

FINDING OF NO SIGNIFICANT IMPACT

Issuance of a Negotiated Agreement Authorizing Use of Outer Continental Shelf Sand from Surfside Borrow Area in the Myrtle Beach Reach 3 Storm Damage Reduction Project – Garden City and Surfside Beach, South Carolina

Pursuant to the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), the U.S. Army Corps of Engineers Charleston District (Corps), in cooperation with the Bureau of Ocean Energy Management (BOEM), prepared an environmental assessment (EA) to determine whether the proposed use of Outer Continental Shelf (OCS) sand resources in the Myrtle Beach Reach 3 Storm Damage Reduction Project (Project) would have a significant effect on the human environment and whether an environmental impact statement (EIS) should be prepared.

Pursuant to the Department of the Interior (DOI) regulations implementing NEPA (43 CFR 46), BOEM has independently reviewed the EA and determined that the potential impacts of the proposed action have been adequately addressed.

Proposed Action

BOEM's proposed action is the issuance of a negotiated agreement to authorize use of the Surfside Borrow Area so that the project proponents, the Corps and Horry County (non-federal sponsor), can obtain up to 1 million cubic yards (cy) of OCS sand for the Project. The Corps' proposed action is the nourishment of approximately 7.7 miles of shoreline.

The purpose of BOEM's proposed action is to respond to the Corps' request for use of OCS sand under the authority granted to the DOI by the Outer Continental Shelf Lands Act (OCSLA). The legal authority for the issuance of negotiated noncompetitive leases for OCS sand and gravel is provided by OCSLA (43 U.S.C. 1337(k) (2)). The project was authorized by Congress for initial construction by Section 01(a)(1) of the Water Resources and Development Act of 2000. The project is needed in order to provide storm and long-term erosional protection to shore-based infrastructure.

Alternatives to the Proposed Action

In 1993, the Corps prepared the *Final Environmental Impact Statement for the Myrtle Beach and Vicinity Shore Protection Project, Horry and Georgetown Counties, South Carolina* for the entire length of the Myrtle Beach Project (Reaches 1-3). In 1996, BOEM (then the Minerals Management Service) prepared an EA (*Environmental Assessment for Issuance of a Noncompetitive Lease for Surfside Borrow Area, Myrtle Beach, South Carolina Shore Protection Project*) covering the initial nourishment of Surfside Beach (Reach 3) using Outer Continental Shelf (OCS) sand from the Surfside BA (MMS, 1996). The Corps selected beach nourishment as the preferred alternative and subsequently constructed approximately 25.3 miles of the Project in 1997 and renourished the project area in 2007/08 using the Surfside Borrow Area located within state waters and federal waters. Prior to the 2007/2008 renourishment effort, the Corps prepared another EA (*Final Environmental Assessment: Myrtle Beach Storm Damage Reduction Project. North Myrtle Beach, Myrtle Beach, and Horry County, SC. July 2007*).

Two practical alternatives were considered by BOEM: A) authorize use of the OCS portion of the Surfside Borrow Area and B) the No Action alternative. The potential impacts resulting from

BOEM's no action, or not issuing the negotiated agreement, would depend on the course of action subsequently pursued by the project proponents. The options considered include:

- (a) Identification and use of another alternative offshore borrow location of comparable sand quantity and quality,
- (b) Identification and use of onshore sources of comparable sand quantity and quality, or
- (c) Not constructing the project.

Alternative economically-viable borrow areas with sufficient beach compatible sediment have been identified. While option (a) is feasible and the use of an alternative borrow area would fully meet the Project's purpose and need in a timely manner, the environmental harm would be greater than reusing an existing, previously impacted, accreting borrow area. Option (b) is not considered to be economically viable, as suitable upland sources are limited in the project area. In the case of no project under option (c), coastal erosion would continue, available habitat would continue to deteriorate, the recreational amenity associated with the public beach would be severely affected, and the likelihood and frequency of property and storm damage would increase.

