



**US Army Corps
of Engineers**

Philadelphia District

**MANASQUAN INLET TO BARNEGAT INLET
STORM DAMAGE REDUCTION PROJECT**

OCEAN COUNTY, NJ

FINAL ENVIRONMENTAL ASSESSMENT (EA)

MAY 2014

PREPARED BY:

U.S. ARMY CORPS OF ENGINEERS, PHILADELPHIA DISTRICT

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**MANASQUAN INLET TO BARNEGAT INLET
STORM DAMAGE REDUCTION PROJECT
OCEAN COUNTY, NJ
FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

In 2002, the United States Army Corps of Engineers (USACE), Philadelphia District, evaluated the environmental impacts associated with the proposed construction of the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project, and prepared a Final Environmental Impact Statement (FEIS), which was filed with the Environmental Protection Agency in 2002. A Record of Decision (ROD) was signed on July 2, 2008. The selected plan involves the placement of beachfill sand, which would be obtained from offshore sources to construct a berm and a dune for the purpose of storm damage reduction for the municipalities of Point Pleasant Beach, Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Heights, Seaside Park, and Berkeley Township. The plan extends approximately 13.7 miles and will result in a continuous dune line extending from Manasquan Inlet south to the northernmost portion of Island Beach State Park. Maintenance of the berm and dune would be accomplished by periodic sand nourishment of the project area.

Congress authorized construction of the Manasquan Inlet to Barnegat Inlet project in the Water Resources Development Act of 2007 (WRDA 07). However, there has been no construction of the project to date. As a result of Hurricane Sandy in October 2012, which caused significant storm damage to the project area, Congress passed Public Law 113-2, the "Disaster Relief Appropriations Act – 2013". This act provided funding for USACE to construct "previously authorized Corps projects designed to reduce flood and storm damage risks", including construction of the Manasquan to Barnegat project.

In 2013, the Philadelphia District conducted surveys of the beach and nearshore zones within the project area to determine the quantity of sand required for project construction, and reviewed the shoreline behavior of the project area in the period since the Feasibility Report was completed in 2002. As a result of these investigations, periodic nourishment quantities were increased for the project area from the plan proposed in the 2002 FEIS. The current initial sand quantity required is estimated at 10,728,000 cubic yards. Periodic nourishment was increased from 961,000 cubic yards to 1,364,000 cubic yards, and is scheduled to occur every 4 years.

The design template is a +22 ft NAVD dune, with a 25 ft crest width, slopes of 1V:5H from the crest to the berm which extends 75 ft seaward with an elevation of +8.5 ft NAVD for the municipalities of Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Park and Berkeley Township. The municipalities of Point Pleasant Beach and Seaside Heights will have a dune with an elevation of +18 ft NAVD, and a berm width of 100 ft. Point

Pleasant Beach will have a berm height of +11.5 ft NAVD, and Seaside Heights will have a berm elevation of +8.5 ft NAVD. The project includes the installation of approximately 72,077 linear feet of sand fence and the planting of over 190 acres of dune vegetation. The beachfill continues from MHW to MLW with slopes of 1:10H. The profile is expected to maintain the existing shape from MLW to the depth of closure, at approximately -26 ft NAVD. At the northern end, the project terminates at the Manasquan Inlet south jetty with no requirement for a taper. At the southern end, the project will terminate with the optimal engineered taper, which will require placement of sand into the northern section of Island Beach State Park, provided the Corps receives permission from the NJDEP to enter the park and place sand. If permission is not granted by the NJDEP, the taper will be limited to the existing beach within Berkeley Township and will avoid the need for any construction activity within Island Beach State Park.

For initial construction, material would be taken from the sand borrow areas identified as areas A, B, D, and E. Sand for periodic nourishment would be obtained from these four offshore borrow areas and potentially one that is currently being studied known as F2. Borrow Area F2 is located entirely within Federal waters and would be used upon approval from the Bureau of Ocean Energy Management. The Bureau of Ocean Energy Management (BOEM) has jurisdiction over mineral resources on the Federal Outer Continental Shelf (OCS) pursuant to section 8(k)(2)(d) of the OCS Lands Act (OCSLA), and is serving as a cooperating agency for this project. BOEM's purpose is to respond to an OCS sand use request under the authority granted to the United States Department of the Interior (USDOl) by the OCSLA. Any use of borrow areas located on the Federal Outer Continental Shelf (OCS) would require authorizations from BOEM to undertake the proposed project. The current Environmental Assessment (EA) covers only the use of borrow areas A, B, D and E. A new EA will be completed to address potential impacts associated with Borrow Area F2.

In compliance with the National Environmental Policy Act of 1969, as amended, and Council on Environmental Quality (CEQ) regulations, the Philadelphia District has prepared an Environmental Assessment (EA) to evaluate new information and proposed modified actions subsequent to the 2002 Manasquan FEIS. The Draft EA was forwarded to the U.S. Environmental Protection Agency Region II, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the New Jersey State Historic Preservation Office, the New Jersey Department of Environmental Protection (NJDEP), and all other known interested parties for comment.

The EA concludes that the proposed storm damage reduction project, if implemented, would not likely jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to the Endangered Species Act of 1973 as amended by P.L. 96-159.

The EA also concludes that the project can be conducted in a manner, which should not violate New Jersey's Surface Water Quality Standards. Pursuant to Section 401 of the Clean Water Act, a 401 Water Quality Certificate was received from the NJDEP on April 24, 2014. Based on the information gathered during preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, it was determined, in accordance with Section 307(C) of the Coastal Zone Management Act of 1972, that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of New Jersey. A Federal consistency determination for this project was received from the NJDEP on April 24, 2014.

There are no known properties listed on, or eligible for listing on, the National Register of Historic Places that would be adversely affected by the proposed activity. The proposed plan has been designed to avoid archaeologically sensitive areas, and is therefore not expected to impact any cultural resources.

In accordance with the Clean Air Act, this project will comply with the General Conformity (GC) requirement (40CFR§90.153) through the following options that have been coordinated with the New Jersey Department of Environmental Protection (NJDEP); statutory exemption, emission reduction opportunities, use of the Joint Base McGuire/Lakehurst GC State Implementation Plan budget, and/or the purchase of Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) ozone season oxides of nitrogen (NOx) allowances. This project is not *de minimis* under 40CFR§90.153, therefore one or a combination of these options will be used to meet the GC requirements. The project specific option(s) for meeting GC are detailed in the Statement of Conformity (SOC), which is required under 40CFR§90.158.

The proposed Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project will not significantly affect the quality of the human environment; therefore a Supplemental Environmental Impact Statement is not required.

25 June 2014
Date

John C. Becking
John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

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1.0 INTRODUCTION

This document is being issued pursuant to 33 CFR 230.10(a) and is intended to present and evaluate new information for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project located along the Atlantic Coast of New Jersey (Figure 1). The information in this document updates the previously published National Environmental Policy Act (NEPA) document for this project, which is the Final Feasibility Report and Integrated Environmental Impact Statement (EIS) dated June 2002. A Record of Decision (ROD) was signed on July 2, 2008. To minimize duplication, only items involving new pertinent information and changes in the plan as previously proposed are addressed in this document. Items covered previously in the Final Feasibility Report and Integrated EIS are incorporated by reference and are referenced herein as USACE (2002), unless otherwise specified.

The project evaluated in this document will require the use of sand resources in Federal waters for future nourishment cycles. The Bureau of Ocean Energy Management (BOEM) has jurisdiction over mineral resources on the Federal Outer Continental Shelf (OCS) pursuant to section 8(k)(2)(d) of the OCS Lands Act (OCSLA), and is serving as a cooperating agency on this project. BOEM's purpose is to respond to an OCS sand use request under the authority granted to the United States Department of the Interior (USDOI) by the OCSLA. Any use of borrow areas located on the Federal OCS would require authorizations from BOEM to undertake the proposed project and will result in a new Environmental Assessment.

2.0 PURPOSE AND NEED

The purpose of this project is to provide storm damage reduction for the municipalities of Point Pleasant Beach, Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Heights, Seaside Park, and Berkeley Township located in Ocean County, NJ (Figure 1) based on the vulnerability of these communities to significant economic damages to structures and properties due to storms. Severe storms in recent years have caused a reduction in the overall beach height and width along the study area. This exposes these communities to catastrophic damage from ocean flooding and wave attack in the absence of a long-term commitment of protection. The project area has recently experienced several significant storm events, most notably the Nor'Ida Storm of 2009, Hurricane Irene in 2011, and the devastating Hurricane Sandy in October 2012, which resulted in severe economic damages in the region. Based on the vulnerability of this area, a Federal storm damage reduction project is needed that will provide a long-term commitment to these communities. In response to Hurricane Sandy, the project schedule for implementation is being expedited in accordance with P.L. 113-2: Disaster Relief Appropriations Act (FY 2013) for

authorized Federal projects in areas affected by Hurricane Sandy that have not been constructed.

3.0 ALTERNATIVES CONSIDERED

In USACE (2002), a number of structural and non-structural storm damage reduction alternatives were identified and evaluated individually and in combination on the basis of their suitability, applicability and merit in meeting the planning objectives, planning constraints, economic criteria, environmental criteria and social criteria for the study.

The final screening of alternatives concluded that only berm and dune restoration utilizing sandy material dredged from a nearby offshore source should be considered further. The NED plan identified for the project was berm and dune restoration utilizing beachfill. Detailed descriptions of these plans are provided in Section 4.1 and 4.2.

The selected plan was chosen because it would provide the maximum net benefits over costs based on storm damage reduction. USACE (2002) provided a comparative environmental impact analysis of the various alternatives considered. Additionally, a number of sand sources were screened based on their suitability and environmental impacts. The sand sources proposed in USACE (2002), Borrow Area A and Borrow Area B, were determined to be suitable based on their material grain sizes and lower impacts to fisheries resources.

4.0 EXISTING CONDITIONS, NO ACTION AND PROPOSED PROJECT

4.1 Proposed Plan from USACE (2002)

USACE (2002) evaluated various alternative plans of improvement formulated for hurricane and storm damage reduction. The selected plan was in the form of berm and dune restoration utilizing beachfill to reduce storm damages for these communities. Details of the authorized plan from USACE (2002) are provided below; however, periodic nourishment quantities required for the authorized project were modified as a result of surveys and analysis conducted by the Philadelphia District after Hurricane Sandy. The proposed modifications to the plan involve increases in periodic nourishment quantities and sand borrow area usage changes, which are provided in Section 4.2.

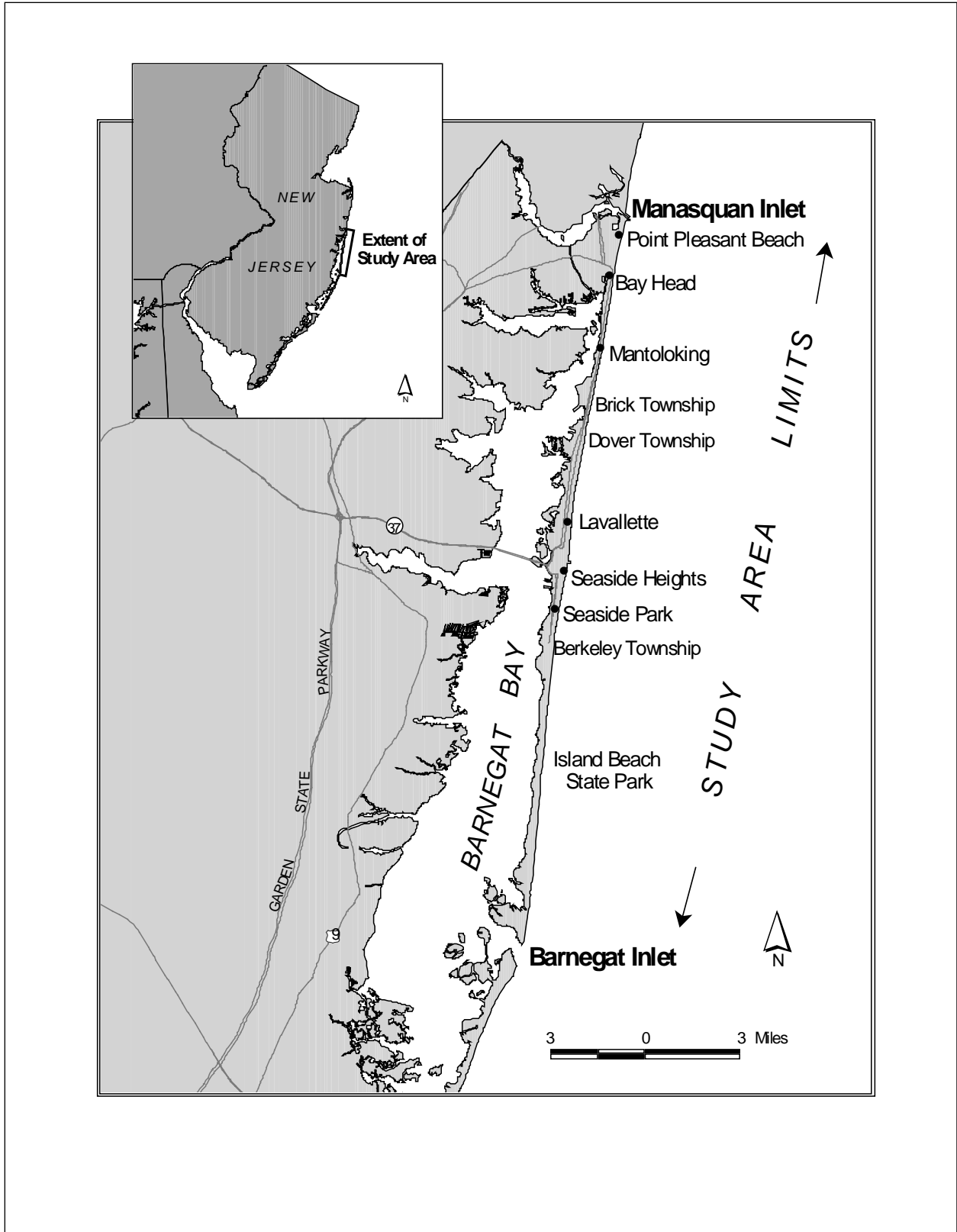


Figure 1. Project Area and Vicinity

In USACE (2002), the selected plan consisted of a berm and dune constructed using sand obtained from offshore borrow sources. The plan extends approximately 13.7 miles and would result in a continuous dune line extending from Manasquan Inlet south to the northernmost portion of Island Beach State Park. The selected design template included a +22 ft NAVD dune, with a 25 ft crest width, slopes of 1V:5H from the crest to the berm which extends 75 ft seaward with an elevation of +8.5 ft NAVD for the municipalities of Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Park and Berkeley Township (Figure 2). The design template for the municipalities of Point Pleasant Beach and Seaside Heights included a dune with an elevation of +18 ft NAVD, and a berm width of 100 ft (Figure 3). The Point Pleasant Beach and Seaside Heights design included a berm height of +11.5 ft NAVD and +8.5 ft NAVD respectively. The beach fill would continue from MHW to MLW with slopes of 1:10H. The profile is expected to maintain the existing shape from MLW to the depth of closure, at approximately -26 ft NAVD. The selected plan also includes planting the dunes with approximately 190 acres of dune vegetation and the installation of approximately 72,077 linear feet of sand fence. At the northern end, the project terminates at the Manasquan Inlet south jetty with no requirement for a taper. At the southern end, the project will terminate with the optimal engineered taper, which will require placement of sand into the northern section of Island Beach State Park, provided the Corps receives permission from the NJDEP to enter the park and place sand. If permission is not granted by the NJDEP, the taper will be limited to the existing beach within Berkeley Township and will avoid the need for any construction activity within Island Beach State Park.

Initial sand quantity (from USACE, 2002) was 10,689,000 cubic yards (cy) which included a design fill quantity of 9,728,000 cy plus advance nourishment of 961,000 cy. Periodic nourishment of 961,000 cy was scheduled to occur every 4 years. Material for initial construction and periodic nourishment was proposed in 2002 to have been taken from the Borrow Areas A and B (Figure 4).

4.2 Project Changes

Since the completion of the Feasibility report in 2002, changes to the existing project conditions and further detailed analyses have resulted in changes to the selected plan, but these changes do not impact the overall scope of the project. Changes to the project involve the borrow area utilization and quantities of beachfill required. However, there have been no changes to the project design template, beachfill placement locations or changes in the overall scope of the project.

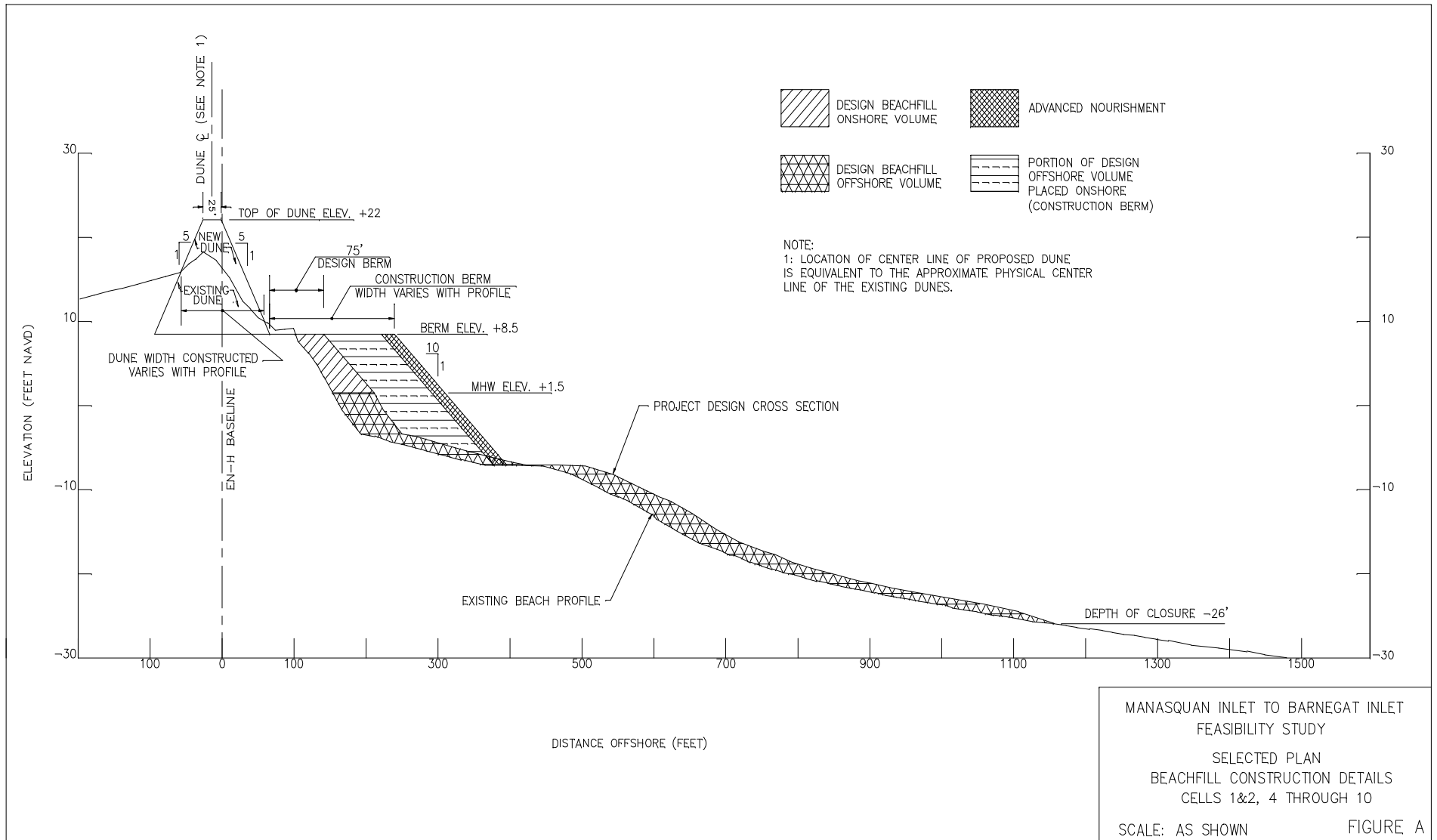


Figure 2. Selected Plan - Typical Design Cross-Section with 22-ft NAVD Dune (All Communities except Seaside Heights and northern Point Pleasant Beach)

