears the way for boating and the sand is a better quality than off shore.

If possible, sand from the Charleston Harbor dredging would also be welcomed as well as the northeast side of the harbor jetties.

*USACE Response 1: A nourishment interval of 4 to 5 years would not be economically justified. More frequent renourishments were considered prior to determining the recommended plan, see Appendix E for more information.*

*Coastal modeling of the inner Stono Inlet shoal has shown that borrowing material from this area could have potential negative impacts to the Folly Beach and Kiawah Island shorelines. Deepening of the area within the shoal allows bigger wave heights to reach the shoreline and change the tidal currents. Borrowing sand from inside the protected area of the Folly River had no negative impacts or from areas further offshore. The cost of moving sand from the north side of the jetties for a full-scale nourishment project on Folly Beach was cost prohibitive.*

*Per ER 100 the city can charge “reasonable” fees.*

## **J.D. McAllister**

J.D. McAllister Comment 1. Does the use of offshore sand hinder natural accretion and aid erosion? This is a serious question that needs to be studied and answered. What is the best scientific answer to this question? What will the Corps do to answer this question? Will an Environmental Impact Study be undertaken?

*USACE Response 1: USACE-ERDC conducted an offshore borrow area analysis using the Steady-state Wave model STWAVE. The study used the nearshore bathymetry and hindcasted wave data off Folly Beach to evaluate changes to the wave climate and impacts on the shoreline. The model was ran with existing conditions and with sand excavated from the borrow area represented by deepening the bathymetry grid at the proposed borrow area. The model was ran with multiple wave directions and using the mean monthly, maximum monthly and the maximum wave event in the wave record. The study resulted in the removal of a borrow area near Stono Inlet because of increased wave heights at Folly Beach and Kiawah Island. All of the other borrow sites were further offshore and below the depth of closure and had no impact on the shorelines.*

## **Audubon South Carolina (ASC)**

ASC Comment 1: The COE’s reliance on recent actions by the Department of Interior opening-up the CBRS to sand mining for use outside of the System is unlawful and inconsistent with the plain language of the Coastal Barrier Resources Act.

*USACE Response 1: Utilization of sand from within a CBRS unit to nourish a beach outside the unit was determined by US Department of the Interior (USDol) to be an acceptable action in a November 2019 Solicitor’s opinion. On July 15, 2021, the*

*Department of Interior reinstated its earlier interpretation under CBRA as it relates to certain federally funded shoreline stabilization actions, vacating the 2019 opinion. On August 5, 2021, the USFWS notified USACE that, as it relates to this project, “the CBRA exception under 16 U.S.C. § 3505(a)(6)(G) for ‘nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system’ cannot be applied to removal of sand from within the CBRS to support beach nourishment projects that occur outside of the CBRS.” As a result, the recommended plan will not utilize borrow sites located within a CBRS Unit.*

ASC Comment 2: Opening the CBRS to sand mining is strongly opposed by taxpayer advocacy organizations, state officials, sportsmen’s organizations, conservative think tanks, and conservation groups nationwide.

*USACE Response 2: The USACE coordinates use of sand from within a CBRS with the U.S. Fish and Wildlife Service (the federal agency responsible for implementing the Act).*

ASC Comment 3: The Draft Report and EA for the project is deficient because it fails to sufficiently evaluate and address the immediate and lasting harm that the project will impose on sensitive coastal resources in South Carolina that are included in the Coastal Barrier Resources System. The EA fails to sufficiently consider and address impacts from the project on shorebirds, fish and shellfish, and other animals that use the CBRS areas to harmful impacts. The COE’s environmental assessment also fails to address impacts to the sand borrow sites themselves from repetitive major sand mining episodes.

*USACE Response 3: The 2020 sediment transport modeling study cited in section 5.01 confirmed rapid recharge of the Folly River borrow area with the majority of that material originating from the nourished beach and nearshore area along Folly Beach and transported southwest around the terminal groin. The model results did not show negative erosion impacts to the County Park shoreline when removing 2,500,000 CY from the Folly River. Model results did show an increased in erosion of the river bottom below MLW immediately adjacent to the borrow area footprint but did not extend to the Folly Island shoreline or to Bird Key Stono. Based the 2020 ERDC study and on past use of the same area, no significant impacts are expected. In addition, previous use of the Folly River borrow site has not resulted in any long-term harm to sensitive coastal resources. The USACE relies on this knowledge in assessing the impacts from future use of the same borrow site.*

ASC Comment 4: Sediment dredging can interrupt natural sand supplies, particularly in inlets. Benthic and ecological damages can be caused by sand mining. Sand mining in coastal inlets can reduce coastal resiliency. Negative impacts on birds can occur from dredging sand in inlets.