Environmental Effects

This EA, which tiers from and updates the 1993 EIS, the 1996 and 2007 EAs, evaluates the impacts from the proposed action, including connected actions of conveyance and placement of the sand. The EA incorporates by reference the previous effects analyses that have been determined to still be valid and augments a subset of analyses in light of new information. No new significant impacts were identified, nor was it necessary to change the conclusions of the types, levels, or locations of impacts described in previous documents. The EA and FONSI identify all mitigation, monitoring, and reporting requirements necessary to avoid, minimize, and/or reduce and track any foreseeable adverse impacts that may result from all phases of construction. A subset of these requirements, specific to activities under BOEM jurisdiction, will be incorporated into the negotiated agreement (Attachment 1).

Significance Review

Pursuant to 40 CFR 1508.27, BOEM evaluated the significance of potential environmental effects considering both CEQ context and intensity factors. The potential significance of environmental effects has been analyzed in both spatial and temporal context. Potential effects are generally considered reversible because they will be minor to moderate, localized, and short-lived. No long-term significant or cumulatively significant adverse effects were identified. The ten intensity factors were considered in the EA and are specifically addressed below:

1. Impacts that may be both beneficial and adverse.

Potential adverse effects to the physical environment, biological resources, cultural resources, and socioeconomic resources have been considered. Temporary reduction of water quality is expected due to elevated turbidity during dredging and placement operations; the Project will be constructed using best management practices to avoid violation of SCDHEC Water Quality Standards. Noise levels will be elevated during dredging, transport, pump-out and placement activities but will return to preconstruction levels upon project completion. Total increases in air emissions from offshore and onshore equipment are small, localized, and temporary relative to existing point and nonpoint and mobile source emissions in Horry County, SC. Short-term and

local adverse effects to benthic and fishery resources are expected within the dredging and placement areas. Dredging depths within Surfside Borrow Area are limited to 10 feet below the existing elevations to facilitate ecological recovery by minimizing impacts to shoal morphology and habitat. Potential dredging entrainment risk of sea turtles has been reduced through the use of sea turtle deflecting dragheads and associated operating parameters. Potential effects to marine mammals have been reduced through vessel speed and avoidance protocols. Temporary displacement or behavior modification of birds near the borrow area and/or along the reach of beach placement could occur through direct construction impacts and/or indirect impacts to benthic prey base. For safety reasons, navigational and recreational resources located in the vicinity of the dredging operation would temporarily be unavailable for public use. A temporary increase in noise levels and a temporary reduction in the aesthetic value would occur with the presence and operation of construction equipment. There would be beneficial impacts from increased storm protection and an improved recreational beach. In addition, the renourishment effort would result in the restoration of habitat for nesting sea turtles.

2. The degree to which the proposed action affects public health or safety.

The proposed activities are not expected to significantly affect public health. Construction noise will temporarily increase ambient noise levels and equipment emissions would decrease air quality in the immediate vicinity of placement activities. The public is typically prevented from entering the segment of beach under construction, so recreational activities will not be occurring in close proximity to operations. Dredging operations will be performed in accordance with an environmental protection plan, addressing marine pollution, waste disposal, and air pollution. The Corps will be conducting inspections to ensure compliance with the plan.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No prime or unique farmland, designated Wild and Scenic reaches, or wetlands would be impacted by implementation of this project. The National Marine Fisheries Service (NMFS) considers offshore sandy habitats to be important, although not unique fish habitat. Adjacent to the project area, there is a designated Essential Fish Habitat (EFH) - Habitat Area of Particular Concern (HAPC) known as Hurl Rocks. The Corps will implement NMFS conservation recommendations in order to minimize and mitigate potential adverse effects to this HAPC. Dredging will locally modify the overall seafloor geomorphology within the Surfside Borrow Area. Similar microhabitat will exist pre- and post-dredging and benthic re-colonization should occur within a few years given recruitment from adjacent undisturbed communities. Demersal and pelagic fishes may temporarily avoid the dredged area because of locally reduced prey availability, but will return following benthic re-colonization.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