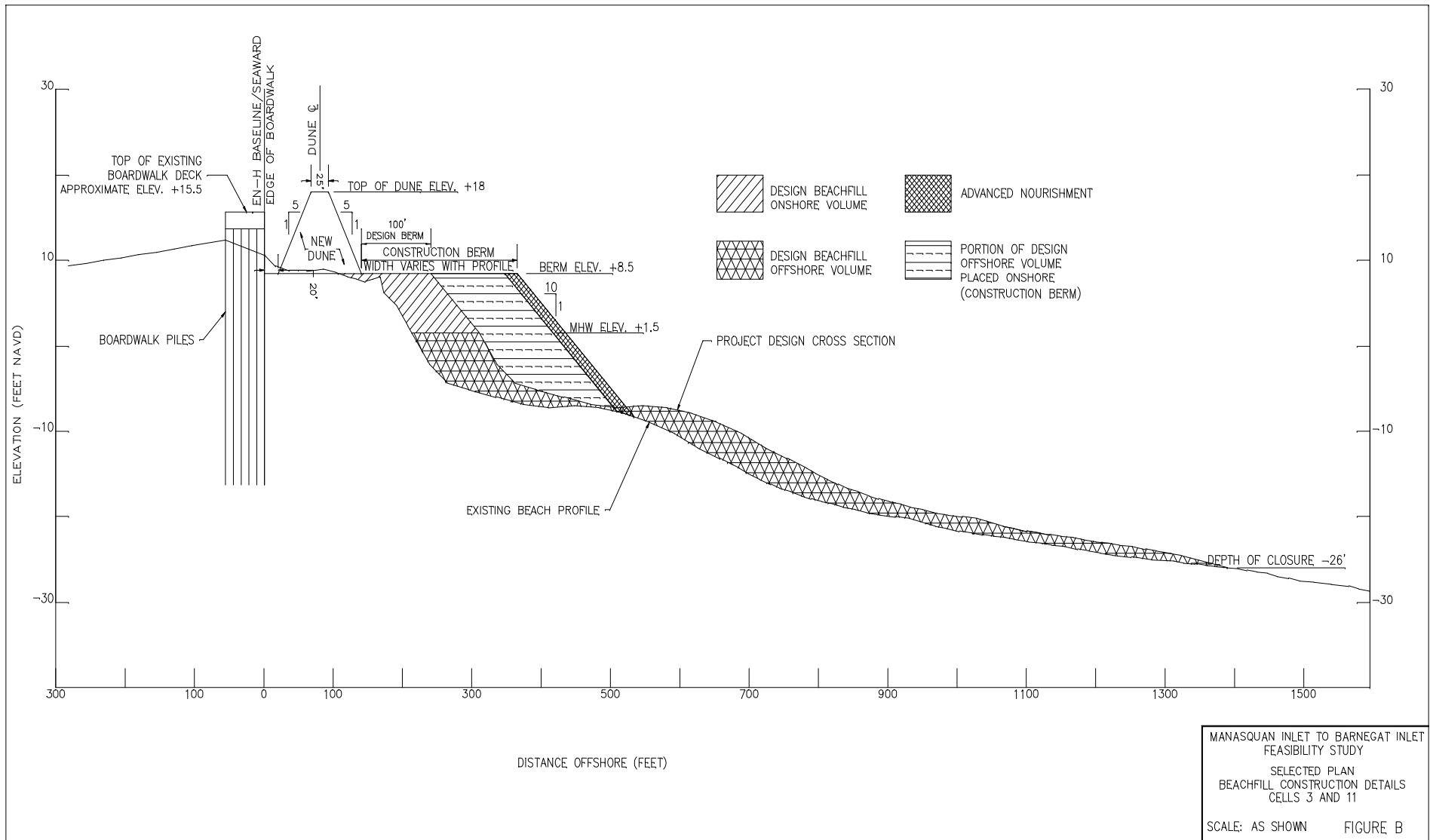


Figure 3. Selected Plan - Typical Design Cross-Section with 18-ft NAVD Dune (Seaside Heights and northern Point Pleasant Beach)

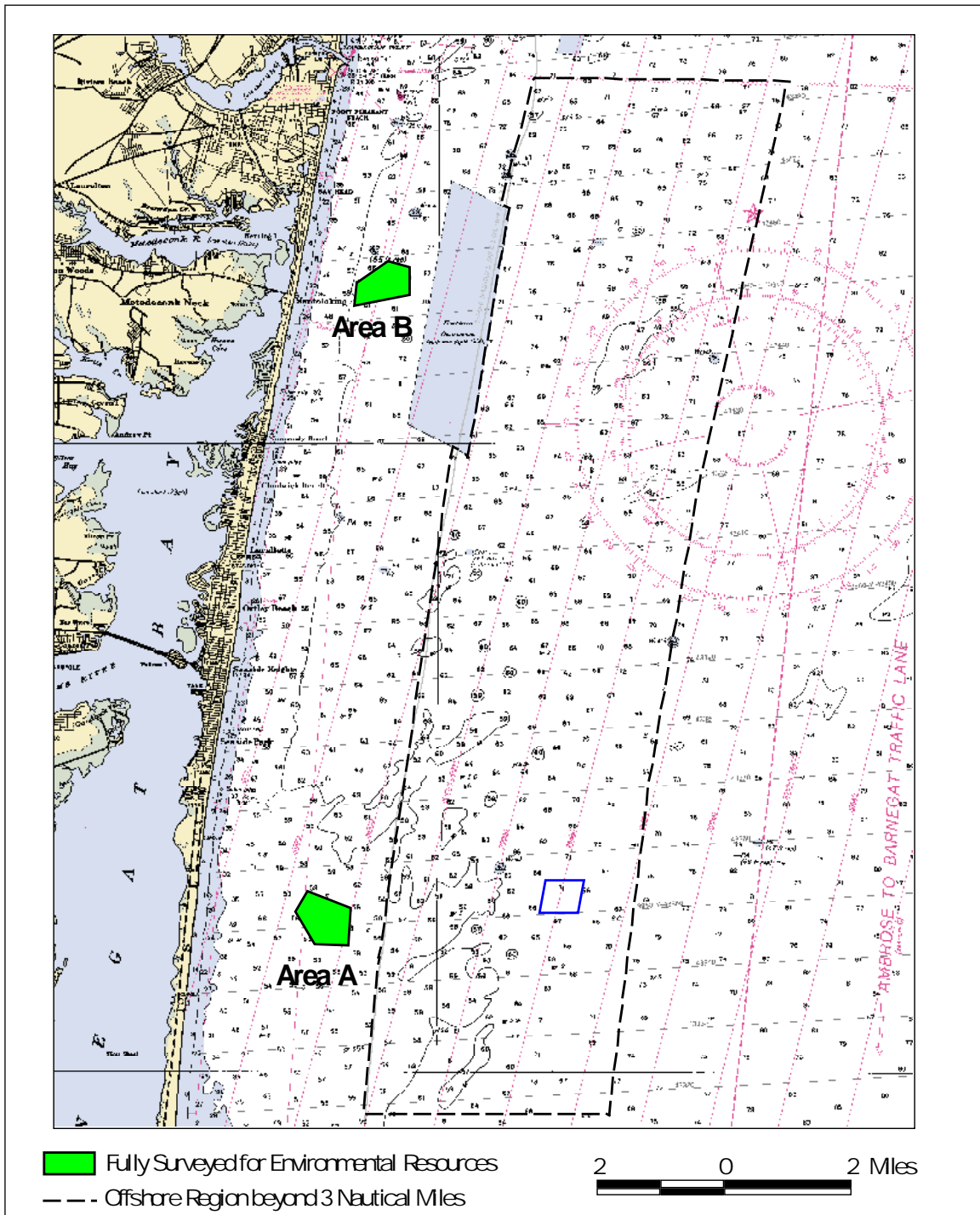


Figure 4. Proposed Sand Borrow Areas from USACE (2002)

4.2.1 Beachfill Quantities

Beach profile surveys were conducted for the Manasquan Inlet to Barnegat Inlet beaches in the spring of 2013 to provide updated beachfill quantity estimates for the selected plan. Table 1 provides a comparison of the required quantities reported in USACE (2002) and the current estimates. For initial construction, current sand quantities are slightly higher than the estimates in 2002, and current periodic nourishment quantities are greater than the estimates provided in USACE (2002). These new periodic nourishment quantities reflect additional data and analyses conducted since 2002. It should be noted that periodic nourishment quantities are an estimate, and that they may vary depending on variable erosion rates and the storm climate at the time of renourishment. Only areas that fall below the design template will be nourished for any given nourishment cycle.

Table 1. Comparison of Beachfill Quantity Estimates from 2002 and 2013.

2002 Sand Qty. Estimate (cubic yards)		2013 Sand Qty. Estimate (cubic Yards)	
Initial Construction (includes advance nourishment)	Periodic Nourishment	Initial Construction (includes advance nourishment)	Periodic Nourishment
10,689,000	961,000 (4 yrs.)	10,728,000	1,364,000 (4 yrs.)

Using the quantity estimates in Table 1 from 2013, total sand quantity estimates for the 50-year project life are provided in Table 2. The cumulative total sand required is approximately 28,884,000 cubic yards, which is approximately 4,000,000 cubic yards more than the original projection in USACE (2002).

Table 2. Total Sand Quantity Estimates Required Based on 2013 Estimates

2013 Estimated Quantities (cubic yards)			
Initial Construction (includes advance nourishment)	Total Periodic Nourishment	Major Replacement	Total 50 year estimate
10,728,000	16,368,000 (12 cycles)	1,788,000	28,884,000

4.2.2 Borrow Areas

As previously discussed, the Feasibility report identified 2 main borrow areas (Borrow Areas A and B) to be used for initial construction and several nourishment cycles of the project. Further investigations conducted since that time resulted in the addition of two new borrow areas that would be used for initial construction and subsequent nourishment (Borrow Areas D and E).

Borrow Area A is located about 2.25 miles offshore of the northern end of Island Beach State Park. This area is approximately 460 acres in size and contains approximately 13.3 million cubic yards of suitable beach fill material with a maximum disturbance depth of approximately -81 feet NAVD.

Borrow Area B is located about 1.75 miles offshore of Mantoloking, NJ. This area is approximately 360 acres in size and contains approximately 7.5 million cubic yards of suitable beach fill material with a maximum disturbance depth of approximately -81 feet NAVD. Through coordination with NJDEP, the Corps has developed a revised dredging plan for this borrow area that will allow the removal of approximately 5 million cubic yards of sand while still maintaining some of the shoal structure found within the borrow area.

Borrow Area D is located about 1.75 miles offshore of Seaside Park, NJ. This area is approximately 232 acres in size and contains approximately 4.5 million cubic yards of suitable beach fill material with a maximum disturbance depth of approximately -81 feet NAVD.

Borrow Area E is located about 2.5 miles offshore of the northern end of Island Beach State Park and is directly adjacent and to Borrow area A. This area is approximately 322 acres in size and contains approximately 8.8 million cubic yards of suitable beach fill material with a maximum disturbance depth of approximately -81 feet NAVD.

As discussed in the Feasibility report, the Corps is also pursuing the use of Borrow Area F2 as another potential source of sand for future periodic nourishments for the project area. Borrow Area F2 is located about 4.6 miles offshore of Mantoloking and is approximately 1700 acres in size. It contains approximately 38.6 million cubic yards of suitable beach fill material with a maximum disturbance depth of approximately -81 feet NAVD. Area F2 lies entirely within Federal waters (i.e. beyond 3 nautical miles from the New Jersey shoreline). Dredging or mining of sand from Federal waters requires coordination and approval from the Bureau of Ocean Energy Management (BOEM). Because of the expedited schedule to start initial construction, Borrow Area F2 will not be used for initial construction. It is expected, however, that F2 will be available for use during periodic nourishment, in addition to Borrow Areas A, B, D, and E. Further NEPA coordination will be completed prior to the use of F2.

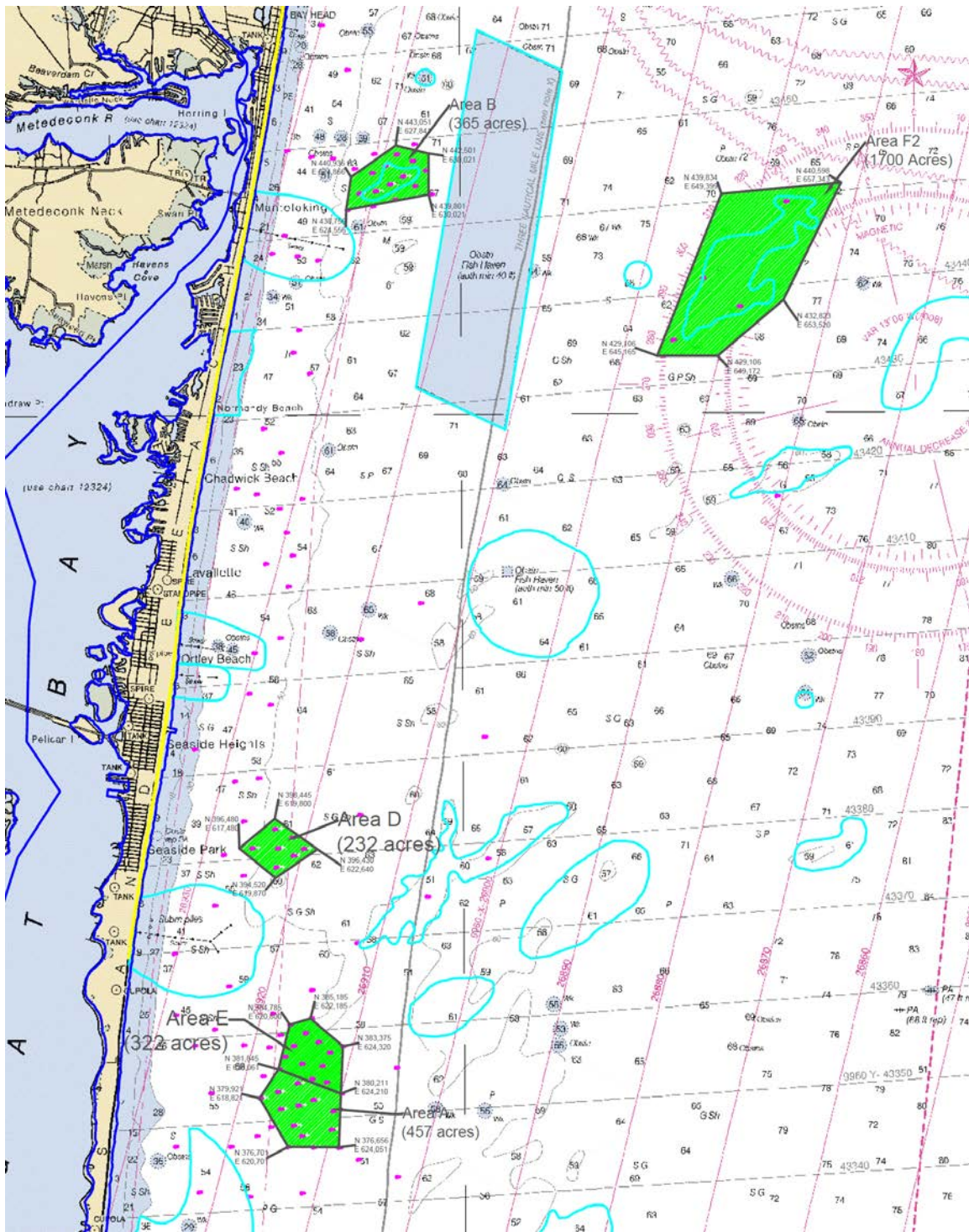


Figure 5. Currently Proposed Sand Borrow Areas

4.3 Recent Changes as a Result of Storms

In recent years, the project area has experienced several significant storm events including the recent Nor' Ida Storm of 2009, Hurricane Irene in 2011, and most notably the devastating storm, Hurricane Sandy, in October 2012.

Hurricane Sandy developed from a tropical wave in the western Caribbean on 22 October and was soon upgraded to Tropical Storm Sandy. On 24 October, Sandy became a hurricane and made landfall near Kingston, Jamaica. Sandy then re-emerged into the Caribbean and strengthened to Category 2. Early on 26 October, Sandy moved through the Bahamas. During 27 and 28 October, Sandy moved alongshore of the southeast U.S. coast, and reached a secondary peak of 90 mph on 29 October with a diameter of over 1,000 nautical miles. Sandy turned to the north-northwest and made landfall as a post-tropical cyclone at ~2000 EDT near Atlantic City, NJ with winds of 90 mph, causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey, and New York. As Sandy approached landfall, it generated intense onshore winds, waves, and a storm surge that was augmented by astronomical spring tides associated with the full moon of 29 October. The remnants weakened over Pennsylvania and degenerated into a remnant trough on 31 October. The combined effects of wind, waves, and elevated tidal water levels led to significant storm damages to residential and commercial structures, public infrastructure and significant beach and dune erosion within the Manasquan Inlet to Barnegat Inlet Project Area. A summary of the impacts in each municipality is provided below.

Point Pleasant Beach: The dunes and beach berm in this area were severely eroded. Hundreds of homes and businesses were significantly impacted by flooding and damages ranged from minor structural issues to complete destruction. A majority of the boardwalk on the north end of the town was destroyed. Two to three feet of sand covered the streets in beach block areas.

Bay Head: Erosion of the dunes during Sandy uncovered a relict seawall that had been buried within the dune. The seawall is composed of stone and was initially constructed in the 1880s. It extends for approximately 4,100 feet from Karge Street to Egbert Street in a north to south direction. Despite the presence of the seawall, there was still significant structural damage to homes in Bay Head.

Mantoloking: Mantoloking experienced a complete loss of dunes and severe beach erosion during Sandy. Wave energy and storm surge was absorbed directly by many of the ocean front structures and they were catastrophically damaged and/or destroyed. Two to three feet of sand was deposited along the streets on the ocean block. Whole roads were washed out and overhead utility systems were destroyed. Breaches occurred in three locations where the ocean washed through the barrier spit and connected to the

bay. The most significant breach was at Herbert Street where Route 528 comes across the bay on a bridge from the mainland and connects to Route 35 in Mantoloking. The Herbert Street breach was approximately 550 wide in a north to south direction and stretched approximately 900 feet from the ocean to the bay. The section of Route 35 at the breach location was completely destroyed.

Brick Township: Damages in Brick Township were similar to Mantoloking in their severity; however, no breaches occurred. Loss of dunes and severe beach erosion occurred and there was widespread destruction of homes.

Toms River Township: The northern portion of Toms River Township (Chadwick Beach) had a large dune system in place which reduced structural impacts. However significant beach erosion occurred on the lower berm and the seaward face of dunes. Wash though occurred at the pedestrian crossover cutouts at each street end. The southern portion of Toms River Township (Ortley Beach) suffered catastrophic damage to the entire infrastructure. The unobstructed wave energy and tidal surge created loss of all major underground utility systems, overhead power system, and paved surfaces. Many homes were completely destroyed on the ocean block. Sink holes were observed in many paved locations. Bay side bulkheads were destroyed.

Lavallette: There was a complete loss of dunes at the south end of Lavallette and very little beach berm remained following the storm. Major structural damage occurred on all of the ocean front buildings. Two to three feet of sand was observed covering the streets in the ocean block. The entire boardwalk was destroyed. Overhead power utilities, underground utilities and paved surfaces were significantly damaged.

Seaside Heights/Seaside Park: There was significant beach berm erosion and almost complete loss of dunes. Wave energy and tidal surge destroyed the boardwalk and amusement pier and caused significant structural damage to ocean block structures.

Berkeley Township: There were no significant impacts behind the large existing dune system. Significant erosion occurred on the beach berm and the seaward face of the dune.