*USACE Response 4: Benthic organisms within the tidal salt waters of the Folly River borrow area and offshore borrow sources dredged for construction and periodic nourishments would be lost. However, recolonization by opportunistic species would be short-term and expected to begin soon after the dredging activity stops. Because of the opportunistic nature of the species that inhabit the soft-bottom benthic habitats, recovery would be expected to occur within 1–2 years, well within the 12-year nourishment cycle. Therefore, no significant impacts are expected to benthic resources.*

*Birds that use the borrow areas as feeding grounds may be temporarily impacted during dredging activities but would quickly return when the dredge leaves. The project would not be expected to significantly affect breeding and nesting shorebirds or colonial waterbirds in the project area.*

*See previous comment for impacts to CBRA and sand mining.*

### **Charleston County Park and Recreation Commission (CCPRC)**

CCPRC Comment 1. The main concern for CCPRC is the reduction in project length and resulting elimination of most of Folly Beach County Park from the project area. In addition, consider including Lighthouse Inlet Heritage Preserve, at the northeast end of Folly Island into the study limits. It too is subject to erosion from storm damages from the federal project at Charleston Harbor and has not benefited from any renourishment.

*USACE Response 1: In response to CCPRC's comments, USACE has included Section 111 mitigation measures in both the Folly Beach County Park and the Lighthouse Inlet Heritage Preserve reaches as part of Folly Beach's comprehensive shoreline protection solution.*

### **City of Folly Beach (FB)**

FB Comment 1. In 2017, the City selected a high sea level rise scenario in its Sea Level Rise Adaptation Report. The final federal plan should reflect the same assumed rate of increase and not the intermediate sea level rise scenario that was selected.

*USACE Response 1: The selection of the Intermediate Sea Level Changed rate followed USACE guidelines and regulations and was approved by the USACE Climate Preparedness and Resilience Community of Practice. The Intermediate rate was also selected for the Charleston Peninsula Coastal Storm Risk Management Feasibility Study and used the same tide gage used for Folly Beach.*

FB Comment 2. A Section 111 study found that the Charleston Harbor jetties are responsible for the majority of erosion on Folly Beach. The erosion caused by the jetties has been documented to be chronically severe and this data should be reflected in the study. The maximum erosion rates utilized for the recommended project were 20 ft/yr on the northeast end. The City's beach monitoring program has measured post-nourishment erosion rates during the first two years after nourishment of 80-100 ft/yr on average. More realistic erosion rates should be considered to reflect the rapid, chronic erosion that has historically dominated Folly, and will continue to do so into the next 50 years, particularly as sea levels rise and storms become more frequent and intense.

*USACE Response 2: The erosion rates used in the analysis were reviewed during the subject matter expert review and during the USACE District and Agency Technical*

*Reviews and approved. The use of erosion rates of 80 to 100 ft/year would result of loss of most of the 1.5 mile northeast end of Folly Beach within 2 years. A majority of the northeast end of the island is under 200 ft. Armor along the northeast end halts the erosion rates.*

FB Comment 3. The Corps' BeachFx model only considers benefits to occur after a complete loss of all protective measures (beach and dune system, seawalls) leading to upland structural failure. This model does not mirror practice on the ground. The Corps doesn't let seawalls fail and houses fall in the ocean – we renourish before that occurs. An updated federal model which is based on preventing damages to private property should be used in order to reflect the core purpose of coastal storm risk reduction.

*USACE Response 3: The use of Beach-fx model is the approved and accepted software for use Coastal Storm Risk Management studies.*

FB Comment 4. Recreation benefits are included in the report. As per policy Corps, recreation benefits are incidental and are not used in plan formulation/selection. Changes to this policy are beyond the scope of this feasibility study.

*USACE Response 4: Recreation benefits are included in the report. As per policy USACE, recreation benefits are incidental and are not used in plan formulation/selection. Changes to this policy are beyond the scope of this feasibility study.*

FB Comment 5. The recommended 12-year renourishment interval does not reflect the past performance of renourishments on Folly Beach. Most of the sand placed on Folly Beach erodes within 2 or 3 years after nourishment. In fact, the Corps has been renourishing Folly Beach every 4 years recently. The final report must address the renourishment interval to avoid an artificially low total project cost. If not, the project will no doubt end up violation of Section 902 (spending all the authorized funds before 50 yrs is up) due to more frequent projects needed due to high erosion and more frequent storms.

*USACE Response 5: More frequent renourishments were considered prior to determining the recommended plan. USACE policy is to identify the plan that maximizes net benefits, which is achieved via the recommended plan. If the sponsor has different objectives than the federal government which leads them to prefer another alternative, they are free to pursue a locally preferred plan. See Appendix E for more information on modeling results.*