No effects are expected that are scientifically controversial. Effects from beach nourishment projects, including dredging on the OCS, are well studied. The recovery of the benthic habitat off the coast of Myrtle Beach was studied following the previous effort (2007/2008). Community metrics, such as total infaunal abundances, decreased following dredging of one borrow area (Little River), but this did not have a large effect on the overall taxonomic composition of the

community. However, the more southern borrow area (Cane South) showed a shift in taxonomic composition away from background conditions, primarily driven by increased dominance of polychaetes and other disturbance-tolerant taxa. The effects analyses in the EA have relied on that most recent monitoring effort and any additional best available scientific information. Numerous studies and monitoring efforts have been undertaken along the mid- and southeast Atlantic coast evaluating the effects of dredging and beach nourishment on shoreline change, benthic communities, nesting and swimming sea turtles, and shorebirds.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Beach nourishment is a common solution to coastal erosion problems along the South Atlantic coast. Phased construction has occurred in 1998 and 2007/2008 within the project area. Monitoring of borrow areas (Cane South and Little River) directly north of Surfside Borrow Area following the 2007/2008 construction showed different responses. The Little River Borrow Area experienced minor changes in sediment composition. The Cane South Borrow Area experienced a significant increase in silt/clay content, sand phi size, and organic matter after dredging relative to the reference area. After twelve months post-dredging, the differences between the reference area and the borrow areas were no longer measurable. The changes in sediment composition at both areas were similar to those changes that occurred during the 1996 initial nourishment project. The current project design is typical of these historical beach nourishment operations.

Proposed hopper dredging activities have the potential to entrain sea turtles. During the 2007/2008 project, there were two lethal takes of loggerhead sea turtles. The earlier renourishment effort in 1996/97 resulted in the lethal take of nine loggerhead sea turtles. Since that time additional mitigation measures have been implemented in the draghead design in order to reduce any potential for lethal take. Additional mitigations are explained in detail below. Based on past experiences constructing similar projects and implementation of previously implemented mitigation measures, the effects of the proposed action are not expected to be highly uncertain and the proposed activities do not involve any unique or unknown risks.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

No precedent for future action or decision in principle for future consideration is being made in BOEM's decision to authorize use of the Surfside Borrow Area for this construction cycle. BOEM considers each use borrow areas on the OCS as a new federal action. The Bureau's authorization of the use of the borrow areas does not dictate the outcome of future leasing decisions. Future actions will also be subject to the requirements of NEPA and other applicable environmental laws.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

Significance may exist if it is reasonable to anticipate cumulatively significant impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. This EA and previous NEPA documents conclude that the activities related to the proposed action are not reasonably anticipated to incrementally add to the effects

of other activities to the extent of producing significant effects. Because the seafloor is expected to equilibrate and moving sediment will slowly accumulate in the Surfside Borrow Area, the proposed project provides an incremental, but localized effect on the reduction of offshore sand resources. Although there will be a short-term and local decline in benthic habitat and populations, both are expected to recover within a few years. Therefore, no significant, long-term cumulative impacts to benthic habitat are expected from the use of the borrow site.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

Seafloor-disturbing activities (e.g., dredging, anchoring, pipeline emplacement and relocation) may occur during proposed construction activities. The greatest risk to cultural resources exists in the borrow area where dredging will occur. Previous investigations revealed that there are no historical or archaeological resources within the beach nourishment area which would be affected by the placement and subsequent movement of sand. In 2006, an archaeological survey was completed in the Surfside Borrow Area, and one potentially significant feature was identified. The anomaly within the borrow area will be avoided with a minimum buffer of 650 feet. Additionally, the contractor will perform a side scan sonar and magnetometer surveys prior to construction and establishment of a pipeline corridor to shore. Any anomalies found with a potential pipeline corridor will be avoided with a 100 foot buffer. No bottom-disturbing activities will occur on the OCS outside of the surveyed borrow areas. If any activities are deemed necessary outside of the borrow areas, the Corps must conduct a cultural resource survey and allow for BOEM review prior to any bottom disturbance activities. No significant impacts to cultural resources in the project area (borrow, placement or pump-out areas), as result of the proposed action, are anticipated with implementation of the measures to protect the existing identified resource, cease of work if an unexpected discovery occurs, and immediate notification to SHPO so they can determine if the resource is significant or not and make the determination of the best means to protect the resource. All of these activities have been completed in accordance with the National Historic Preservation Act (NHPA), as amended; the Archeological and Historic Preservation Act (AHPA), as amended; and Executive Order 11593.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973.*