Recovery efforts in the Manasquan Inlet to Barnegat Inlet project area have been on-going since Hurricane Sandy. These efforts have included some emergency storm damage protection projects to repair the most severely damaged areas that were most vulnerable to future storm events. The most severe damage, the breach at Herbert Street in Mantoloking, was repaired by the New Jersey Department of Transportation (NJDOT) and the US Army Corps of Engineers (with funding from FEMA) to restore the connection of Route 35 and Route 528. This repair involved the closure of the breach with a stone foundation in the former location of Route 35 and the installation of approximately 580 linear

feet of a steel sheet pile wall on the beach side of the road. Sand and fill material were then used to restore the ground elevations to pre-breach conditions.

In the aftermath of Hurricane Sandy, the Federal Highway Administration and the State of New Jersey have begun a project that will reconstruct a 12.5 mile stretch of Route 35 from Point Pleasant to Island Beach State Park. As part of this plan, the New Jersey Department of Transportation has proposed a plan to construct a steel sheet pile wall along the oceanfront of the Borough of Mantoloking and Brick Township. The wall would run parallel to, and be covered by, the dunes proposed in the USACE (2002) project. The sheet pile wall would be similar to the one installed at the Herbert Street breach and would be driven 30 feet into the ground and stand 16 feet above the existing grade (Figure 6). The sheet pile would serve as a last line of defense against wave attack and storm surge if the proposed dunes were to be eroded by a storm similar to Hurricane Sandy in the future. The main purpose of the sheet pile wall would be to protect Route 35 and prevent another breach from occurring in these two municipalities, which are the narrowest populated section of the Barnegat Peninsula.

As noted earlier in this section, the erosion of the dunes in Bay Head during Hurricane Sandy uncovered a relict seawall that had been buried within the dune for approximately 100 years. Since the presence of this seawall appears to have given Bay Head a higher degree of protection than the dunes that were composed solely of sand and completely lost in the adjacent Mantoloking, the NJDEP has permitted beach front homeowners to extend the existing seawall. The structure has been extended approximately 1,600 feet to the south from Egbert Street to Mathis Place on the beach side of 17 properties. The relic seawall and the new extension will be covered by the dunes proposed in the USACE (2002) project. Current plans specify that the seawall extension in Bay Head will connect to the proposed sheetpile wall in Mantoloking with no gaps, resulting in a contiguous line of protection that utilizes underlying hard structures within the dune system.

Recovery efforts following Hurricane Sandy have also included the removal of debris that was deposited on land by the storm and the dredging of subaqueous areas where the deposition of materials has created shoals or navigation hazards. In 2013, USACE issued the NJDEP permits (under Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and a Nationwide Permit) which authorize these clean up and dredging activities within the project area from Point Pleasant south to Seaside Park. The subaqueous work involves the mechanical (bucket) dredging of shoals, marina basins, and state navigation channels within Barnegat Bay. Work at the land/water interface involves the cleaning of storm sewer outfalls that were choked with material. The permits specify that any of the dredged or clean up material that is greater than 90% sand can be screened and then stockpiled by the NJDEP for potential reuse in beach front areas, as long as the work remains

on uplands/non-wetlands above the high tide line and the material is contained to prevent its escape to any aquatic areas. Within the project area, the permits authorize the dredging and potential reuse (given the cited conditions) of up to 415,000 cubic yards of material. Depending on where this reuse occurs in the beach front areas, these efforts could affect the quantities of beachfill needed for the proposed Federal Corps project.

4.4 Regulatory Changes

On October 6, 2010, the National Marine Fisheries Service (NMFS) published a Notice in the Federal Register proposing to list three Distinct Population Segments (DPSs) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) in the Northeast Region. The New York Bight DPS, which includes Atlantic sturgeon whose range occurs in watersheds that drain into coastal waters, including Long Island Sound, the New York Bight, and the Delaware Bay, from Chatham, MA to the Delaware-Maryland border on Fenwick Island, as well as wherever these fish occur in coastal bays, estuaries, and the marine environment from Bay of Fundy, Canada to the Saint Johns River, FL, was proposed for listing as endangered. On February 6, 2012, NMFS issued two final rules (77FR 5880 and 77 FR 5914) listing five DPSs of Atlantic sturgeon as threatened or endangered under the Endangered Species Act (ESA). The effective date of the listing was April 6, 2012.

Since 1996, dredging projects have been conducted in the Philadelphia District in accordance with the Biological Opinion (NMFS, 1996) that provides conservation recommendation and reasonable and prudent measures for the shortnose sturgeon (*Acipenser brevirostrum*), four species of sea turtles, and marine mammals. By letter of February 21, 2013, the Philadelphia District reinitiated consultation in accordance with 50 CFR 402.14(c) under Section 7 of the Endangered Species Act to address the District's beach nourishment projects' effects on Atlantic Sturgeon and the sea turtles/marine mammals previously covered in NMFS (1996). A Programmatic Biological Assessment was prepared by the Philadelphia District in March 2014 to cover all existing and proposed storm damage reduction projects within the Philadelphia District. This will be followed by a new BO to be issued by NMFS. In the interim, the Philadelphia District, through coordination with NMFS, has determined that allowing the District's beach nourishment program to continue to operate during the re-initiation period will not violate Section 7(a)(2) or 7(d).

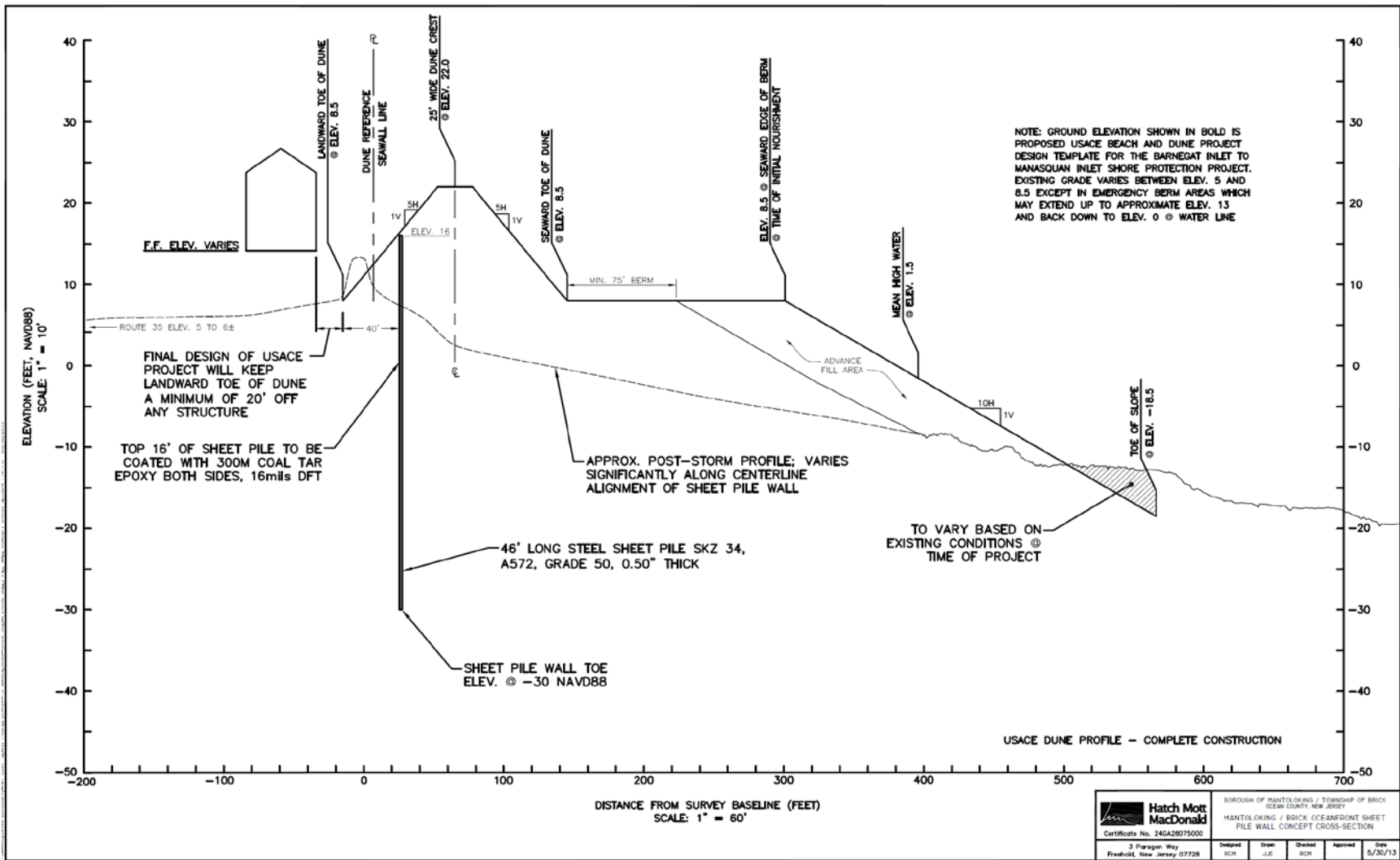


Figure 6. Concept Cross-Section for the Proposed Steel Sheet Pile Wall in Mantoloking and Brick Township

In 2006, the *rufa* subspecies of the red knot (*Calidris canutus rufa*) was added to the list of Federal candidate species due to the high magnitude of imminent threats to the subspecies, and the U.S. Fish and Wildlife Service (USFWS) is currently determining whether to designate it as threatened or endangered. Since 2006, listing has been precluded by other, higher priority listing actions. The Service is now preparing a Proposed Rule to list the species as either threatened or endangered. The Service must also consider whether there are areas of habitat believed to be essential to red knot conservation. If prudent and determinable, those areas will be proposed for designation as Critical Habitat. Transient red knots may be found anywhere along New Jersey's coasts. Concentrations of migrating birds are known to occur in Cumberland, Cape May, and Atlantic Counties ("Red Knot - New Jersey Field Office - U.S. Fish & Wildlife Service." *Red Knot - New Jersey Field Office - U.S. Fish & Wildlife Service*. N.p., n.d. Web. 24 July 2013. <http://www.fws.gov/northeast/njfieldoffice/endangered/redknot.html>).

4.5 No Action

No action assumes that there would be no Federal involvement for storm damage reduction within the project area. USACE (2002) documented the vulnerabilities of the project area communities to storm damages associated with erosion, inundation and wave damages from the Atlantic Ocean. No action was eliminated early in the screening process because it did not meet the planning objectives for erosion protection, inundation protection and wave attack protection. Recent storms have demonstrated the vulnerability of this area to these types of damages. As described in Section 4.3, a majority of the project area experienced significant beach erosion, dune loss, flooding, structural damages and infrastructure damages from Hurricane Sandy. Based on the vulnerabilities of the project area to storm damages as demonstrated in USACE (2002), and the recent storms experienced in the project area, no action still does not meet the planning objectives, and is not considered further. Therefore, the selected plan with the proposed modifications is recommended for implementation.

5.0 AFFECTED ENVIRONMENT

USACE (2002) provided a comprehensive discussion on affected resources within the project area. A review of the affected environmental resources was conducted to determine if significant changes have occurred or if new information has become available since completion of USACE (2002). This review is presented as Table 3. Resource topics that do not require further discussion are incorporated by reference and are not discussed further. Resources that require further discussion are presented as indicated in Table 3.

Table 3. Status of Affected Resources			
Resource Topic	Incorporate By Reference	Have There Been Any Significant Changes or New Information Since USACE (2002)?	Notes
General Environmental Setting	USACE (2002)	No	Although the area was affected by significant storm events, the overall environmental setting has not changed significantly since 2002.
Soils	USACE (2002)	No	No significant changes since 2002.
Mineral Resources	USACE (2002)	Yes	Two additional offshore borrow areas have been included.
Air Quality	USACE (2002)	Yes	A Conformity Analysis was completed and coordinated with EPA.
Water Quality	USACE (2002)	No	No significant changes.
Wetland Habitat	USACE (2002)	No	Some back-bay tidal wetland losses and storm-related debris deposition may have occurred since 2002.
Dune Habitat	USACE (2002)	Yes	Dune habitats experienced erosion from storm damages. Vegetation, shape and extent of dunes have been modified.
Upper Beach Habitat	USACE (2002)	Yes	Beaches experienced erosion due to storm damages.
Intertidal Zone Habitat	USACE (2002)	No	No significant change. Some storm-related debris could be in surf zone. No significant changes to benthic communities expected.
Nearshore and Offshore Zone Habitats	USACE (2002)	No	No significant change. Some storm-related debris could be in nearshore. No significant changes to benthic communities expected.
Shellfish	USACE (2002)	No	No significant changes.
Finfish	USACE (2002)	No	Potential impacts to fisheries habitat related to near shore wrecks will be monitored following construction.
Prime Fishing Areas	USACE (2002)	Yes	Borrow Areas B and F2 now contain Prime Fishing Areas
Essential Fish Habitat	USACE (2002)	No	EFH coordination with NMFS has been updated.
Benthos (intertidal and nearshore)	USACE (2002)	No	Although the beaches were significantly affected by storm-related erosion, the benthic community is not expected to have been significantly altered due to its inherent resilience and adaptability in this dynamic environment.
Benthos (offshore)	USACE (2002)	Yes	Information on benthic sampling in Borrow Areas D and E is included in EA.
Birds	USACE (2002)	No	No significant change

Table 3. Status of Affected Resources			
Resource Topic	Incorporate By Reference	Have There Been Any Significant Changes or New Information Since USACE (2002)?	Notes
Mammals (terrestrial)	USACE (2002)	No	No significant change
Mammals (marine)	USACE (2002)	No	Updated discussion of noise and effects on marine life.
Threatened and Endangered Species	USACE (2002)	Yes	Formal Section 7 consultation for the Atlantic sturgeon has been initiated with NMFS. Interim measures are being implemented as per agreement with NMFS. Streamlined consultation as per USFWS (2005) for piping plovers and seabeach amaranth is required prior to construction. Coordination for red knot is being initiated.
Recreation	USACE (2002)	No	No significant changes since 2002.
Land Use	USACE (2002)	No	No significant changes since 2002.
Visual and Aesthetic Values	USACE (2002)	Yes	Significant dune and beach loss have altered the visual and aesthetic environment. Storm debris and structural damages from the storms have been addressed or are currently being addressed by local authorities.
Noise	USACE (2002)	No	No significant changes since 2002.
Cultural Resources	USACE (2002)	Yes	Phase II Cultural Resource Survey was conducted in 2005.
Hazardous, Toxic and Radioactive Waste (HTRW)	USACE (2002)	No	No significant changes since 2002.
Socioeconomics	USACE (2002)	No	A reanalysis of the socioeconomics of the project area was conducted as part of a Limited Re-evaluation Report (LRR) in 2013.

5.1 Mineral Resources

The offshore Borrow Area F2 lies outside of New Jersey State Waters and falls under Federal jurisdiction pursuant to the 1953 Outer Continental Shelf (OCS) Lands Act (43 U.S.C. 1331 et seq.; 43 U.S.C. 1801 et seq.). Under this Act, the Secretary of the Interior has direct responsibility for administration of oil, gas and mineral exploration; for development of the OCS; and for formulation of regulations to meet provisions of the Act. These functions are centralized under the U.S. Department of the Interior – Bureau of Ocean Energy Management (BOEM) (formerly the Minerals Management Service (MMS)). Because this site would make use of Federal OCS sand resources, the Philadelphia District will coordinate with BOEM regarding the site location and pertinent site data. Prior to utilization of F2, a project-specific Memorandum of Agreement (MOA)

between the USACE and BOEM will need to be negotiated and executed concerning the use of this site. However, because of the time constraints under the expedited schedule for initial construction of this project under P.L. 113-2: Disaster Relief Appropriations Act (FY 2013), F2 will not be available in time for initial construction. Therefore, initial construction will rely on Borrow Areas A, B, D and E, which are within state waters. Coordination with BOEM for the use of F2 for periodic nourishment has been initiated in order to comply with Outer Continental Shelf Lands Act. BOEM is a cooperating agency on this project. Additional NEPA work, specific to this borrow area will be completed prior to the use of this site.

5.2 Air Quality

USACE (2002) described the air quality in the project area. The U.S. Environmental Protection Agency (EPA) adopts National Ambient Air Quality Standards (NAAQS) for the common air pollutants, and the states have the primary responsibility to attain and maintain those standards. Through the State Implementation Plan (SIP), The New Jersey Department of Environmental Protection – Division of Air Quality manages and monitors air quality in the state. The goal of the State Implementation Plan is to meet and enforce the primary and secondary national ambient air quality standards for pollutants. New Jersey air quality has improved significantly over the last 40 years, but exceeds the current standards for ozone (O₃) throughout the state and fine particles (PM₁₀ or PM_{2.5}) in many urban areas. New Jersey has attained the sulfur dioxide (SO₂) (except for a portion of Warren County), lead (Pb), and nitrogen dioxide (NO₂) and Carbon Monoxide (CO) standards. The New Jersey Division of Air Quality also regulates the emissions of hazardous air pollutants (HAPs) designated by the U.S. EPA (accessed from internet website on 7/15/2013 at <http://www.state.nj.us/dep/daq/>).

The Clean Air Act requires that all areas of the country be evaluated and then classified as attainment or non-attainment areas for each of the National Ambient Air Quality Standards. Areas can also be found to be “unclassifiable” under certain circumstances. The 1990 amendments to the act required that areas be further classified based on the severity of non-attainment. The classifications range from “Marginal” to “Extreme” and are based on “design values”. The design value is the value that actually determines whether an area meets the standard. For the 8-hour ozone standard for example, the design value is the average of the four highest daily maximum 8-hour average concentrations recorded each year for three years. Their classification with respect to the 8-hour standard is shown in Figure 7. Ground-level ozone is created when nitrogen oxides (NO_x) and volatile organic compounds (VOC’s) react in the presence of sunlight. NO_x is primarily emitted by motor vehicles, power plants, and other sources of combustion. VOC’s are emitted from sources such as motor vehicles, chemical plants, factories, consumer and commercial products, and even natural sources such as trees. Ozone and the pollutants that form ozone (precursor pollutants) can also be transported into an area from sources hundreds of miles upwind. The entire state of New Jersey is in non-attainment and is classified as

being “Marginal.” A “Marginal” classification is applied when an area has a design value of 0.085 ppm up to but not including 0.092 ppm (NJDEP, 2012 Ozone Summary).

New Jersey

8-hour Ozone Nonattainment Areas in Blue Border

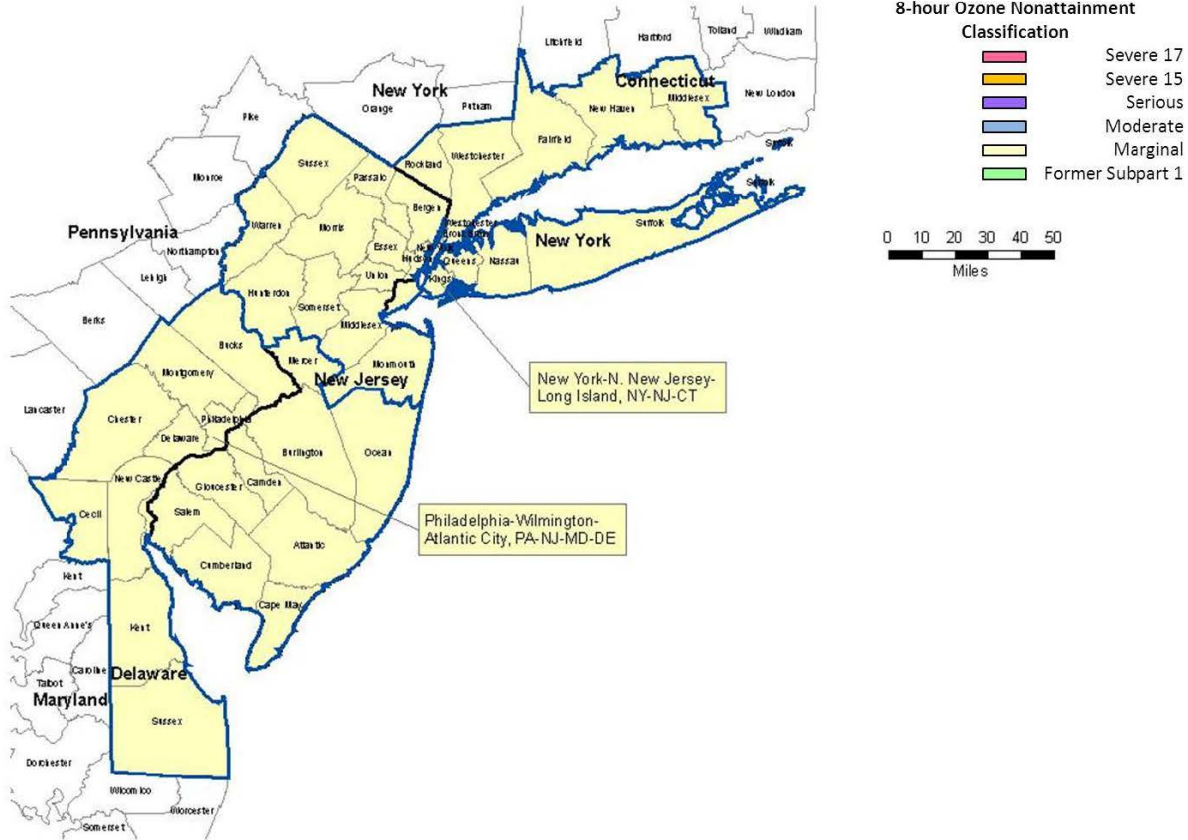


Figure 7. New Jersey Non-Attainment Areas for Ozone (Source: NJDEP, 2012).