Nesting and swimming green and loggerhead sea turtles present in the project area during and after construction operations may be adversely affected. If a hopper dredge is used for the dredging operations, potential impacts to sea turtles could occur. To minimize the risk to swimming sea turtles, standard sea turtle protection conditions will be implemented such as the use of a state-of-the-art rigid deflector draghead at all times, inflow screens, and observer monitoring of the operation. To minimize the risk to nesting sea turtles, standard sea turtle protection conditions will be implemented such as monitoring surveys, sand compaction monitoring, and lighting restrictions. If work occurs during the sea turtle nesting period, in order to minimize impacts to nesting sea turtles and emerging hatchlings, a beach monitoring and nest relocation program for sea turtles will be implemented.

It has been determined that the proposed project will not adversely modify critical habitat for the North Atlantic right whale. North Atlantic right whales occur only rarely in the project area. Most right whale sightings occur in the area in winter. If whales are sighted within 1,000 feet of the dredge plant, all appropriate precautions will be implemented to ensure protection of the whale. In addition, the project has been determined to not likely adversely affect the manatee, piping plover, Atlantic sturgeon, rufa red knot, seabeach amaranth, Kemps ridley, leatherback and hawksbill sea turtles. The project will have no effect on critical habitat for the loggerhead sea turtle and wintering piping plover and on shortnose sturgeon.

This project was fully coordinated under the ESA and is in full compliance with the Act. Under the Regional Biological Opinion (RBO) for the South Atlantic Region, the Corps previously determined that the use of a hopper dredge may adversely affect sea turtles. NMFS has concurred with this determination in their 1995/1997 RBO and July 30, 2009, concurrence, and determined that take resulting from hopper dredging activity will not jeopardize the continued existence of any sea turtle species. The Corps notified NMFS of its intent to utilize the RBO for this proposed renourishment and indicated that BOEM is authorizing use of OCS sand in the Project. The RBO addresses dredging operations and provides guidance and requirements on a state by state basis.. If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action, consultation will need to be reinitiated.

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

The Corps must comply with all applicable Federal, State, and local laws and requirements. The dredging contractor is required to provide an environmental protection plan that verifies compliance with environmental requirements. BOEM and the Corps have undertaken the necessary consultations with NMFS, the U.S. Fish and Wildlife Service (USFWS), and relevant state agencies. A South Carolina Department of Health and Environmental Control Coastal Zone Consistency has issued conditional concurrence for the Project. The Coastal Zone Consistency concurrence includes mitigation and monitoring requirements that are applicable to the connected state activities.

The proposed action is in compliance with the Marine Mammal Protection Act. As outlined previously, marine mammals are not likely to be adversely affected by the project and incorporation of safeguards to protect threatened and endangered species during project construction would also protect marine mammals in the area. Migratory birds are not likely to be adversely affected by the proposed action. No recent nesting of migratory birds has been reported on Horry County beaches.


Consultations and Public Involvement

The Corps, serving as the lead federal agency, and BOEM, in a cooperating role, has coordinated with the USFWS, NMFS, and SCDHEC in support of this leasing decision. The EA was subject to a public comment period. Pertinent correspondence with federal and state agencies is provided in Appendix 6 of the EA. The EA and FONSI will be posted to BOEM web site (<http://www.boem.gov/Non-Energy-Minerals/Marine-Minerals-Program.aspx>).