5.3 Water Quality

Water quality within the project area was discussed in USACE (2002). Versar (2000) measured water quality in borrow areas A and B in August 1999 and borrow areas D and E in July 2005. Temperature, pH, dissolved oxygen (DO), conductivity, and salinity were measured relative to depth. The measurements taken found the water columns to be fairly homogeneous with little differences detected between sites. Water column stratification was detected between the surface and bottom measurements in all borrow sites, especially in regard to DO and temperature which were substantially lower for the stations at the sediment interface (bottom) than at the water surface.

Water quality is generally indicated by measuring levels of the following: nutrients (nitrogen/phosphorus), pathogens, floatable wastes, and toxins. Rainfall is an important parameter for studying water quality; runoff leads to non-point source pollution and fresh water (rainfall, ground water seepage, runoff, and river discharge) can ultimately affect hydrodynamic circulation in the ocean. Ocean and bay recreational beaches are subject to opening and closing procedures of the State Sanitary Code and must be resampled when bacteria concentrations exceed the primary contact standard of 104 enterococci per 100 mL of sample. Consecutive samples that exceed the standard require the closing of the beach until a sample is obtained that is within the standard.

Elevated enterococci counts along the coast of New Jersey may result from failing septic tanks, wastewater treatment plant discharges, combined sewer overflows, stormwater drainage, runoff from developed areas, domestic animals, wildlife and sewage discharge from boats. Point source discharges from coastal wastewater treatment facilities can affect water quality at bathing beaches. Accordingly, the NJDEP routinely monitors the treatment of effluent at these facilities, to ensure that they operate in accordance with the requirements of their permits. For recreational beaches, the health agency also surveys the area visually and collects additional samples ("bracket samples") at either side of the station to determine the extent of the pollution and possible pollution sources. The results of the bracket samples determine the extent of restrictions imposed along the shore and the number of beaches closed.

Between 2012 and August 2013, the Ocean County Health Department sampled recreational beach water for bacteria and pathogens. Sampling was conducted once a week during the swimming season. During the 2012 summer swimming season in Ocean County, water quality criteria were exceeded within:

- Lavallette on June 25
- Seaside Park on July 2
- Seaside Heights on July 9
- Lavallette, Seaside Park, and Seaside Heights on July 16
- Lavallette, Seaside Park, and Seaside Heights on August 6
- Lavallette on August 13
- Point Pleasant and Seaside Heights on September 4

In 2013 to date (August 26th), water quality criteria have not been exceeded within the project area (data obtained from internet website: <http://www.nj.gov/dep/beaches/oc.html> on 8/28/2013).

5.4 Wetland Habitat

The wetland habitat in the study area was described in USACE (2002) and consists of back bay/coastal salt marsh systems. The backbays are comprised of open water, a low marsh zone, tidal flats, a high marsh zone and a transition zone. All of these zones play a critical habitat roll for diverse number of species. Post-storm

assessments performed after Hurricane Sandy indicated that wetlands in Barnegat Bay to the east of Mantoloking had been impacted by the breaches that occurred. Habitat in these wetlands had been degraded by the massive influx of sand from across the island which covered the zones mentioned above.

Wetlands on the bay side of Island Beach State Park were also impacted by the erosive forces of Hurricane Sandy. The elevations of these wetlands had been lowered which made them vulnerable to repeated tidal flooding, overwash, storm surge and wave action. These elevation changes can have critical impacts on coastal zone species that rely on this habitat for breeding, food source, cover, and travel corridors.

5.5 Dune and Upper Beach Habitat

As discussed in USACE (2002) natural dunes or remnants of ones are present within the study area, primarily within Island Beach State Park. However, large segments of the shoreline contain dense development consisting primarily of residential houses or commercial structures with a maintained dune or no dune at all. The presence and sizes of dunes vary throughout the project area. Flora typical of primary and secondary dunes were described.

Following Hurricane Sandy, a post-storm assessment of the beaches in the project area was performed by Philadelphia District personnel in early November 2012. Beach and dune erosion were documented and summarized in Section 4.3 of this Environmental Assessment. Severe erosion or complete loss of dunes occurred along a majority of the project area. With damage to the dunes, vegetation along with habitat values for some wildlife was substantially or completely lost. As part of the Hurricane Sandy recovery efforts, some dunes have been partially rebuilt by the municipalities and NJDEP with sand that was deposited landward during the storm.

5.6 Fisheries

5.6.1 Shellfish

Shellfish resources within the project affected area were described in USACE (2002). Surfclams (*Spisula solidissima*) are the largest bivalve community found off the Atlantic coast from the Gulf of Saint Lawrence, Canada to North Carolina, and are of considerable resource value in New Jersey Atlantic Coastal waters.

The proposed sand borrow areas in USACE (2002) (A and B) were surveyed in 1999 and 2001 to document the presence and density of juvenile and adult surf clam stocks. In the initial survey, Versar, Inc., (2000) found that the mean abundance of juvenile clams at the two borrow areas were, in general, significantly lower than the clam abundances at the nearby Long Beach Island borrow areas (LBI regional areas).

In the 1999 survey, approximately 2,000 surf clams were collected among the 15 tows conducted in Area A. Density estimates for Area A averaged 6 clams/100 sq ft and ranged to 51 clams/100 sq ft. Overall, the standing stock of adult surf clams of Area A was estimated to be 1.2 million clams.

In the 1999 survey, no adult surf clams were collected in the five tows conducted within Area B. Subsequent to this survey, the size of Borrow Area B was increased to accommodate sand quantities required for the project so additional surf clam tows were conducted within the entire borrow area in 2001. Density estimates for Area B averaged 11.9 clams/100 sq. ft. and ranged to 69.6 clams/100 sq. feet. Overall, the standing stock of adult surf clams of Borrow Area B was estimated to be 1.86 million clams.

Borrow areas D and E were surveyed in 2006 to document the presence and density of juvenile and adult surf clam stocks (Versar, 2007). Hydraulic surf clam dredging conducted at 20 stations within each borrow area indicated that although adult clams were present in the area, overall, adult clam densities were low. Juvenile clam abundances collected with the grab sampler were also low, indicating that neither borrow area is an active nursery for surf clam recruits. At borrow area D, only 7 of 17 stations contained juvenile clams and abundances ranged from 1 to 6 clams per grab. At borrow area E, only 1 to 2 clams per grab were collected from the six stations with clams.

Versar (2008) conducted a comprehensive analysis of surfclam data collected by NJDEP over a 19-year period from 1988 to 2006. This data shows variable densities over the years, but tended to have the higher densities closer to Manasquan Inlet and Barnegat Inlet. From a historical perspective, some areas between Manasquan Inlet and Barnegat Inlet showed densities that were relatively high (>5.7 bushels/100m²) (Figure 8).

5.6.2 Finfish

The species composition of finfish in the project area has not changed significantly since it was discussed in USACE (2002). However, the habitat for finfish, specifically near shore shipwrecks functioning as artificial reefs, may be altered by the proposed project. Potential impacts to the shipwrecks and the proposed monitoring plans are discussed in section 6.5.2.

5.6.3 Prime Fishing Areas

Several locations within or near the project area are classified as Prime Fishing Areas (NJAC 7:7E-3.4) by NJDEP (Figure 9). One of these features lies within Borrow Area B and one lies within Borrow Area F2 ("The Manasquan Ridge"). Prime Fishing Areas in New Jersey were originally delineated by Long and Figley (1984) in a

publication titled “New Jersey’s Recreational and Commercial Ocean Fishing Grounds”. The mapping was updated by the NJDEP in 2003 when they surveyed charter boat, party boat and private boat captains to identify the areas they consider recreationally significant fishing areas. A portion of Borrow Area B was designated as Prime Fishing habitat at this time. This survey data was used as a basis for the mapping of these areas (NJDEP website:

<http://www.nj.gov/dep/gis/digidownload/metadata/statewide/sportfishing.htm>). Prime Fishing Areas include tidal water areas and water’s edge areas, which have a demonstrable history of supporting a significant local quantity of recreational or commercial fishing activity. Other fish habitats of value, within the study area include artificial reefs, wreck sites, groins and jetties.

5.6.4 Essential Fish Habitat

Under provisions of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act of 1996, the entire study area including the borrow areas, nearshore and intertidal areas were designated as Essential Fish Habitat (EFH) for species with Fishery Management Plans (FMP’s), and their important prey species. The National Marine Fisheries Service has identified EFH within 10 minute X 10 minute squares. The study area contains EFH for various life stages for 30 species of managed fish and shellfish. Table 4 presents the managed species and their life stage that have been identified within the study area. These squares are within the seawater biosalinity zone (NOAA, 1999). The habitat requirements for identified EFH species and their representative life stages are provided in Table 5. USACE (2002) provided an evaluation of EFH in the project area. Recent correspondence with NMFS identified a need to re-evaluate EFH. To provide a complete evaluation, information from USACE (2002) is included, and any new information is presented as appropriate.

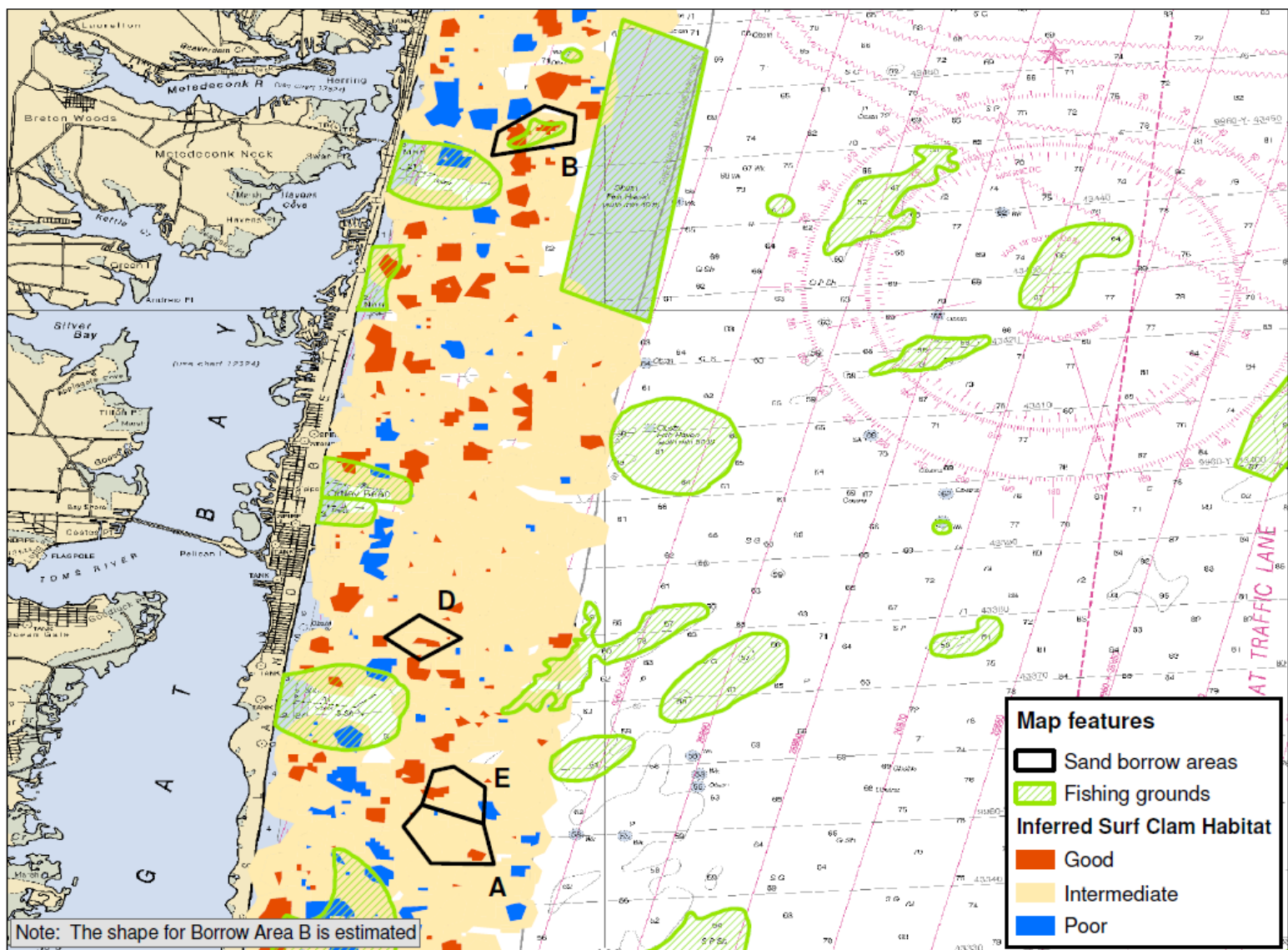


Figure 8. Surf Clam Habitat Map Based on the Geo-Spatial Analysis of 19 years of NJDEP Data (1988 to 2006).

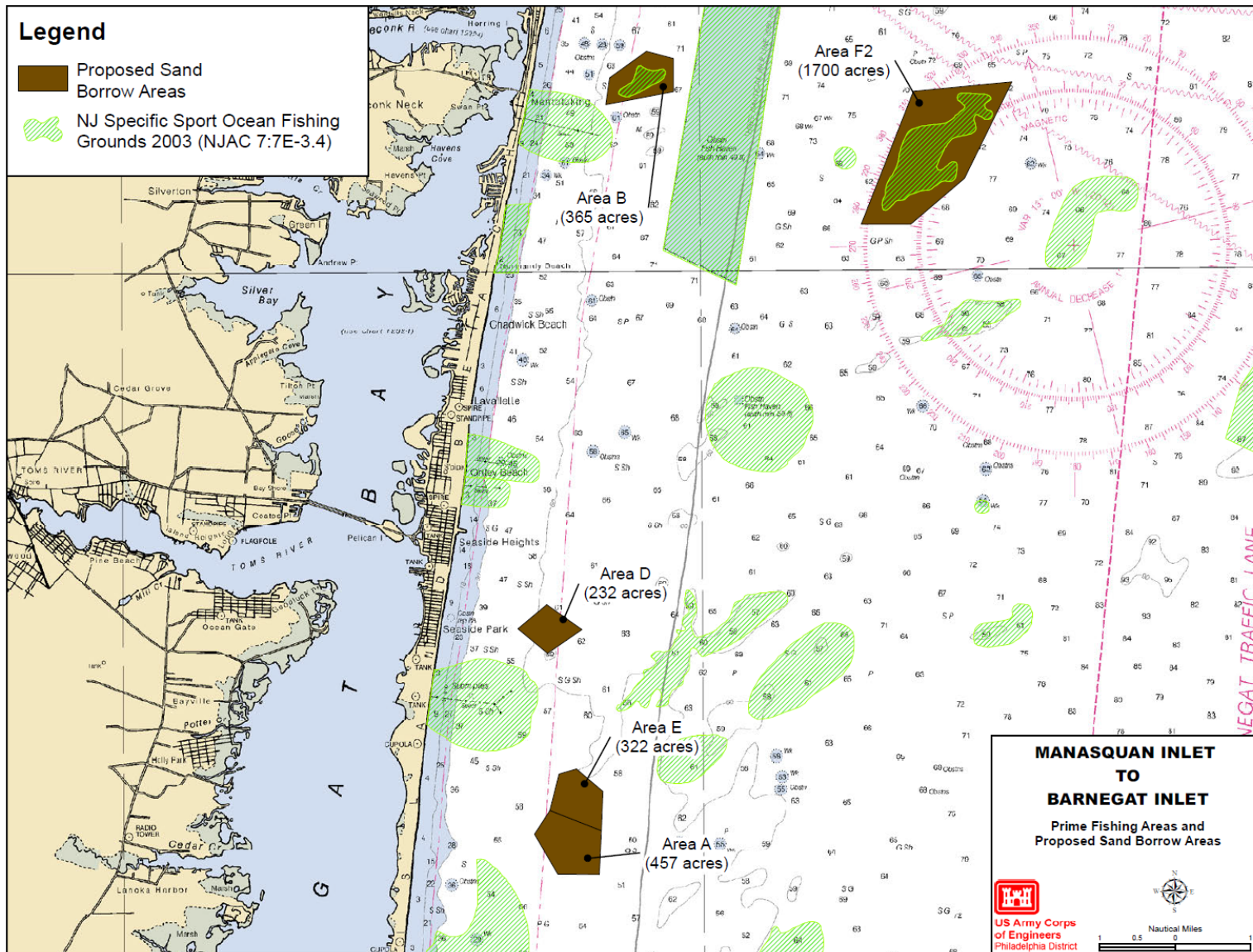


Figure 9. Prime Fishing Areas and Proposed Sand Borrow Areas

Table 4. Summary of Species with EFH Designations in the 10 Min. X 10 Min. Squares within the Study Area (Guide to Essential Fish Habitat Designations accessed on 8/13/2013 at <http://www.nero.noaa.gov/hcd/index2a.htm>)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
Atlantic cod (<i>Gadus morhua</i>)				X
Whiting (<i>Merluccius bilinearis</i>)	X	X	X	X
Red hake (<i>Urophycis chuss</i>)	X	X	X	
Redfish (<i>Sebastes fasciatus</i>)	n/a			
Witch flounder (<i>Glyptocephalus cynoglossus</i>)	X			
Winter flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
Yellowtail flounder (<i>Pleuronectes ferruginea</i>)	X	X		
Windowpane flounder (<i>Scophthalmus aquosus</i>)	X	X	X	X
Ocean pout (<i>Macrozoarces americanus</i>)	X	X		X
Atlantic sea herring (<i>Clupea harengus</i>)			X	X
Monkfish (<i>Lophius americanus</i>)	X	X		
Bluefish (<i>Pomatomus saltatrix</i>)			X	X
Long finned squid (<i>Loligo pealei</i>)	n/a	n/a		
Short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a		
Atlantic butterfish (<i>Peprilus tricanthus</i>)			X	
Summer flounder (<i>Paralichthys dentatus</i>)		X	X	X
Scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
Black sea bass (<i>Centropristus striata</i>)	n/a		X	X
Surf clam (<i>Spisula solidissima</i>)	n/a	n/a	X	X
Ocean quahog (<i>Artica islandica</i>)	n/a	n/a		
Spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		
King mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	X	X
Cobia (<i>Rachycentron canadum</i>)	X	X	X	X
Dusky shark (<i>Charcharinus obscurus</i>)		X		
Sandbar shark (<i>Charcharinus plumbeus</i>)		X	X	X
Tiger shark (<i>Galeocerdo cuvieri</i>)		X	X	
Clearnose skate (<i>Raja eglanteria</i>)			X	X
Little skate (<i>Raja erinacea</i>)			X	X
Winter skate (<i>Raja ocellata</i>)			X	X