Conclusion

BOEM has considered the consequences of issuing a negotiated agreement to authorize use of OCS sand from the Surfside Borrow Area for the Project. BOEM independently reviewed the attached EA (Attachment 2) and finds that it complies with the relevant provisions of the CEQ and DOI regulations implementing NEPA and other Marine Mineral Program requirements. Appropriate terms and conditions enforceable by BOEM will be incorporated into the negotiated agreement to avoid, minimize, and/or mitigate any foreseeable adverse impacts (Attachment 1).

Based on the evaluation of potential impacts and mitigating measures discussed in the EA, BOEM finds that entering into a negotiated agreement, with the implementation of the mitigating measures, does not constitute a major federal action significantly affecting the quality of the human environment, in the sense of NEPA Section 102(2) (C), and will not require preparation of an EIS.



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Chief, Division of Environmental Assessment

Date 8/18/16

ATTACHMENT 1 PROPOSED MITIGATION MEASURES

This attachment includes the draft Plan and Performance Measures provided to the BOEM Leasing Division for inclusion in the Memorandum of Agreement.

1.1 Plans and Performance Requirements

USACE will include this MOA as a reference document in the advertised "Construction Solicitation and Specifications Plan" (hereinafter referred to as the "Plan"). USACE will ensure that all operations at the Surfside Borrow Area are conducted in accordance with the final approved Plan and all terms and conditions in this MOA, as well as all applicable statutes, regulations, orders and any guidelines or directives specified or referenced herein. USACE will send BOEM a copy of the plans and any modifications prior to construction.

The dredging method for removing sand from the Surfside Borrow Area will be consistent with those methods evaluated in the NEPA documents prepared in conjunction with the Project and approved in the NEPA analysis authorizing documents, as well as project permits. Dredging depths will not exceed those outlined in the Plan. USACE will allow BOEM to review and comment on modifications to the Plan that may affect the Borrow Area or pipeline corridors on the OCS, including the use of submerged or floated pipelines to directly convey sediment from the Borrow Area to the placement site. BOEM will be given one (1) week from receipt to review and provide comments on the Plan, so as to not unnecessarily delay USACE's construction contract or schedule.

If dredging and/or conveyance methods are not wholly consistent with those evaluated in relevant NEPA documents prepared by BOEM for this Project, and environmental and cultural resource consultations, and those authorized by the CZM, additional environmental review may be necessary. If the additional NEPA review, consultations, or permit modifications would affect or otherwise supplement the provisions of this MOA, an amendment may be required.

Prior to the commencement of construction, USACE must electronically provide BOEM with a summary of the construction schedule consistent with Paragraph 15. USACE, at the reasonable request of BOEM or the Bureau of Safety and Environmental Enforcement ("BSEE"), must allow access, at the site of any operation subject to safety regulations, to any authorized Federal inspector, and must provide BOEM or BSEE any documents and records that are pertinent to occupational or public health, safety, environmental protection, conservation of natural resources, or other use of the OCS, as may be requested.

1.2 Environmental Responsibilities and Environmental Compliance

USACE is the lead agency on behalf of the Federal Government to ensure the Project complies with applicable environmental laws, including but not limited to the ESA, MSA, MBTA, NHPA, and CZMA, and any consultations or limitations imposed thereunder.

USACE will serve as the lead Federal agency for ESA Section 7 consultation concerning protected species under the purview of the U.S. Fish and Wildlife Service ("USFWS") and

National Marine Fisheries Service ("NMFS"). USACE will instruct its contractor(s) to implement the mitigation terms, conditions, and measures required by the USFWS, NMFS, CZM Consistency Determination, and BOEM pursuant to applicable Federal and State laws and regulations prior to commencement of activities authorized under this MOA, including extraction, transportation and placement of sand resources from the Surfside Borrow Area. The required mitigation terms, conditions, and measures are reflected in the relevant Biological Opinions, Conservation Recommendations, and Consistency Determination. Electronic copies of all relevant correspondence, monitoring data, and reports related to the activities covered by this MOA, will be provided electronically to BOEM within 14 days of issuance (including observer and dredging reports) unless a shorter period is provided in any applicable Biological Opinion, permit, or other authorization for the Project. The County is responsible for compliance with the Specific Conditions of the CZM Consistency Determination. Construction may not commence until the pre-construction requirements have been completed.