Table 5. Habitat Utilization of Identified EFH Species for Representative Life Stages (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
Atlantic cod (<i>Gadus morhua</i>) (Fahay, 1998)				Habitat: Bottom (rocks, pebbles, or gravel) winter for Mid-Atlantic Prey: shellfish, crabs, and other crustaceans (amphipods) and polychaetes, squid and fish (capelin redfish, herring, plaice, haddock).
Whiting (<i>Merluccius bilinearis</i>) (Morse et al. 1998)	Habitat: Pelagic continental shelf waters in preferred depths from 50-150 m.	Habitat: Pelagic continental shelf waters in preferred depths from 50-130 m. (Morse et al. 1998)	Habitat: Bottom (silt-sand) nearshore waters in preferred depths from 150-270 m in spring and 25-75 m in fall. Prey: fish, crustaceans (euphasids, shrimp), and squids (Morse et al. 1998)	
Red hake (<i>Urophycis chuss</i>) (Steimle et al. 1998)	Habitat: Surface waters, May – Nov.	Habitat: Surface waters, May – Dec. Abundant in mid-and outer continental shelf of Mid-Atl. Bight. Prey: copepods and other microcrustaceans under floating eelgrass or algae.	Habitat: Pelagic at 25-30 m and bottom at 35-40 m. Young inhabit depressions on open seabed. Older juveniles inhabit shelter provided by shells and shell fragments. Prey: small benthic and pelagic crustaceans (decapod shrimp, crabs, mysids, euphasiids, and amphipods) and polychaetes).	
Witch flounder (<i>Glyptocephalus cynoglossus</i>) (Cargnelli et. al., 1998)	Habitat: Pelagic , generally over deep water in depths ranging from 10 – 1250			

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
	m.			
Winter Flounder (<i>Pseudopleuronectes americanus</i>) (Pereira et. al., 1998)	Habitat: Demersal, inshore areas with sand, muddy sand, mud, and gravel bottoms. Water depths less than 5 meters.	Habitat: Pelagic and demersal inshore areas, water depths less than 6 meters.	Habitat: Young of the year (YOY) are demersal, nearshore low (primarily inlets and coves) energy shallows with sand, muddy sand, mud and gravel bottoms. Prey: YOY Amphipods and annelids JUV – Sand dollar, Bivalve siphons, Annelids, Amphipods	Habitat: Demersal offshore (in spring) except when spawning where they are in shallow inshore waters (fall). Prey: Amphipods, Polychaetes, Bivalves or siphons, Capelin eggs, Crustaceans
Yellowtail flounder (<i>Pleuronectes ferruginea</i>) (Johnson et al., 1998)	Habitat: Pelagic waters ranging from 10 to 750 m	Habitat: Pelagic waters Prey: Polychaetes		
Windowpane flounder (<i>Scopthalmus aquosus</i>) (Chang, 1998)	Habitat: Surface waters <70 m, Feb-July; Sept-Nov.	Habitat: Initially in pelagic waters, then bottom <70m., May-July and Oct-Nov. Prey: copepods and other zooplankton	Habitat: Bottom (fine sands) 5-125m in depth, in nearshore bays and estuaries less than 75 m Prey: small crustaceans (mysids and decapod shrimp) polychaetes and various fish larvae	Habitat: Bottom (fine sands), peak spawning in May, in nearshore bays and estuaries less than 75 m Prey: small crustaceans (mysids and decapod shrimp) polychaetes and various fish larvae
Ocean pout (<i>Macrozoarces americanus</i>) (Steimle et. al., 1998)	Habitat: Demersal, cool waters across the continental shelf	Habitat: Coastal and saline (>25ppt) estuarine waters		Habitat: Intertidal areas across continental shelf and on upper continental slope to about 200 m. Prey: Variety of benthic inverts, including polychaetes, molluscs, crustaceans, and echinoderms
Atlantic sea herring (<i>Clupea harengus</i>) (Reid et al., 1998)			Habitat: Pelagic waters and bottom, < 10 C and 15-130 m depths Prey:	Habitat: Pelagic waters and bottom habitats; Prey: chaetognath, euphausiids, pteropods and copepods.

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
			zooplankton (copepods, decapod larvae, cirriped larvae, cladocerans, and pelecypod larvae)	
Monkfish (<i>Lophius americanus</i>) (Steimle et al., 1998)	Habitat: Surface waters, Mar. – Sept. peak in June in upper water column of inner to mid continental shelf	Habitat: Pelagic waters in depths of 15 – 1000 m along mid-shelf also found in surf zone Prey: zooplankton (copepods, crustacean larvae, chaetognaths)		
Bluefish (<i>Pomatomus saltatrix</i>)			Habitat: Pelagic waters of continental shelf and in Mid Atlantic estuaries from May-Oct.	Habitat: Pelagic waters; found in Mid Atlantic estuaries April – Oct.
Long finned squid (<i>Loligo pealei</i>)	n/a	n/a		
Short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a		
Atlantic butterfish (<i>Peprilus tricanthus</i>)			Habitat: Pelagic waters in 10 – 360 m	
Summer flounder (<i>Paralichthys dentatus</i>)		Habitat: Pelagic waters, nearshore at depths of 10 – 70 m from Nov. – May	Habitat: Demersal waters (mud and sandy substrates)	Habitat: Demersal waters (mud and sandy substrates). Shallow coastal areas in warm months, offshore in cold months
Scup (<i>Stenotomus chrysops</i>)	n/a	n/a	Habitat: Demersal waters	Habitat: Demersal waters offshore from Nov – April
Black sea bass (<i>Centropristus striata</i>)	n/a		Habitat: Demersal waters over rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas and wintere off shore at	Habitat: Demersal waters over structured habitats (natural and man-made), and sand and shell areas and winters off shore at depths of 25-50 m in shell beds and shell patches.

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
			depths of 1-38 m in shell beds and shell patches	
Surf clam (<i>Spisula solidissima</i>)	n/a	n/a	Habitat: Throughout bottom sandy substrate to 60 m depth	Habitat: Throughout bottom sandy substrate to 60 m depth
Ocean quahog (<i>Artica islandica</i>)	n/a	n/a		
Spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		
King mackerel (<i>Scomberomorus cavalla</i>)	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone.	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone.	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone.	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone.
Spanish mackerel (<i>Scomberomorus maculatus</i>)	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory
Cobia (<i>Rachycentron canadum</i>)	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory	Habitat: Pelagic waters with sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone. Migratory
Dusky shark (<i>Charcharinus obscurus</i>)		Habitat: Shallow coastal waters		
Sandbar shark (<i>Charcharinus</i>)		Habitat:	Habitat:	Habitat: Shallow coastal

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
<i>plumbeus</i>)		Shallow coastal waters	Coastal and pelagic waters	waters
Tiger shark (<i>Galeocerdo cuvieri</i>)		Habitat: Shallow coastal waters	Habitat: Shallow coastal waters	
Clearnose skate (<i>Raja eglanteria</i>)			Habitat: Shallow soft bottoms or rocky, gravelly bottoms.	Habitat: Shallow shores moves to deeper water in winter.
Little skate (<i>Raja erinacea</i>)			Habitat: Shallow coastal water over sand or gravel to 80 fathoms Prey: Crustaceans, clams, squids and worms	Habitat: Shallow coastal water over sand or gravel to 80 fathoms Prey: Crustaceans, clams, squids and worms
Winter skate (<i>Raja ocellata</i>)			Habitat: Shallow coastal water over sand or gravel to 80 fathoms Prey: Crustaceans, clams, squids and worms	Habitat: Shallow coastal water over sand or gravel to 80 fathoms Prey: Crustaceans, clams, squids and worms

5.7 Benthos

Intertidal and Nearshore Zones: Benthic macroinvertebrates of the intertidal and nearshore zones within the affected area are described in USACE (2002), which includes those that inhabit soft sandy bottoms and hard rocky intertidal areas. This zone contains a mixture of deposit feeders and carnivores. A number of interstitial animals (meiofauna) are present feeding among the sand grains for bacteria and unicellular algae, which are important in the beach food chain. Meiofauna are generally < 0.5 mm in size and are either juveniles of larger macrofauna or exist as meiofauna during their entire life cycle. Some common meiofauna include Rotifera, Gastrotricha, Kinorhyncha, Nematoda, Archiannelida, Tardigrada, Copepoda, Ostracoda, Mystacocarida, Halacarida, and many groups of Turbellaria, Oligochaeta, and some Polychaeta.

Naturally occurring rocky intertidal zones are absent from the project area. However, man-made structures such as seawalls, jetties, and groins are present and provide suitable habitats for aquatic and avian species. Benthic macroinvertebrates such as barnacles (*Balanus balanoides*), polychaetes, molluscs (*Donax sp.*), small crustaceans such as, mysid shrimp (*Heteromysis formosa*), amphipods (*Gammarus*

sp.), and uropods (*Idotea baltica*), reside on and around these structures. The blue mussel (*Mytilus edulis*) is a dominant member of this community.

Despite the disturbance of these zones from recent storm activity, no significant changes to this benthic community are expected. This is attributed to this community's highly adaptive and resilient nature because of the extreme environment that they inhabit.

Offshore Zone: Benthic macroinvertebrates of the offshore zone within the original two proposed offshore borrow areas (A and B) are described in USACE (2002). A benthic-sediment assessment was conducted focusing on infauna species within borrow areas A and B to establish a baseline for the benthic macroinvertebrate assemblages within the areas (Versar, Inc., 2000). Other objectives were to identify the presence of any commercial and/or recreationally important benthic communities within the proposed sand borrow sites. The data obtained from areas A and B were compared to each other, nearby reference areas, and other local borrow areas sampled under other studies.

For the 2000 assessment, 30 benthic macroinvertebrate samples were collected from areas A and B. The results of the Versar, Inc. investigation indicate that the community composition of the borrow areas and the nearby reference areas were similar. The borrow areas were dominated by a few very abundant taxa. Of the 20 dominant taxa collected from the areas, eleven were polychaete taxa. The most dominant polychaete taxa was the small bristle worm, *Polygordius* spp. Small, juvenile surfclams (*Spisula solidissima*) were the dominant bivalve in the two borrow areas.

In 2005, Versar, Inc. sampled benthic communities in borrow areas D and E. The benthic communities observed in these areas contained marine species common to stable mid-Atlantic coastline environments. The most abundant taxa consisted of common polychaete species and oligochaetes with opportunistic life-history characteristics. Such taxa possess characteristics that include short life cycles of one year or less, rapid growth, and the ability to produce multiple broods per year. These life-history characteristics lead to populations with natural boom and bust abundance patterns that can occur even on a microhabitat scale. Abundances of the three dominant taxa collected ranged from hundreds to thousands per square meter from station to station within each borrow area and accounted for over 90% of the total abundance within each borrow area. Cluster analysis performed on all of the stations within each borrow area were remarkably similar, leading to the conclusion that the benthic populations located in the deeper waters offshore of the project area are very stable over space and time.

Benthic communities can be variable seasonally or over the long-term. However, the benthic communities that currently exist in the offshore sand sources are not expected to be significantly different from those described in USACE (2002) and those sampled in 2005.

5.8 Wildlife

5.8.1 Birds

USACE (2002) provides a discussion of all of the avifauna within the affected areas. A majority of the species discussed utilize the isolated and undeveloped back bay and island habitats for wintering, nesting, and feeding. The erosive forces of Hurricane Sandy impacted the back bay habitats by eliminating nesting sites or by lowering the elevation of many nesting sites and making them vulnerable to repeated tidal flooding, overwash, storm surges and wave action. Much of this lost habitat included marsh hummocks which are critical to salt marsh obligate breeding birds. During the breaches that occurred at Mantoloking, avian wetland habitat in Barnegat Bay was impacted by the resulting sediment influx. Some wetland habitat at Island Beach State Park was also lost due to erosion during the storm.

On the ocean side of the project area, the loss of beach eliminated or significantly reduced the size of many high energy areas where shore birds feed. Both the biomass and species composition of the infaunal communities in these areas are critical for supplying the nutritional needs of shorebirds, especially during spring and fall migrations. The loss of dunes rendered areas less suitable for nesting and vulnerable to nest flooding. For obligate beach nesting shorebirds and seabirds, this habitat loss could have severe reproductive implications.

In some areas, the storm may have created habitat for beach nesting shorebirds and other shore and migratory species by pushing sand westward. However this habitat is not likely to be of a high quality since these areas are heavily accessed by humans.

5.8.2 Mammals, Reptiles and Amphibians

Terrestrial mammalian species are more likely to be found in the more upland habitats along the ocean coast. Several species of mammals are associated with dune habitats such as the raccoon (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), red fox (*Vulpes fulva*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pensylvanicus*), and white-tailed deer (*Odocoileus virginianus*).

Common reptilian and amphibian species associated with dune habitats may include Fowler's toad (*Bufo woodhousei fowleri*), eastern hognose snake (*Heterodon platyrhinos*), and box turtle (*Terrapene carolina*). Tidal marsh and adjacent upland dunes of the inland bays system are important habitats for feeding and nesting of the diamondback terrapin (*Malaclemys terrapin terrapin*).

The erosion of the dunes that occurred across the project area during Hurricane Sandy diminished the dune habitats that are available to these species.

5.8.3 Rare, Threatened and Endangered Species

USACE (2002) provides a discussion of all of the rare, threatened and endangered species within the affected areas. The Federally listed (threatened) and state listed (endangered) piping plover (*Charadrius melodus*) has historically nested near the study area in Island Beach State Park. NJDEP, Division of Fish and Wildlife, reports that the last known documentation of nesting pairs of piping plovers in the study area was in 2005 at Island Beach State Park.

The candidate species, red knot (*Calidris canutus rufa*.) can be found in lower densities during the spring and fall migrations along Atlantic Coast beaches, and could occur within the project area. In wintering and migration habitats, red knots may forage on bivalves, gastropods, and crustaceans (USFWS 2013; Harrington 2001).

The seabeach amaranth (*Amaranthus pumilus*) is a Federally listed threatened plant. The seabeach amaranth is an annual plant, endemic to Atlantic coastal plain beaches, and primarily occurs on overwash flats at the accreting ends of barrier beach islands and lower foredunes of non-eroding beaches. The species occasionally establishes small temporary populations in other areas, including bayside beaches, blowouts in foredunes, and sand and shell material placed as beachfill. The 2012 U.S. Fish and Wildlife Service Survey and Monitoring Report for seabeach amaranth indicated that 16 plants were found in Island Beach State Park and one plant was found in Mantoloking. No seabeach amaranth was documented within the study area or Island Beach State Park in 2013.

The New York Bight population of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was recently listed as endangered by the NMFS. Atlantic sturgeon are anadromous, spending a majority of their adult life phase in marine waters, migrating up rivers to spawn in freshwater then migrating to brackish water in juvenile growth phases. The Atlantic sturgeon are known to spawn within the Delaware River and migrate along the coast of New Jersey, although the extent of the use of marine habitat by Atlantic sturgeon is not fully known. This species could be present within the project impact area. Studies have indicated that depth distribution appears seasonal, with sturgeon inhabiting the deepest waters during the winter and the shallowest during summer and early fall.

5.9 Visual and Aesthetic Values

As noted in USACE (2002), the resort towns in the study area draw on the high aesthetic values of the seashore environment, which includes sandy beaches, dunes, and ocean views. The significant dune and beach losses that occurred during Hurricane Sandy have altered the visual and aesthetic environment. Although storm debris and structural damages from the storm are currently being addressed by local authorities, the condition of the dunes and beaches are, in some areas, significantly different than described in USACE (2002).

5.10 Noise

USACE (2002) discussed noise in the affected area and determined that noise is of environmental concern because it can cause annoyance and adverse health effects to humans and animal life. Noise can impact such activities as conversing, reading, recreation, listening to music, working, and sleeping. Wildlife behaviors can be disrupted by noises also, which can disrupt feeding and nesting activities. Because of the developed nature of the communities in the study area, noises are common and can come in the form of restaurant and entertainment facilities, automobiles, boats, and recreational visitors. However, these communities impose local restrictive noise ordinances to minimize noise.

5.11 Cultural Resources

Several terrestrial and marine cultural resource investigations were conducted by the USACE and discussed in USACE (2002). These investigations were conducted in consultation with the New Jersey State Historic Preservation Office (NJSHPO) and other interested parties for the Manasquan Inlet to Barnegat Inlet project to fulfill Section 106 responsibilities under the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR Part 800.

For one of the investigations mentioned above (Dolan Research, Inc. 2001), researchers examined proposed project offshore borrow areas, submerged near-shore locations, and terrestrial shoreline areas utilizing magnetometer, side-scan, and bathymetric data collection techniques. No remote sensing targets were identified in the project's two offshore borrow areas (A and B) or on the terrestrial portion of the shoreline. Nineteen remote sensing targets exhibiting shipwreck characteristics were identified in the submerged portion of the near-shore area. One possible shipwreck was also identified 15 feet offshore of South Mantoloking/Camp Osborne Beach near Seneca Dunes. It was determined that the proposed construction activities had the potential to impact these 20 sites and that they should be further investigated by a Phase II underwater investigation during the next Planning, Engineering and Design (PED) phase of the project.

Subsequent coordination in 2004 between the Philadelphia District, the NJSHPO, and Dolan Research determined that 10 of the remotely sensed targets did not require Phase II investigations because one was an outfall pipe and 9 others had no sonar image and were completely buried. It was agreed that the deposition of sand in the near-shore portion of the project would have no effect on the 9 buried targets. This left 9 remaining targets that did exhibit shipwreck characteristics, as well as the Seneca Dunes target and a newly identified "Lizzie Brayton" shipwreck, for a total of 11 remote sensing Phase II targets.

A Phase II investigation of the “Lizzie Brayton” Shipwreck, the Seneca Dunes Shipwreck and nine previously recorded magnetic anomalies was conducted in 2005. The report was titled, *Phase I and II Underwater Archaeological Investigations, Manasquan Inlet to Barnegat Inlet, Ocean County, New Jersey* prepared by Dolan Research, Inc. Only three of these nearshore sites (3-249, 3-1401 and 33-1048) appear to meet the criteria of eligibility for inclusion in the NRHP. The remaining anomalies /wreck sites do not appear to be potentially significant; however, a buffer was recommended to avoid unnecessary impacts. The wreck of the Seneca Dunes was not located during the investigation.

At the time of the investigation, sites 3-249 and 3-1041 were almost completely buried and site 33-1048 located approximately 300 feet offshore was partially buried. The proposed beach nourishment may result in the migration of sand over the three eligible sites but should not adversely affect them. In fact their reburial will act to protect the sites from sport divers and possible looting. In order to ensure that no dredging, pipe placement, mooring or anchoring occurs, a 200-foot radius buffer was recommended around each of the potentially eligible site centroids, and around both major aspects of the wreck of the Creole (33-1048). A 100-foot buffer around the other existing wrecks will be applied to ensure no further impacts. These avoidance areas will be depicted on our project plans and specifications.

Since the 2002 publication of the Environmental Impact Statement, additional Phase I surveys were conducted in Borrow Areas D and E. No significant remote sensing anomalies with characteristics that could be considered indicative of submerged historic properties were identified in either Borrow Area D or Borrow Area E.

6.0 ENVIRONMENTAL IMPACTS

USACE (2002) provided a comprehensive discussion on the direct, indirect and cumulative effects of the selected plan. A comparative impact analysis of the alternatives considered was also provided in this document and is incorporated by reference. Table 6 provides a review of the affected environmental resources, and if any significant changes in the project or project area require additional discussion. Resource topics with impacts that do not require further discussion are incorporated by reference (USACE, 2002). Resources that require further discussion are presented as indicated in Table 6.

Table 6. Potential Impacts to Affected Resources

Impact Category	Incorporate By Reference	Impacts of Changes since USACE (2002)	Section
Mineral Resources	USACE (2002)	Increase in periodic nourishment quantities results in approximately 4 million cubic	6.1

Impact Category	Incorporate By Reference	Impacts of Changes since USACE (2002)	Section
		yards more than 2002 estimate for 50-yr project. Borrow Area F2 requires approval from BOEM for periodic nourishment.	
Air Quality	USACE (2002)	Philadelphia District has completed a general conformity analysis which can be found in Appendix A of this document.	6.2
Water Quality	USACE (2002)	No significant changes in impacts from project changes discussed in Section 4.2.	--
Wetland Habitats	USACE (2002)	No significant changes in impacts from project changes discussed in Section 4.2.	--
Dune and Upper Beach Habitat	USACE (2002)	Dune and upper beach habitats experienced significant erosion from recent storms. Project would restore these habitats and provide more stability.	6.3
Benthos (offshore)	USACE (2002)	Acreage of benthic habitat impacted is expected to increase given the increased number of borrow areas and sand quantities required for periodic nourishment.	6.4
Shellfish	USACE (2002)	Acreage of surf clam habitat impacted may increase given the increase in borrow areas and sand quantities required for periodic nourishment.	6.5.1
Finfish	USACE (2002)	Habitat value of near shore shipwrecks functioning as artificial reefs may be impacted if covered by sand. A shipwreck monitoring plan has been prepared.	6.5.2
Prime Fishing Areas	USACE (2002)	Prime Fishing Areas as identified in NJAC 7:7E-3.4 have been updated since 2002. Prime Fishing Areas are now located in Borrow Areas B and F2.	6.5.2
Essential Fish Habitat	USACE (2002)	NMFS requested an updated EFH assessment. New species were updated to EFH list. Impacts on EFH including project changes not considered significant.	6.5.3
Birds	USACE (2002)	Some upper beach and primary dune habitats damaged by storms. Loss of nesting habitat in severely eroded areas, but enhancement of habitat in	6.6.1

Impact Category	Incorporate By Reference	Impacts of Changes since USACE (2002)	Section
		overwash area for beach nesting birds. Project would benefit terrestrial-oriented birds by providing more stable habitat.	
Mammals, Reptiles and Amphibians	USACE (2002)	Some upper beach and primary dune habitats damaged by storms. Project would benefit terrestrial-oriented species.	6.6.2.
Rare, Threatened and Endangered Species	USACE (2002)	Formal Section 7 consultation for the Atlantic sturgeon has been initiated. Interim measures are being implemented as per agreement with NMFS. Streamlined consultation as per USFWS (2005) for piping plovers and seabeach amaranth is required prior to construction.	6.7
Visual and Aesthetic Values	USACE (2002)	Project would restore the aesthetics of the beach and dunes.	6.8
Noise	USACE (2002)	Noises produced from dredging could affect marine mammals and other marine life.	6.9
Cultural Resources	USACE (2002)	New shipwrecks identified in project area. No adverse effect determination by NJSHPO.	6.10
Cumulative Impacts	USACE (2002)	Multiple beach repair and restoration projects will be conducted in short time-frame with no significant cumulative effects. Project modifications will have no significant cumulative effects.	6.11

6.1 Mineral Resources

As discussed in USACE (2002), approximately 24.0 million cubic yards of sand were expected to be required from the offshore borrow sites over the 50-year life of the project. A more recent estimate in 2013 projects an increase in sand quantity required over the project life to approximately 28.0 million cubic yards. Although sand resources will be removed from the borrow sites, the sand will be redistributed to the shoreline and littoral system. Therefore, this does not result in a permanent consumptive loss of this resource. In addition, since the nourishment quantities are only estimates of what may be needed in the future, actual sand requirements may be lower as only areas that fall below the design template will be filled during nourishment activities.

USACE (2002) and Section 5.1 discuss the requirement for offshore sand sources. The proposed F2 Borrow Area will require the approval from the Bureau of Ocean Management (BOEM), prior to utilization. Due to the time constraints based on

an expedited schedule for project implementation, approval from BOEM will not be acquired prior to initial construction; therefore, F2 is being deferred for periodic nourishment. An additional NEPA document will be required by BOEM for this site.

6.2 Air Quality

Air quality impacts resulting from the release of carbon monoxide and particulate emissions will occur at the site during project related activities. Exhaust from the construction equipment will have an effect on the immediate air quality around the construction operation but should not impact areas outside of the construction area. These emissions will subside upon cessation of operation of heavy equipment.

The 1990 Clean Air Act Amendments include the provision of Federal Conformity, which is a regulation that ensures that Federal Actions conform to a nonattainment area's State Implementation Plan (SIP) thus not adversely impacting the area's progress toward attaining the National Ambient Air Quality Standards (NAAQS). In the case of the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project, the Federal Action is to construct a berm and dune restoration project utilizing beachfill sand dredged from offshore sand sources. The U.S. Army Corps of Engineers, Philadelphia District would be responsible for construction. The Federal Action would take place in Ocean County, New Jersey, which is classified as marginal nonattainment for ozone (oxides of nitrogen [NO_x] and volatile organic compounds [VOCs]). Ocean County, NJ is within the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE Nonattainment Area.

There are two types of Federal Conformity: Transportation Conformity and General Conformity (GC). Transportation Conformity does not apply to this project because the project would not be funded with Federal Highway Administration money and it does not impact the on-road transportation system. However, GC is applicable to this project. Therefore, the total direct and indirect emissions associated with project construction must be compared to the GC trigger levels presented below.

<u>Pollutant</u>	<u>General Conformity Trigger Levels (tons per year)</u>
NO _x	100
VOCs	50

Following a review of the USACE (2002) report, EPA Region 2 requested that the Philadelphia District complete a general conformity analysis as required under the Clean Air Act. In 2007, the Philadelphia District responded to the EPA and indicated that it would be unable to prepare an accurate general conformity analysis until the exact details of the project construction were available. These details would not be

available until after a project partnership agreement was signed, which would be several years in the future. However, the District indicated that they intended to employ SCR (selective catalytic reduction) technology to meet the emissions requirements of the Clean Air Act. The District also indicated that an enforceable statement would be placed in the ROD that would commit USACE to perform a formal general conformity analysis prior to project construction. EPA concurred with the District and indicated that these plans were acceptable.

Since that time, the Philadelphia District conducted a project emissions inventory starting with a list of equipment necessary for construction as itemized in the project construction cost estimate. Pertinent construction equipment identified in the inventory included: hydraulic pipeline dredge, booster pump, various work boats and work barges, dozers and other earth moving equipment, and various trucks. The emissions contribution for each piece of equipment was calculated to identify total tons of VOCs and NOx released during project construction. The procedure to calculate these releases involved the following basic steps:

- List equipment, number of engines, engine hp, and duration of operation required for project construction
- Apply a Load Factor (LF) for each engine (the average percentage of rated horsepower used during an engine’s operation). This calculation results in the total number of horsepower-hours (hp-hr) for each piece of equipment.
- Calculate total emissions of VOC and NOx from each engine category (multiply hp-hr by an emission factor (g/hp-hr). This calculation results in the total mass of VOC and NOx produced during project construction.

The total VOC emission estimate calculated for project construction is 8.4 tons in 2014, 20.3 tons in 2015, and 11.8 tons in 2016, which are below the annual General Conformity *de minimis* threshold level of 50 tons/yr and therefore meets the conformity requirement for the project area.

The total NOx emission estimate for project construction is 374.5 tons for the projected first year of construction, 898.9 tons for the second year, and 524.3 tons for the third year are above the 100 tons/year *de minimis* threshold (Table 7).

Table 7. Manasquan Inlet to Barnegat Inlet Shore Protection Project - Initial Construction -NOx and VOCs Estimates.

PROJECT SEGMENT	2014	2015	2016
Total Project NOx Emissions (Tons)*	374.5	898.9	524.3
Total Project VOCs Emissions (Tons)*	8.4	20.3	11.8

*Starcrest Consulting Group, LLC provided technical support in developing project emissions estimates

Because the 100 tons/year threshold for NO_x emissions is exceeded in all three construction years, General Conformity (GC) (40CFR§90.153) will apply to this action. Based on this, a compliance plan has been developed in order to comply with the GC requirement through the following options that have been coordinated with the New Jersey Department of Environmental Protection (NJDEP); statutory exemption, emission reduction opportunities, use of the Joint Base McGuire/Lakehurst GC State Implementation Plan budget, and/or the purchase of Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) ozone season oxides of nitrogen (NO_x) allowances. This project is not *de minimis* under 40CFR§90.153, therefore one or a combination of these options will be used to meet the GC requirements. The project specific option(s) for meeting GC are detailed in the Statement of Conformity (SOC), which is required under 40CFR§90.158. The SOC is provided in Appendix A.

6.3 Dune and Upper Beach Habitat

USACE (2002) described the construction impacts on the upper beaches and dunes in the affected area. This action would greatly disturb the impacted beach and dune area during the construction and periodic nourishment phases; however, impacts to terrestrial upland vegetation are expected to be minor and temporary. Since there is little vegetation on the beach area, the direct impact on vegetation will mainly be limited to the existing constructed dune areas that require the dunes to be built-up to specified elevations. Because of the erosion experienced from recent storms including Hurricane Sandy, a fortified berm and dune system would have beneficial effects on terrestrial beach and dune habitats within the project area.

6.4 Benthos of Offshore Borrow Areas

A discussion of impacts to the benthic community in the borrow areas is provided in USACE (2002). The primary ecological impact of dredging within the sand borrow sites will be the complete removal of the existing benthic community within the affected area through entrainment into the dredge. Dredging will primarily involve the immediate loss of infaunal and some of the less mobile epifaunal organisms. These may include polychaetes (worms), mollusks (clams and snails), and crustaceans (amphipods and crabs). Some of the more noticeable and larger benthos that would be impacted include horseshoe crabs and whelks. Mortality of these organisms will occur as they pass through the dredge device and/or as a result of being transplanted into an unsuitable habitat on the beach or nearshore. Despite the initial effects of dredging on the benthic community, recolonization is anticipated to occur within one year. However, depending on the post-dredging conditions, recovery of the benthic community through abundance, diversity, and biomass can be variable by taking a few months to several

years (Burlas, et. al., 2001). Accumulations of fine sediment may also shift a benthic community from predominantly a filter-feeding community to a deposit-feeding community. It is important that for recovery to a similar benthic community, the bottom sediments should be composed of the same grain sizes as the pre-dredge bottom. It can be expected that after sand is removed from the borrow sites, the affected areas would first be colonized by surface-dwelling opportunistic species. This may gradually change within a few years to a more-deeper burrowing community composed of larger-sized organisms.

Benthic investigations in and around the borrow sites indicate the presence of a benthic community that has abundance and diversity typical for sandy bottoms in offshore waters of the middle Atlantic Coast (Versar, Inc., 2000 and 2007). Versar, Inc. did not find any rare or unique benthic assemblages within the vicinity of the sand borrow areas. However, shifts in benthic community composition can be expected if the physical habitat is significantly different than the pre-dredging habitat. Since the majority of offshore borrow areas are in a less dynamic area (as opposed to the high-energy ebb shoal or inlet area), little replenishment of new sand into these areas is expected after dredging ceases. Therefore, the recruitment of benthic species similar to the existing community requires the exposure of a similar substrate after dredging operations terminate. Vibracore data from the borrow areas will be used to calculate appropriate dredging depths that will ensure that similar sand strata will remain exposed following dredging. Although the bathymetry of the borrow areas will be modified, the dredging will be performed in a manner that would not produce any deep pits.

USACE (2002) provided estimates of benthic habitat impacted based on a dredging depth of 9 to 13 feet. It was estimated then that a total of approximately 822 acres of sandy marine benthic habitat could be impacted from dredging associated with initial construction and the first six nourishment cycles. The addition of borrow areas D and E will add approximately 554 acres of benthic habitat impacts, for a total of 1376 acres for all four borrow areas. The change in borrow area utilization as described in Section 4.2 is not expected to have any significant new impacts on benthic resources as originally described in USACE (2002). The stable nature of all four borrow areas suggest that if they were used as a sand source for the project, the benthic community should recover relatively quickly. Since the dominant taxa are present in large numbers, they should provide a good recruitment base after the dredging disturbance.

6.5 Fisheries

6.5.1 Shellfish

As discussed in USACE (2002), surfclams are the most prominent shellfish resource that would be impacted by project activities. The direct effect of dredging operations on the commercial shellfish of the region is of great concern to natural resource managers. The Atlantic surfclam (*Spisula solidissima*) harvest along New Jersey's coast accounted for more than 80% of the total mid-Atlantic catch (NJDEP 1997b). Annual commercial surfclam surveys conducted by the New Jersey

Department of Environmental Protection, Division of Fish and Wildlife indicate that the vast majority of commercial surfclam beds in New Jersey waters are located between Atlantic City and Shrewsbury Rocks, which includes the proposed borrow areas.

Dredging sand for beach replenishment has the potential to impact these resources. An immediate potential effect is the removal of existing shellfish communities and alteration of the substrate composition, which may affect important nursery habitats and hinder surfclam recruitment success (Scott and Wirth, 2000). To minimize the impacts of the proposed project on the surf clam population, periodic monitoring of the benthic communities in the borrow areas will be conducted prior to each dredging cycle to provide information for selecting dredging locations within these borrow areas that minimize surf clam impacts. If commercial populations of clams are found in an area prior to dredging, the Corps will coordinate with NJDEP Bureau of Shellfisheries to develop a plan to try to avoid portions of any site that supports productive surf clam habitat. The clams in the areas avoided should provide a good recruitment base for population recovery. Evidence from a dredged area at Great Egg Harbor Inlet near Ocean City, New Jersey, indicates that surfclam populations are resilient and will be able to successfully recruit even after multiple dredging operations (Scott and Kelley 1998). Data from that study indicated that good clam recruitment is occurring and the clams in the area are reaching mature and harvestable sizes.

Based on the existing surfclam populations within the four borrow areas, each area is expected to recover from dredging operations provided suitable environmental conditions are present following dredging. These conditions include a thick (at least 3 feet) surficial sandy substrate and sufficient dissolved oxygen concentrations. Dredging depths could be restricted to maintain appropriate sandy substrate depth and physical/chemical conditions favorable for surfclam recruitment. Monitoring would be required to determine physical substrate and dissolved oxygen content along with determining rate of recruitment. Adaptive measures such as modifying dredging depths may be required if recruitment is poor within impacted areas. Within 6 months of dredging, the Philadelphia District will coordinate with the NJDEP Bureau of Shellfisheries to determine if a new surfclam survey is needed in the area. Results of such a survey would provide a basis if mitigative measures are necessary such as avoidance of high density areas.

Given these plans for monitoring and potential mitigation in the borrow areas, the use of them for beach restoration and periodic renourishment is not expected to have any significant impact on the surf clam population or the commercial fishery along the New Jersey Coast.

6.5.2 Prime Fishing Areas/Fisheries Resources

Prime Fishing Areas (as identified in NJAC 7:7E-3.4) have been updated since 2002. As depicted in Figure 9, currently both Borrow Area B and the proposed F2 borrow area contain features identified as NJ Specific Sport Ocean Fishing Grounds.

As a result of coordination with the NJDEP, Bureau of Marine Fisheries, the dredging plan for Borrow Area B has been revised in order to maintain relief within the borrow area in order to retain a portion of the existing shoal structure. The quantity of material removed from this borrow area has also been reduced in order to minimize potential impacts to fishery resources.

One of the conditions stipulated by NJDEP during their review of the final USACE (2002) report (discussed in Section 4.4) was that the Philadelphia District would monitor any shipwrecks in the project area that provide valuable marine habitat to determine the significance of any impacts from the project. During the Phase II investigation in 2005, it was determined that 6 of the shipwrecks in the project area provided valuable marine fisheries habitat. In conjunction with the Phase II cultural resource field effort, Versar conducted biological investigations on the six shipwrecks to determine the level of fish use on the structures and to estimate the benthic secondary productivity the wrecks provide to higher trophic levels.

The biological investigations of the shipwrecks determined that they have an established community of epibenthic macroinvertebrates, associated forage fish, and large macroinvertebrate species. Most of the biomass on the wrecks was dominated by larger mussels, which are prey for larger mobile invertebrates, such as crabs and starfish, as well as larger forage fish. Based on the sampling results, the loss of all six shipwrecks due to potential smothering by sand from the project could result in the loss of approximately 600,000 Kcal/yr benthic secondary productivity and 608 square meters of habitat for reef dwelling fish and invertebrates.

A monitoring plan for these 6 shipwrecks was prepared by Versar, Inc. for the Philadelphia District in 2006. The monitoring plan provides for 3 annual monitoring cycles following project construction with annual reports provided to the NJDEP. If the post-construction monitoring documents that permanent loss of habitat occurred as a result of the beach nourishment activities, USACE will negotiate a plan with NJDEP to mitigate for the loss through the construction of an artificial reef at a minimum of a 1 to 1 surface area basis.

In 2013, additional ROV surveys were conducted in order to determine the current conditions of the shipwrecks following Hurricane Sandy and other recent coastal storms. The results of the survey indicated that most of the features were still intact and functioning as fish habitat. One site, the Lizzie Brayton, was not located during the 2013 survey and may have been destroyed as a result of coastal storms. Some of the other sites had less exposed surface area than in 2005. The current conditions will be coordinated with the NJDEP and the monitoring plan will be adjusted accordingly.

6.5.3 Essential Fish Habitat

As discussed previously, there are a number of Federally managed fish species where essential fish habitat (EFH) was identified for one or more life stages within the

project impact areas. Fish occupation of waters within the project impact areas is highly variable spatially and temporally. Some of the species are strictly offshore, while others may occupy both nearshore and offshore waters. In addition, some species may be suited for the open ocean or pelagic waters, while others may be more oriented to bottom or demersal waters. This can also vary between life stages of Federally managed species. Also, seasonal abundances are highly variable, as many species are highly migratory.

In general, adverse impacts to Federally managed fish species may stem from alterations of the bottom habitat, which result from dredging offshore in the borrow sites and beachfill placement in the intertidal zone and nearshore. EFH can be adversely impacted temporarily through water quality impacts such as increased turbidity and decreased dissolved oxygen content in the dredging and placement locations. These impacts would subside upon cessation of construction activities. More long-term impacts to EFH involve physical changes to the bottom habitat, which involve changes to bathymetry, sediment substrate, and benthic community as a food source.

One major concern with respect to physical changes involves the potential loss of prominent offshore sandy shoal habitat within the borrow sites due to sand mining for the beach replenishment. It is generally regarded that prominent offshore shoals are areas that are attractive to fish including the Federally managed species, and are frequently targeted by recreational and commercial fishermen. Despite this, there is little specific information to determine whether shoals of this type have any enhanced value for fish. However, it is reasonable to expect that the increased habitat complexity at the shoals and adjacent bottom would be more attractive to fish than the flat featureless bottom that characterizes much of the mid-Atlantic coastal region (USFWS, 1999a).

Since mining of sand in these shoals may result in a significant habitat alteration, it is proposed that these areas be avoided or the flatter areas surrounding the prominent shoals be mined. Prominent shoal habitat was avoided as part of the borrow site screening process to the greatest extent possible. This was accomplished by eliminating such sites with prominent shoal habitat such as the "Seaside Lumps", "Manasquan Ridge" and "Fish Heaven", which are considered an important sport and commercial fishing ground (Long and Figley, 1982). Other physical alterations to EFH involve substrate modifications. An example would be the conversion of a soft sandy bottom into a hard clay bottom through the removal of overlying sand strata. This could result in a significant change in the benthic community composition after recolonization, or it could provide unsuitable habitat required for surfclam recruitment or spawning of some finfish species. This could be avoided by correlating vibracore strata data with sand thickness to restrict dredging depths to avoid exposing a different substrate. Based on the vibracore data, dredging depths would be considered to minimize the exposure of dissimilar substrates. Biological impacts on EFH are more indirect involving the temporary loss of benthic food prey items or food chain disruptions. Table 7 provides a brief description of direct or indirect impacts on the designated Federally

managed species and their EFH with respect to their life stage within the designated EFH squares that encompass the entire project impact area.

Of the 30 species identified with Fishery Management Plans, the proposed project could have immediate direct impacts on habitat for surf clams, ocean pout, black sea bass, and egg and larval stages of winter flounder. This is attributable to the benthic or demersal nature of these species and their affected life stages. However, the effect on surfclams and other benthic food-prey organisms present in the borrow areas and sand placement areas is considered to be temporary as benthic studies have demonstrated recolonization following dredging operations within 1 to 2.5 years.