1.3 Pre-Construction Notification of Activity in or near the Borrow Area

USACE will invite BOEM to attend a pre-construction meeting that describes USACE's and/or its contractors' or agents' plan and schedule to construct the Project.

USACE will notify BOEM electronically at least 72 hours prior to the commencement, and within 24 hours after termination, of operations at the Surfside Borrow Area. BOEM will electronically notify USACE in a timely manner of any OCS activity within the jurisdiction of the DOI that may adversely affect USACE's ability to use OCS sand resources for the Project.

1.4 Dredge Positioning

During all phases of the Project, USACE will ensure that the dredge and any bottom-disturbing equipment are outfitted with an onboard global positioning system ("GPS") capable of maintaining and recording location within a horizontal accuracy range of no more than plus or minus 3 meters. The GPS must be installed as close to the hydraulic dredge as is practicable or must use appropriate instrumentation to accurately represent the position of the hydraulic dredge. During dredging operations, USACE will immediately notify BOEM electronically if dredging occurs outside of the approved Borrow Area. Such notification will be made as soon as possible after the time USACE becomes aware of dredging outside of the approved Borrow Area.

Anchoring, spudding, or other bottom disturbing activities are not authorized outside of the approved Borrow Area on the OCS, except for immediate concerns of safety, navigation risks or emergency situations.

USACE will provide BOEM, electronically, with all appropriate Dredging Quality Management ("DQM") data acquired during the Project using procedures jointly developed by USACE's National Dredging Quality Management (DQM) Data Program Support Center and BOEM. USACE will submit the DQM data, including draghead, cutterhead, or other hydraulic or mechanical dredging device depth, biweekly. A summary DQM dataset will be submitted within 90 days of completion of the Project. If available, USACE will also submit Automatic Identification System ("AIS") data for vessels qualifying under the International Maritime Organization's ("IMO") International Convention for the Safety of Life at Sea.

1.5 Dredge Operation

Dredging will occur preferentially in naturally accreting areas of the Surfside Borrow Area, and dredging will be avoided in erosional areas of the shoal to the extent possible. If a hopper dredge is used, dredging will be performed so that the hopper dredge excavates material using relatively shallow and uniform passes to an overall cut depth not to exceed ten (10) feet or that identified in the geotechnical plan provided in the final NEPA document. USACE will use the methods necessary to maintain the relative profile and shape of the borrow area to the extent practicable, as determined by USACE, to avoid creating deep depressions or pits.

1.6 Submittal of Production and Volume Information

USACE, in cooperation with the dredge operator, must submit to BOEM a summary of the dredge track lines, outlining any deviations from the original Plan, on a biweekly basis. A color-coded plot of the draghead, cutterhead, or other hydraulic or mechanical dredging device will be submitted, showing any horizontal or vertical dredge violations. The dredge track lines must show dredge status: hoteling, dredging, transiting, or unloading. This map will be provided in PDF format.

USACE will provide to BOEM, at least a biweekly report electronically, of the construction progress, including estimated volumetric production rates. The project completion report, as described below, will also include production and volume information, including Daily Operational Reports.

1.7 Local Notice to Mariners

The USACE will require its contractor(s) for the Project to place a notice in the U.S. Coast Guard Local Notice to Mariners regarding the timeframe and location of dredging and construction operations in advance of commencement of dredging.

1.8 Marine Pollution Control and Contingency Plan

The USACE will require its contractor(s) and subcontractor(s) to prepare for and take all necessary precautions to prevent discharges of oil and releases of waste and hazardous materials that may impair water quality. In the event of such an occurrence, notification and response will be in accordance with applicable requirements of 40 C.F.R. part 300. All dredging and support operations must be compliant with U.S. Coast Guard regulations and the U.S. Environmental Protection Agency's Vessel General Permit, as applicable. The USACE will notify BOEM of any noncompliant discharges and remedial actions taken, and will provide copies of all reports of the incident and resultant actions electronically.