Table 8. Direct and Indirect Impacts on Federally Managed Species and Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)				
MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
1. Atlantic cod (<i>Gadus morhua</i>)				Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
2. Whiting (<i>Merluccius bilinearis</i>)	Eggs are pelagic and are concentrated in depth of 50 – 150 meters, therefore no direct or indirect effects are expected.	Larvae are pelagic and are concentrated in depth of 50 –150 meters, therefore no direct or indirect effects are expected.	Direct: Occur near bottom. Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
3. Red hake (<i>Urophycis chuss</i>)	Eggs occur in surface waters; therefore, no direct or indirect effects are expected.	Larvae occur in surface waters; therefore, no direct or indirect effects are expected.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms.	
4. Redfish (<i>Sebastes fasciatus</i>)	n/a			
5. Witch flounder (<i>Glyptocephalus cynoglossus</i>)	Eggs are pelagic, generally over deep water, therefore no			

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
	direct of indirect effect are expected.			
6. Winter flounder (<i>Pseudopleuronectes americanus</i>)	Eggs are demersal in very shallow waters of coves and inlets in Spring. Dredging may have some effect on eggs if construction occurs during Spring .	Larvae are initially planktonic, but become more bottom-oriented as they develop. Potential for some to become entrained during dredging borrow areas.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
7. Yellowtail flounder (<i>Pleuronectes ferruginea</i>)	Eggs are pelagic, generally over deep water, therefore no direct of indirect effects are expected.	Larvae occur in pelagic waters; therefore, no direct of indirect effects are expected.		
8. Windowpane flounder (<i>Scophthalmus aquosus</i>)	Eggs occur in surface waters; therefore, no direct or indirect effects are expected.	Larvae occur in pelagic waters; therefore, no direct or indirect effects are expected.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
9. Ocean Pout (<i>Macrozoacres americanus</i>)	Eggs are demersal, laid in masses on the bottom. Dredging may impact eggs if construction occurs when eggs are present.	Larvae generally stay at or near bottom, possibly near nesting site. Dredging may impact larvae if present. Impacts will be minimized due to short duration of larval stage.		Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
10. Atlantic sea herring (<i>Clupea harengus</i>)			Direct: Occur in pelagic and near bottom. Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: None, prey items are planktonic	Direct: Occur in pelagic and near bottom. Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: None, prey items are primarily planktonic
11. Monkfish (<i>Lophius americanus</i>)	Eggs occur in	Larvae occur in pelagic		

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
	surface waters with depths greater than 75 ft; therefore, no direct or indirect effects are expected.	waters with depths greater than 75 ft; therefore, no direct or indirect effects are expected.		
12. Bluefish (<i>Pomatomus saltatrix</i>)			Direct: Juvenile bluefish are pelagic species. No significant direct effects anticipated. Indirect: Temporary disruption of benthic food prey organisms.	Direct: Adult bluefish are pelagic species. No significant direct effects anticipated. Indirect: Temporary disruption of benthic food prey organisms.
13. Long finned squid (<i>Loligo pealei</i>)	n/a	n/a	Direct: Adult squids tend to be demersal during the day and pelagic at night (Hammer, 2000). There is a potential for entrainment.	Direct: Adult squids tend to be demersal during the day and pelagic at night (Hammer, 2000). There is a potential for entrainment.
14. Short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a		
15. Atlantic butterfish (<i>Peprilus tricanthus</i>)			Direct: Juvenile butterfish are pelagic species. No significant direct effects anticipated. Indirect: Temporary disruption of benthic food prey organisms.	
16. Summer flounder (<i>Paralichthys dentatus</i>)		Larvae occur in pelagic waters; therefore, no direct or indirect effects are expected.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Indirect: Temporary disruption of benthic food prey organisms.
17. Scup (<i>Stenotomus chrysops</i>)	n/a	n/a	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of juveniles could be expected from entrainment into the dredge. Indirect: Temporary disruption of benthic food prey organisms.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Adults should be capable of relocating during impact. Indirect: Temporary disruption of benthic food prey organisms.
18. Black sea bass (<i>Centropristus striata</i>)	n/a		Direct: Physical habitat in borrow sites should remain basically similar to pre-dredge conditions. Offshore	Direct: Physical habitat in borrow sites should remain basically similar to pre-dredge conditions. Offshore

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
			sites are mainly sandy soft-bottoms, however, some pockets of gravelly or shelly bottom may be impacted. Some mortality of juveniles could be expected from entrainment into the dredge. Some intertidal and subtidal rocky habitat may be impacted due to sand partially covering groins along the shoreline. Indirect: Temporary disruption of benthic food prey organisms.	sites are mainly sandy soft-bottoms, however, some pockets of gravelly or shelly bottom may be impacted. Some intertidal and subtidal rocky habitat may be impacted due to sand partially covering groins along the shoreline. Indirect: Temporary disruption of benthic food prey organisms.
19. Surf clam (<i>Spisula solidissima</i>)	n/a	n/a	Direct: Complete removal within borrow sites during dredging. Exposure of similar substrate is expected to allow for future recruitment. Indirect: Temporary reduction in reproductive potential. *See shellfish section for more discussion.	Direct: Complete removal within borrow site during dredging. Similar substrate would allow for recruitment. Indirect: Temporary reduction in reproductive potential. *See shellfish section for more discussion.
20. Ocean quahog (<i>Artica islandica</i>)	n/a	n/a		
21. Spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		
22. King mackerel (<i>Scomberomorus cavalla</i>)	Direct Impacts: Eggs are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: None anticipated.	Direct Impacts: Larvae are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: None anticipated.	Direct Impacts: Juveniles are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: Minor indirect adverse effects on food chain through disruption of benthic community, however, mackerel are highly migratory.	Direct Impacts: Adults are pelagic and highly migratory, therefore no adverse impacts are anticipated. Indirect Impacts: Minor indirect adverse effects on food chain through disruption of benthic community, however, mackerel are highly migratory.
23. Spanish mackerel (<i>Scomberomorus maculatus</i>)	Direct Impacts: Eggs are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: None anticipated.	Direct Impacts: Larvae are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: None anticipated.	Direct Impacts: Juveniles are pelagic, therefore no adverse impacts are anticipated. Indirect Impacts: Minor indirect adverse effects on food chain through disruption of benthic community, however, mackerel are highly migratory.	Direct Impacts: Adults are pelagic and highly migratory, therefore no adverse impacts are anticipated. Indirect Impacts: Minor indirect adverse effects on food chain through disruption of benthic community, however, mackerel are highly migratory.
24. Cobia (<i>Rachycentron canadum</i>)	Direct Impacts: Eggs are pelagic, therefore no	Direct Impacts: Larvae are pelagic, therefore no adverse impacts are anticipated.	Direct: Cobia are pelagic and migratory species. No significant direct effects	Direct: Cobia are pelagic and migratory species. No significant direct effects

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
	adverse impacts are anticipated. Indirect Impacts: None anticipated.	Indirect Impacts: None anticipated.	anticipated. Indirect: Temporary disruption of benthic food prey organisms.	anticipated. Indirect: Temporary disruption of benthic food prey organisms.
25. Dusky shark (<i>Charcharinus obscurus</i>)		Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Mortality from dredge unlikely because embryos are reported up to 3 feet in length (McClane, 1978). Therefore, the newborn may be mobile enough to avoid a dredge or placement areas. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.		
26. Sandbar shark (<i>Charcharinus plumbeus</i>)		Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. However, some mortality of larvae may be possible from entrainment into the dredge or burial in nearshore, but not likely since newborns are approx. 1.5 ft. in length (pers. conv. between J. Brady-USACE and H.W. Pratt-NMFS) and are considered to be mobile. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Juveniles are mobile and are capable of avoiding impact areas. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Adults are highly mobile and are capable of avoiding impact areas. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.
27. Tiger shark (<i>Galeocerdo cuvieri</i>)		Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Mortality from dredge or fill placement unlikely because newborn are reported up to 1.5 feet in length (McClane, 1978). Therefore, the newborn may be mobile enough to avoid a dredge or placement areas. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.	Direct: Physical habitat in borrow site should remain basically similar to pre-dredge conditions. Juveniles are mobile and are capable of avoiding impact areas. Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.	

Direct And Indirect Impacts On Federally Managed Species And Essential Fish Habitat (EFH) In The 10 Min. X 10 Min. Squares Affected by the Project (NOAA, 1999)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
28. Clearnose skate (<i>Raja eglanteria</i>)			<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredged conditions. Juveniles are highly mobile, and most are capable of avoiding impact areas. Some entrainment into dredge is possible.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow area and placement sites.</p>	<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredge conditions. Adults are highly mobile and are capable of avoiding impact areas.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.</p>
29. Little skate (<i>Raja erinacea</i>)			<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredged conditions. Juveniles are highly mobile, and most are capable of avoiding impact areas. Some entrainment into dredge is possible.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow area and placement sites.</p>	<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredge conditions. Adults are highly mobile and are capable of avoiding impact areas.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.</p>
30. Winter skate (<i>Raja ocellata</i>)			<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredged conditions. Juveniles are highly mobile, and most are capable of avoiding impact areas. Some entrainment into dredge is possible.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow area and placement sites.</p>	<p>Direct: Physical habitat in borrow sites should remain basically similar to pre-dredge conditions. Adults are highly mobile and are capable of avoiding impact areas.</p> <p>Indirect: Temporary disruption of benthic food prey organisms and food chain within borrow and placement sites.</p>

Minor elevation differences resulting from dredging may serve to enhance bottom habitat for a number of these species. Post-construction monitoring will be useful in determining the severity of habitat alterations and its direct and indirect impacts on EFH. Important physical/chemical parameters such as changes in substrate composition, dissolved oxygen levels, and bathymetry will be monitored. Biological monitoring would involve benthic grab samples to measure recruitment of the infaunal community, and commercial surfclam surveys within affected areas. This monitoring would serve to provide valuable information early on in the project concerning the effects on EFH to

base future adaptive management measures to minimize any adverse effects in subsequent periodic nourishment cycles.

The change in borrow area utilization as described in Section 4.2 is not expected to have any significant new impacts to EFH as originally described in USACE (2002). The use of Borrow Area F2 is currently being evaluated and any impacts to EFH in F2 will be described in a separate NEPA document at a later date.

6.6 Wildlife

6.6.1 Birds

The project impact area is host to a variety of migratory shorebirds, colonial nesting waterbirds, migratory waterfowl, raptors, and other passerine bird species. Of particular concern, are potential adverse impacts to migratory shorebirds and colonial nesting birds, which include several Federal and State listed threatened and endangered species. USACE (2002) discussed the potential impacts on birds from noise and disturbance caused by construction activities on the beach. Recently, the NJDEP – Division of Fish and Wildlife and the Conserve Wildlife Foundation of New Jersey (Pover and Egger, 2012) conducted a post storm assessment after Hurricane Sandy for beach nesting and migratory birds at a number of locations along the New Jersey coast, including the Island Beach State Park. Beach nesting bird habitat was noted as severely eroded, but the impact on beach nesters is less certain. The losses of sand could reduce the quantity of habitat, but the washover areas especially in areas that previously had thick vegetation would be an improvement of habitat. Beachfill placement in nesting areas with severe erosion could be beneficial provided that the construction is scheduled outside of nesting seasons. Timing restrictions and/or buffer zones should be established to avoid adversely impacting any nest sites in the project vicinity.

6.6.2 Mammals, Reptiles and Amphibians

The impacts are expected to be temporary and minor. Wildlife inhabiting the beach and dune areas are expected to temporarily relocate from the impact area to adjacent habitats during placement of material on the beach, and are expected to return after construction is completed. Habitat value for terrestrial wildlife may improve slightly with a more stable vegetated dune and wider beach.

A number of marine mammals could be within the affected area during construction activities, and be affected by noise. A discussion on the effects of noise on marine life is provided in Section 6.9. The project changes as proposed in Section 4.2 are not expected to have any significant adverse impacts on marine wildlife beyond the impacts discussed previously in USACE (2002).

6.7 Rare, Threatened and Endangered Species

USACE (2002) identified potential project impacts on beach nesting birds such as the piping plover, which is Federally listed as threatened and State listed as endangered, and the least tern and black skimmer (both State endangered species).

Beach replenishment can potentially have significant direct and indirect adverse impacts on these species. Sand placement can bury nests, and machinery on the beach can crush eggs, nestlings, and adults. Human disturbance related to noise and lights can disrupt successful nesting of these birds (Louis Berger Group, 1999). Also, pipelines used during construction may become barriers to young chicks trying to reach intertidal areas to feed. The presence of these species will require the implementation of protection measures, which may include the establishment of a buffer zone around the nest, and limiting construction to be conducted outside of the nesting period (15 March – 15 August). The 2012 NJDEP Division of Fish and Wildlife survey of nesting sites indicated that the last known documentation of nesting piping plovers in the study area was in 2005 at Island Beach State Park.

Other indirect impacts associated with the proposed plan include the temporary reduction in the quality of forage habitat for piping plover and other shorebirds within the intertidal zone until the area becomes recolonized by benthic fauna such as polychaete worms, mollusks, and crustaceans. This impact may be short-lived as the area could become recolonized as early as a few weeks after filling is completed. The construction of a wider beach may result in the beach becoming more attractive to nesting birds such as piping plover, least tern, and black skimmers. Although this may appear beneficial, it is believed that this could have adverse impacts on these species. This is based on the fact that a replenished wider beach may attract these birds away from natural areas where human disturbance effects are less.

The candidate species, red knot, is a migratory shorebird that can be found on Atlantic Coast beaches during spring and fall migrations. Construction during this period (especially the fall migration) could affect foraging patterns by disturbing habitat and temporarily displacing a food source by burying intertidal benthic organisms. Since the affected area is a highly dynamic beach area, this would be a temporary effect.

Another species which may be found within the project area is the Federally-listed threatened plant, seabeach amaranth, which inhabits overwash flats, accreting ends of coastal barrier beaches and lower foredunes of non-eroding beaches. Seabeach amaranth has sporadically appeared in the project area within the last ten years. Therefore, it is possible that seabeach amaranth may become naturally established within the project area within the life of the project. Since the proposed project may actually create habitat for the seabeach amaranth, impacts to this species are also possible related to construction of beach stabilization structures, beach erosion and tidal inundation, beach grooming, and destruction by off-road vehicles (USFWS, 1999b).

To address these issues, the Philadelphia District developed and submitted a programmatic Biological Assessment (BA) for the piping plover and seabeach amaranth as part of formal consultation requirements to the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act in 2001. In 2005, the USFWS developed a Biological Opinion (BO) based upon their review of the BA. Formal consultation will be ongoing throughout the project life where the USFWS requires individual Tier 2 consultation prior to construction and each periodic nourishment cycle. The terms and conditions of the BO require construction monitoring, timing restrictions in active nesting areas, and avoidance during the construction through the use of buffer zones. Other issues addressed in the BO include dune fence orientation, local practices such as beach raking, off-road vehicles, permanent easements for monitoring and management activities, and general public access in or near nesting locations. The project area, specifically the foredune area, would be periodically monitored for the seabeach amaranth. Contingency plans for the presence of seabeach amaranth at the time of initial construction or periodic maintenance may involve avoidance of the area (if possible), collection of seeds to be planted in non-impacted areas, and timing restrictions. If the red knot becomes listed as Federally threatened or endangered, coordination will be conducted with USFWS under the Endangered Species Act to address potential impacts to the species.

From June through November, New Jersey's coastal waters may be inhabited by transient sea turtles, especially the loggerhead (Federally listed threatened) or the Kemp's ridley (Federally listed endangered). Sea turtles have been known to be adversely impacted during dredging operations that have utilized a hopper dredge. Dredging encounters with sea turtles have been more prevalent among waters of the southern Atlantic and Gulf coasts; however, incidences of "taking" sea turtles have been increasing in waters of the Middle Atlantic Coast in hopper dredges, which utilize high-suction heads. Endangered whales such as the highly endangered Right whale may also transit the project area. As with all large vessels, there is a potential for a collision of the dredge with a whale that could injure or kill a whale.

Formal consultation with the National Marine Fisheries Service (NMFS) in accordance with Section 7 of the Endangered Species Act has been undertaken on all Philadelphia District Corps of Engineers dredging projects utilizing a hopper dredge that may have impacts to Federally threatened or endangered species (including shortnose sturgeon, sea turtles, and marine mammals). A Biological Assessment (USACE, 1995) that discusses Philadelphia District hopper dredging activities and potential effects on Federally threatened or endangered species of sea turtles, marine mammals and shortnose sturgeon has been prepared, and was formally submitted to NMFS in accordance with Section 7 of the Endangered Species Act. A subsequent Programmatic Biological Opinion (BO) (NMFS, 1996) from NMFS was completed and submitted to the Corps in 1996. As a term and condition of the incidental take statement included in this opinion, the NMFS required monitoring of all hopper dredge operations in areas where sea turtles are present between June and November by trained endangered species observers. Adherence to the findings and conditions of the Biological Opinion ensures compliance with Section 7 of the Endangered Species Act.

Since 1996, projects that have utilized a hopper dredge between June and November have included NMFS approved sea turtle observers on the dredge to monitor for sea turtles during dredging. Observers inspect the hopper, skimmer, and draghead after each load looking for signs of interaction with endangered or threatened species. Recent changes to dredging protocols in the State of New Jersey now require all dredges being used for beach nourishment to be outfitted with munitions screening of 1 ¼ inches. This size screening makes it highly unlikely that turtle monitors would be able to observe any impacts to turtles during the dredging activities. For this reason, NMFS has not required the presence of monitors for recent hopper dredging activities where munitions screens are required. The Corps will continue to coordinate this issue with NMFS for upcoming work.

As discussed previously, the New York Bight Distinct Population Segment (DPS) of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was recently listed as endangered by the NMFS, and although transient in the marine environment, this species could be present within the project area. With regard to physical injuries to the Atlantic sturgeon, the potential exists for them to become entrained during dredging operations. It is expected, however, that most adult sturgeon would actively avoid a working dredge. As with other fish species, the temporary impacts to water quality due to increased turbidity can impact prey availability during construction activities. Noise generated from a working dredge at the dredge site and beachfill placement could potentially be a factor affecting sturgeon. However, it is expected that sturgeon will avoid the borrow areas and beaches during construction. Due to the open water nature of the borrow sites, this temporary movement away from the borrow areas does not constitute a significant effect on this species. By letter of February 21, 2013, the Philadelphia District reinitiated consultation in accordance with 50 CFR 402.14(c) under Section 7 of the Endangered Species Act to address the District's beach nourishment project's effects on Atlantic Sturgeon. A Programmatic Biological Assessment was submitted to NMFS in March 2014 by the Philadelphia District to cover all existing and proposed storm damage reduction projects within the Philadelphia District. This will be followed by a new BO to be issued by NMFS. In the interim, the Philadelphia District has determined, through coordination with NMFS, that allowing the District's beach nourishment program to continue to operate during the re-initiation period will not violate Section 7(a)(2) or 7(d). The Philadelphia District recognizes that this 7(a)(2) determination is only applicable during the re-initiation period, and does not address the Corps' longer term obligation to ensure the action is not likely to jeopardize the continued existence of listed species.

6.8 Visual and Aesthetic Values

The temporary adverse impacts and the permanent aesthetic impacts of the proposed project were discussed in USACE (2002) and have not significantly changed. However, following the severe beach and dune erosion that occurred across the study area during Hurricane Sandy, a new permanent positive impact will result from the proposed project. If the beach berm and dune are restored by the construction of the

project, it would re-establish the beachfront resort environment that constitutes the main aesthetic draw within the study area.

6.9 Noise

Project-related noise at the placement site during construction will consist of the sound of dredged material passing through the pipe and discharging in a plume of water. Earth-moving equipment, such as bulldozers, will shape the newly deposited dredged material and produce engine noise in the nearby vicinity.

At the offshore borrow areas, hydraulic suction dredging involves raising loosened material to the sea surface by way of a pipe and centrifugal pump along with large quantities of water. Suction dredges produce a combination of sounds from relatively continuous sources including engine and propeller noise from the operating vessel and pumps and the sound of the drag head moving across the substrate. Robinson et al. (2011) carried out an extensive study of the noise generated by a number of trailing suction hopper dredges during marine aggregate extraction. Source levels at frequencies below 500 hertz (Hz) were generally in line with those expected for a cargo ship travelling at modest speed. The dredging process is interspersed with quieter periods when the dragheads are raised to allow the dredge to change positions. Clarke et al. (2003) evaluated sound levels produced by a hopper dredge during its “fill” cycle working in a sandy substrate. They found that most of the sound energy produced fell within the 70 to 1,000 Hz range, with peak pressure levels in the 120 to 140 decibel (dB) range at 40 meters from the dredge. These data correlate well with a study conducted in the United Kingdom which found trailing suction hopper dredge sounds to be predominately in the low frequency range (below 500 Hz), with peak spectral levels at approximately 122 dB at a range of 56 meters (DEFRA, 2003).