1.9 Encounter of Ordnance

If any ordnance is encountered while conducting dredging activities at the Surfside Borrow Area, USACE will report the discovery within 24 hours to: Chief, BOEM Marine Minerals Branch, at (703) 787-1851 and dredgeinfo@boem.gov.

1.10 Bathymetric Surveys

USACE will provide BOEM with pre- and post-dredging bathymetric surveys of the Surfside Borrow Area. The pre-dredging survey will be conducted within the 60 days prior to dredging. The post-dredging survey will be conducted within 60 days after the completion of dredging. It is recommended that USACE provide BOEM with additional bathymetric surveys within one (1) year and three (3) years following the completion of dredging. Hydrographic surveys will be performed in accordance with the USACE Hydrographic Surveying Manual EM 1110-2-1003, providing 100 percent seamless coverage using interferometric swath or multibeam bathymetry. All surveys will be completed at or above >200 kHz in accordance Atlantic OCS Proposed Geological and Geophysical Activities Mid-Atlantic and South Atlantic Planning Areas Final Programmatic Environmental Impact Statement and Biological Opinion (see Figures 2-6 and 2-7 <http://www.boem.gov/BOEM-2014-001-v1/>). All bathymetric data will be roll, pitch, heave, and tide corrected using accepted practices. Survey lines of the specific dredge area, within the Surfside Borrow Area, will be established at intervals necessary to provide 100 percent coverage. Survey line spacing is dependent upon a variety of factors including water depth, equipment employed, and the desired resolution of the survey data. The minimum line spacing should be based on the number of lines necessary to calculate volumetric change in the project area. In some instances, tighter line spacing may be necessary to acquire the appropriate level of coverage and data quality. Survey shall not exceed primary line spacing of 25m throughout the project area. Three equidistant cross-tie lines will be established parallel to the principal survey baseline. All survey lines will extend at least 100 meters beyond the edge of the dredge areas. All data will be collected in such a manner that post-dredging bathymetry surveys are compatible with the pre-dredging bathymetric survey data to enable the latter to be subtracted from the former to calculate the volume of sand removed, the shape of the excavation, and nature of post-dredging bathymetric change.

Copies of pre-dredging and post-dredging hydrographic data will be submitted to BOEM electronically within ninety (90) days after each survey is completed. The delivery format for data submission is an ASCII file containing corrected x, y, z data. The horizontal data will be provided in the North American Datum of 1983 (NAD '83) South Carolina State Plane, U.S. survey feet, unless otherwise specified. Vertical data will be provided in the North American Vertical Datum of 1988 (NAVD '88), U.S. survey feet, unless otherwise specified. Data should be consistent with the IHO Special Order survey standards from 0 to 40 m water depths. Surveyors should also follow IHO hydrographic survey guidelines for quality control and data processing (IHO Standards for Hydrographic Surveys, 2008 (http://www.iho.int/iho_pubs/standard/S-44_5E.pdf)). An 8.5-x-11-inch plan view plot of the pre- and post-construction data will be provided showing the individual survey points, and/or vessel track lines, as well as contour lines at appropriate elevation intervals. These plots will be provided in PDF format. Survey metadata will also be provided. Data shall comply with ISO 19115, ISO 19115-2 and / or ISO 19139 metadata standards. Guidance may be found here: https://geo-ide.noaa.gov/wiki/index.php?title=Multibeam_Data_Metadata_Template

1.11 Archaeological Resources

Onshore Prehistoric or Historic Resources If USACE discovers any previously unknown historic or archeological resources while accomplishing the activity on Horry County beaches, USACE will notify BOEM of any finding. USACE will initiate the Federal and State coordination required to determine if the discovered resources warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

Offshore Prehistoric or Historic Resources

USACE will require the contractor to perform a marine remote sensing survey at the site of any booster pump and/or submerged pipeline locations in advance of operations in or along the OCS. USACE will review the results of the survey prior to laying the pipeline and will share the results of the survey with BOEM. If markers indicative of prehistoric or historic resources are identified during the survey, the USACE has indicated a minimum of a 100-ft buffer will be established around each potential prehistoric or historic resource. All bottom disturbing activities, including anchoring or spudding, in the vicinity of any such historic resource will be avoided and the buffer will be strictly maintained. To minimize the risk of inadvertent damage to undiscovered archeological or historic resources, USACE will ensure that the dredge contractor does not drag equipment outside the borrow area.

The following anomaly (listed in **Table 2** and shown in **Attachment 1**) must be avoided during dredging operations by at least 650 feet:

Table 1. Avoidance Area Coordinates

Point	Northing*	Easting
Anomaly A	631752	2626302

*SC State Plane NAD83 International Feet

In the event that the Parties and/or dredge operators discover any archaeological resources prior to dredging operations in the Surfside Borrow Area or in the vicinity of pump-out operations, USACE will report the discovery to Chief, Division of Environmental Assessment, BOEM, at (703) 787-1703, or electronically in a timely manner. The Corps Planning Division will coordinate with BOEM on the measures needed to evaluate, avoid, protect, and, if needed, mitigate adverse impacts from an unanticipated discovery. If investigations determine that the resource is significant, the Parties will together determine how best to protect it.

If the Parties and/or dredge operators discover any archaeological resources while conducting dredging operations, USACE will require that dredge and/or pump-out operations be halted immediately and avoid the resource per the requirements of USACE specifications for unanticipated finds. USACE will immediately report the discovery to the Chief, Division of Environmental Assessment, BOEM, at (703) 787-1703 and the SC SHPO Office. The Corps Planning Division will coordinate with BOEM on the measures needed to evaluate, avoid, protect, and, if needed, mitigate adverse impacts from an unanticipated discovery. If investigations determine that the resource is significant, the Parties will together determine the necessary further action required and how to best protect the resource.

1.12 Disclaimers; Contingencies

BOEM does not warrant that the OCS sand resources used in this Project are suitable for the purpose for which they are intended by USACE and the County. BOEM's responsibility under this Project is limited to the authorization of use of OCS sand resources from the Surfside Borrow Area, as described in this MOA, and therefore BOEM disclaims any and all responsibility for the physical and financial activities undertaken by other Parties in pursuit of the Project.

The County's participation and obligation to perform under the provisions of this MOA are contingent upon an appropriation in a sufficient amount for the purpose by the South Carolina Legislature and Horry County.

1.13 Project Completion Report

Consistent with Paragraph 15, a project completion report will be submitted by USACE to BOEM within 120 days following completion of the activities authorized under this MOA. This report and supporting materials should be sent in hard copy and electronically. The report will contain, at a minimum, the following information:

- the names and titles of the project managers overseeing the effort (for USACE, the engineering firm (if applicable), and the contractor), including contact information (phone numbers, mailing addresses, and email addresses);
- the location and description of the Project, including the final total volume of material extracted from the Borrow Area and the volume of material actually placed on the beach or shoreline (including a description of the volume calculation method used to determine these volumes);
- DQM data, in ASCII files, containing the x, y, z and time stamp of the cutterhead or drag arm locations;
- a narrative describing the final, as-built features, boundaries, and acreage, including the restored beach width and length;
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions;
- a list and description of any construction change orders issued, if applicable;
- a list and description of any safety-related issues or accidents reported during the life of the Project;
- a narrative and any appropriate tables describing any environmental surveys or efforts associated with the Project and costs associated with these surveys or efforts;
- a table listing significant construction dates beginning with bid opening and ending with final acceptance of the Project by USACE;
 - a table, an example of which is illustrated below, showing the various key Project cost elements;

	Cost Incurred as of Construction Completion (\$)
Construction	
Engineering and Design	
Pre- and Post-Dredging Bathymetric Surveys	

Compilation of Project Completion Report	
Total	

- a table showing the various phases of the Project construction, the types of construction equipment used, the nature of their use;
- digital appendices containing the as-built surveys, beach-fill cross-sections, and survey data;
- metadata appropriate to electronic deliverables pertaining to the Surfside Borrow Area; and
- any additional pertinent comments.