In a review by Southall et al. (2007) several studies showed altered behavior or avoidance by dolphins to increased sound related to increased boat traffic. Clarke et al. (2003) found that cutterhead dredging operations are relatively quiet compared to other sounds in aquatic environments, whereas hopper dredges produce somewhat more intense sounds. Thomsen et al. (2009) conducted a field study to better understand if and how dredge-related noise is likely to disturb marine fauna. This study found that the low-frequency dredge noise would potentially affect low- and mid-frequency cetaceans, such as bottlenose dolphins. Noise in the marine environment has also been responsible for displacement from critical feeding and breeding grounds in several other marine mammal species (Weilgart, 2007). Noise has also been documented to influence fish behavior (Thomsen et al., 2009). Fish detect and respond to sound utilizing cues to hunt for prey, avoid predators, and for social interaction (LFR, 2004). High intensity sounds can also permanently damage fish hearing (Nightingale and Simenstad, 2001). It is likely that at close distances to the dredge vessel, the noise may produce a behavioral response in mobile marine species, with individuals moving away from the disturbance, thereby reducing the risk of physical or physiological damage. Accordingly, any resulting effects would be negligible.

6.10 Cultural Resources

Since USACE (2002), three shipwreck sites were identified within the project construction boundaries that were determined to be potentially eligible for inclusion in the National Register of Historic Places. The USACE submitted the results of the additional cultural investigations completed after 2002 and the determination of *No Adverse Effect* pursuant to 36 CFR 800.4(d) to the New Jersey State Historic Preservation Officer (SHPO) on January 23, 2006. The SHPO concurred with the determination in a letter dated February 22, 2006. The NJSHPO indicated that the dredging and beach nourishment project will have an effect on the vessels, but that the effect will not be adverse provided that no dredging, placement of pipe, mooring or anchoring of any vessel or equipment will occur within 200 feet of the center of each site. The NJSHPO also indicated that potential additional burial of the three sites resulting from the migration of sand will not result in further deterioration, and may in fact provide protection from recreational removal of objects and other physical disturbances.

6.11 Cumulative Impacts

Cumulative Impacts, as defined in CEQ regulations (40 CFR Sec. 1508.7), are the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

USACE (2002) provided a comprehensive analysis of the cumulative effects of the use of sand borrow areas and affected beaches where beach nourishment projects have occurred or were in various planning stages to occur within the Philadelphia District boundaries (from Manasquan Inlet to Cape May). At that time, most of the coastal areas within this segment of the NJ Coast either had an existing Federal project or were under study for a Federal project. An exception to this is the segment from Hereford Inlet to Cape May Inlet (Wildwood, NJ), which is currently under a Federal Storm Damage Reduction Feasibility Study. The 2002 evaluation included all of the existing sand borrow areas and proposed sand borrow areas, which included inlet borrow areas and offshore borrow areas. It was estimated that over 9,000 acres of marine subtidal habitat would be affected over a period of 50 to 60 years for Corps of Engineers designated borrow areas. A separate evaluation was of potential borrow areas identified as "regions of interest" in Federal waters by the Bureau of Ocean Energy Management (formerly the Minerals Management Service). These regions of interest occupied over 23,000 acres of marine offshore habitat. At present, these regions of interest are not considered in the cumulative analysis because the Corps' identified borrow areas are considered adequate with a few exceptions.

Since 2002, several of the Federal projects that were listed as proposed in USACE (2002) became active. These include the following projects: The Lower Cape May Meadows, Townsends Inlet to Cape May Inlet, Absecon Island (partially constructed at Ventnor and Atlantic City), Brigantine Island, and Barnegat Inlet to Little Egg Inlet (partially constructed at Surf City, Ship Bottom, Harvey Cedars, and Brant Beach). Additionally, the State of New Jersey and local municipalities conducted beachfill projects in Strathmere (Upper Township), Sea Isle City, and the City of North Wildwood in 2009-2010 where there were no existing active Federal projects in place. Presently the area from Hereford Inlet to Cape May Inlet, which includes the City of North Wildwood is in the feasibility phase. The selected plan is the back passing of sand from a donor beach to beaches that require nourishment. Because this is a different type of project than the beachfill projects described above, it is not included in this discussion. USACE (2002) estimated that approximately 71% of the New Jersey Coastline either had an active Federal project or was proposed for a Federal project. The implementation of the existing unconstructed Federal projects does not change this estimate.

Since 2002 there were some minor changes to the existing borrow area configurations for the active Federal projects at Ocean City (Great Egg Harbor and Peck Beach) and Absecon Island. These changes resulted in the expansions of two designated borrow areas, which added approximately 100 acres to the sites listed in USACE (2002). The Corson Inlet borrow area was expanded by about 46 acres for a NJDEP project in 2009-2010. A new offshore borrow area was added to the Cape May City project in 2008, which is identified as Area K, and affects 408 acres of marine offshore habitat. Although these sites resulted in approximately 550 more acres of marine habitat affected by dredging over the long-term, they do not add significant acreage to the total borrow areas designated within Philadelphia District. As discussed in USACE (2002), the impacts on borrow area habitats are considered short-term as these areas become recolonized with benthic organisms, which are an important food source for a number fish species.

In recent years, the New Jersey Coast has been affected by catastrophic coastal storms, most notably Hurricane Sandy in October 2012. In response to the devastation of the Atlantic coastal communities in New Jersey from Hurricane Sandy, the USACE and the Federal Emergency Management Agency (through aid to State and local municipalities) have undertaken unprecedented measures to repair and/or restore the affected beaches under P.L. 84-99 Flood Control and Coastal Emergencies (FCCE) and P.L. 113-2: Disaster Relief Appropriations Act. P.L. 84-99 allows for the repair of beaches with active Federal projects to pre-storm conditions and P.L. 113-2 allows for the restoration of affected beaches to full template that have existing active Federal projects. Also, as part of P.L. 113-2, there is the funding to complete authorized, but unconstructed projects, which include the Great Egg Harbor Inlet to Townsends Inlet and the Manasquan Inlet to Barnegat Inlet projects.

Since November of 2012, several of the authorized and constructed projects within the Philadelphia District have been completed repaired and restored in

accordance with P.L. 84-99 and P.L. 113-2. These projects include: portions of the Barnegat Inlet to Little Egg Inlet (Harvey Cedars, Surf City, and Brant Beach), Brigantine Island, and Absecon Island (Atlantic City and Ventnor), and Townsends Inlet to Hereford Inlet (Avalon and Stone Harbor). The Ocean City - Peck Beach (Northern Ocean City) project and Lower Cape May Meadows were already scheduled for periodic nourishment at the time Hurricane Sandy struck. Cape May City sand placement is currently underway. The remaining authorized, but unconstructed projects are Great Egg Harbor Inlet to Townsends Inlet (Southern Ocean City, Strathmere, Upper Township, and Sea Isle City) and Manasquan Inlet to Barnegat Inlet. Figure 10 presents the status of these projects along the New Jersey coast.

USACE (2002) estimated that approximately 71% of the New Jersey Coastline within the Philadelphia District Boundaries would be affected by a storm damage reduction project. Although nearly 71% of the beaches along the N.J. Coast south of Manasquan Inlet could potentially be impacted by beachfill placement activities, the cumulative effect of these combined activities is expected to be temporary and minor on resources of concern such as benthic species, beach dwelling flora and fauna, water quality and essential fish habitat. This is due to the fact that flora and fauna associated with beaches, intertidal zones and nearshore zones are adapted to and resilient to frequent disturbance as is normally encountered in these highly dynamic and often harsh environments. USACE (2002) concluded that among the existing and proposed projects along this stretch of coast, renourishment cycles vary from two to seven years, which would likely preclude all of the beachfill areas being impacted at one time. However, the massive effort to repair and restore the New Jersey coastline all of this area could be affected within a 2-3 year period. Given the short-term effects of the sand replenishment on the beaches, this is not a significant cumulative impact.

USACE (2002) estimated that approximately 9,000 acres of sand borrow areas, which represent both inlet ebb shoal habitats and marine offshore habitats within the Philadelphia District would be impacted. Since 2002, several borrow sites were expanded and or new ones used. These expansions and additions of sand resources account for about 550 more acres, which is about a 6% increase in borrow areas. The use of these sites to conduct repair and restoration activities for the Hurricane Sandy work do not result in a major expansion of borrow areas and effects to the marine environment compared to what was projected in USACE (2002). Therefore, the cumulative effects of this action and others are not significant.



Figure 10. Status of Storm Damage Reduction Projects within the Philadelphia District

7.0 COMPLIANCE WITH ENVIRONMENTAL STATUTES

Compliance with applicable Federal Statutes, Executive Orders, and Executive Memoranda, was originally discussed in (USACE 2002). Table 9 is a complete listing of compliance status relative to environmental quality protection statutes and other environmental review requirements.

Table 9. Compliance with Environmental Quality Protection Statutes and Other Environmental Review Requirements

FEDERAL STATUTES	COMPLIANCE W/PROPOSED PLAN
Archeological - Resources Protection Act of 1979, as amended	Full
Clean Air Act, as amended	Full
Clean Water Act of 1977	Full
Coastal Barrier Resources Act	N/A
Coastal Zone Management Act of 1972, as amended	Full
Endangered Species Act of 1973, as amended	Ongoing
Estuary Protection Act	Full
Federal Water Project Recreation Act, as amended	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act, as amended	N/A
Marine Protection, Research and Sanctuaries Act	Full
Magnuson-Stevens Fishery Conservation and Management Act	Full
National Historic Preservation Act of 1966, as amended	Full
National Environmental Policy Act, as amended	Full
Rivers and Harbors Act	Full
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic River Act	N/A
Executive Orders, Memorandums, etc.	
EO 11988, Floodplain Management	Full
EO 11990, Protection of Wetlands	Full
EO12114, Environmental Effects of Major Federal Actions	Full
EO 12989, Environmental Justice in Minority Populations and Low-Income Populations	Full
County Land Use Plan	Full

Full Compliance - Requirements of the statute, EO, or other environmental requirements are met for the current stage of review.

Partial Compliance - Some requirements and permits of the statute, E.O., or other policy and related regulations remain to be met.

Noncompliance - None of the requirements of the statute, E.O., or other policy and related regulations have been met.

N/A - Statute, E.O. or other policy and related regulations are not applicable.

8.0 CONCLUSIONS

In 2002, USACE completed the FEIS for a Federal Storm Damage Reduction Project for the municipalities of Point Pleasant Beach, Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Heights, Seaside Park, and Berkeley Township. This EA is evaluating the impacts associated with changes that have occurred since the FEIS was completed in 2002. New information, new statutes

and the development of different operating practices subsequent to USACE (2002) required that the proposed Federal action be evaluated pursuant to the National Environmental Policy Act of 1969, as amended.

The evaluations presented in this EA address the changes in the project area, changes in the proposed project, and regulatory changes that have occurred since 2002. These changes are consistent with the project actions previously detailed and documented, and would not result in any new or significant impacts to the project area. Based on the data presented and continuing coordination with State and Federal resource agencies, no significant adverse environmental impacts are expected to occur as a result of the proposed action. Since the potential impacts identified have been determined to be minor, localized and temporary, the preparation of a new or Supplemental Environmental Impact Statement is not warranted and a Finding of No Significant Impact (FONSI) for the proposed action is appropriate.

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APPENDIX-A
CLEAN AIR ACT STATEMENT OF CONFORMITY AND EMISSIONS
ESTIMATES

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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

CENAP-PL-E

United States Army Corps of Engineers, Philadelphia District
FINAL General Conformity Determination Notice

On October 30, 2012, New York State (DR-4085) and New Jersey State (DR-4086) declared Super Storm Sandy a Major Disaster. In response to the unprecedented breadth and scope of the damages sustained along the New York and New Jersey coastlines, the U.S. Congress passed Public Law (PL) 113-2 "Disaster Relief Appropriations Act 2013", also known as House Resolution (H.R.) 152-2 Title II which was signed into law on January 29, 2013. PL 113-2, which states "That the amounts... are designated by the Congress as being for an emergency requirement pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985", provides funding for numerous projects to repair, restore and fortify the coastline in both states as a result of the continuing emergency as people and property along the coast remain in a vulnerable condition until the coastline is restored and fortified. To this end, New Jersey Governor Christie signed Executive Order No. 140 on September 25, 2013, which authorized the means for the State to acquire all lands outside the State's ownership needed to ensure the sustainability of its coastline, and improve safeguards to diminish the impacts of future storm events, including flood protection for coastal communities that were impacted by the storm. To protect the investments by the Federal, State, local governments and individuals to rebuild damaged sites, it is imperative that these emergency disaster relief projects proceed as expeditiously as possible.

There are a number of coastal projects that were previously proposed and authorized but unconstructed (ABU). The Manasquan Inlet to Barnegat Inlet [WRDA 2007, Title 1, §1001 (32)] project is an ABU project that is anticipated to start construction after June 2014 and this document represents the General Conformity Determination required under 40CFR§93.154 by the United States Army Corps of Engineers (USACE). USACE is the lead Federal agency that will contract, oversee, approve, and fund the project's work, and thus is responsible for making the General Conformity determination for this project.

USACE has coordinated this determination with the New Jersey Department of Environmental Protection (NJDEP) [see NJDEP letter provided as Attachment A]. The Philadelphia-Wilmington-Atlantic City PA-New Jersey-Maryland-Delaware nonattainment area is currently classified as "marginal" nonattainment for the 2008 8-hour ozone standard. Ozone is controlled through the regulation of its precursor emissions, which include oxides of nitrogen (NOx) and volatile organic compounds (VOCs).

The equipment associated with this project that is evaluated under General Conformity (40CFR§93.153) includes direct and indirect nonroad diesel sources, such as dredging equipment and land based earth-moving equipment. The primary precursor of concern with this type of equipment is NO_x, as VOCs are generated at a significantly lower rate. The NO_x emissions associated with the project are estimated to range from 375, 899, and 525 tons per calendar year for 2014, 2015, and 2016 respectively (see emissions estimates provided as Attachment B). The project exceeds the NO_x trigger level of 100 tons in any calendar year and as a result, the USACE is required to fully offset the emissions of this project. The project does not exceed the VOC trigger level of 50 tons in any calendar year.

USACE is committed to fully offsetting the emissions generated as a result of the disaster relief coastal work associated with this project. USACE recognizes that the feasibility and cost-effectiveness of each offset option is influenced by whether the emission reductions can be achieved without introducing delay to the construction schedule that would prevent timely disaster relief.

USACE will demonstrate conformity with the New Jersey State Implementation Plan by utilizing the emission offset options listed below. The demonstration can consist of any combination of options, and is not required to include all or any single options to meet conformity. The options for meeting general conformity requirements include the following:

- a. Emission reductions from project and/or non-project related sources in an appropriately close vicinity to the project location. In assessing the potential impact of this offset option on the construction schedule, USACE recognizes the possibility of lengthening the time period in which offsets can be generated as appropriate and allowable under the general conformity rule (40CFR§93.163 and §93.165).
- b. Use of a portion of the Department of Defense Joint Base McGuire and Lakehurst State Implementation Plan emissions budget, as determined by the NJDEP, and in coordination with the United States Environmental Protection Agency (EPA).
- c. Use of Clean Air Interstate Rule (CAIR) ozone season NO_x Allowances with a distance ratio applied to allowances, similar to the one used by stationary sources found at N.J.A.C 7:27-18.5(c) Table 2.
- d. Use of Surplus NO_x Emission Offsets (SNEOs) generated under the Harbor Deepening Project (HDP). As part of the mitigation of the HDP, USACE and the Port Authority of New York & New Jersey developed emission reduction programs coordinated through the Regional Air Team (RAT). The RAT is comprised of the USACE, NJDEP, EPA, New York State Department of Environmental Conservation, and other stakeholders. SNEOs will be applied in concurrence with the agreed upon SNEO Protocols to ensure the offsets are real, surplus, and not double counted.

Due to unpredictable nature of dredge-related construction and the preliminary estimates of sand required to restore the integrity of the coastlines, the project emissions will be monitored as appropriate and regularly reported to the RAT to assist the USACE in ensuring that the project is fully offset.

In summary, USACE will achieve conformity for NOx using the options outlined above, as coordinated with the NJDEP and coordinated through the RAT.

19 Dec 2013
Date

John C. Becking
John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

Attachment A

Bob Martin, Commissioner, NJDEP Letter to Colonel Paul E. Owen, P.E.,
Commander New York District, USACE and Lieutenant Colonel John C.
Becking, PE., Commander Philadelphia District, USACE
November 4, 2013



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF THE COMMISSIONER

Mail Code 401-07

P.O. Box 402

Trenton, NJ 08625-0402

TEL # (609) 292-2885

FAX # (609) 292-7695

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

November 4, 2013

Colonel Paul E. Owen, P.E.
Commander-NY District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Lieutenant Colonel John C. Becking, P.E (Chris)
Commander-Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Re: Clean Air Act and Superstorm Sandy Coastal Restoration and Repair Projects

Dear Colonel Owen and Colonel Becking:

The purpose of this letter is to assist the United States Army Corps of Engineers (USACE) in complying with the requirements of the Clean Air Act as USACE performs coastal restoration and repair projects in New Jersey.

Superstorm Sandy significantly diminished the protective value of New Jersey's beach and dune system, leaving New Jersey coastal communities vulnerable to damage from future storms. The New Jersey Department of Environmental Protection has been working with your Districts to ensure that federal emergency coastal restoration and repair projects start as quickly as possible.

Emissions of oxides of nitrogen (NO_x) for several of the Authorized but Unconstructed beach and dune repair/restoration projects will be greater than 100 tons/calendar year. As a result, USACE must demonstrate that those projects meet the so-called "General Conformity" requirements of the Clean Air Act. Under the General Conformity rule, federal agencies must work with state governments in a nonattainment area (such as New Jersey) with the goal of ensuring that federal actions conform to the air quality plans established by the state.

USACE must demonstrate compliance for the following projects:

1. Sea Bright to Ocean Township Beach Erosion Control Project (Elberon to Loch Arbour)
2. Manasquan Inlet to Barnegat Inlet
3. Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island)
4. Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island)
5. Great Egg Harbor Inlet to Townsends Inlet

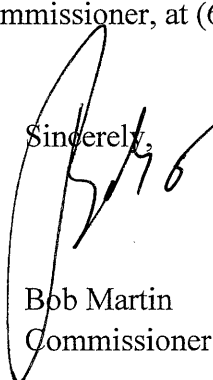
NJDEP does not have the authority to exempt USACE from General Conformity requirements.

Due to the extraordinary nature of the emergency created by Sandy and the ongoing threat to health and safety that would arise from any delay in undertaking these projects, all compliance options should be jointly considered, including invoking the emergency exemption in the Conformity Rules at 40 C.F.R. § 93.153(e), and seeking a Presidential exemption under section 118(b) of the Clean Air Act.

Alternatively, the USACE may comply with General Conformity for the projects by purchasing ozone season NO_x allowances created pursuant to the federal Clean Air Interstate Rule (CAIR) (an emissions program created by the United States Environmental Protection Agency to reduce emissions from power generation facilities). The Department requests that USACE give greater weight to allowances from facilities close to New Jersey in its purchases. See N.J.A.C 7:27-18.5(c) Table 2. USACE may also use Surplus NO_x emission Offsets (SNEOs) that were generated by USACE and others as part of the New York - New Jersey Harbor Deepening Project. Further, the Department of Defense may be willing to reallocate to USACE emissions from its emissions budget for Joint Base McGuire and Lakehurst.

Coastal restoration and repair projects will enhance the sustainability of New Jersey's coastline and diminish the impacts of future storms. I would like to acknowledge the coordinated effort between USACE and the Department's staff to identify opportunities for these projects to meet their regulatory obligations and move forward in a timely manner. I appreciate your time and attention to this matter. Should you have any further questions or need for assistance, please do not hesitate to contact Jane Kozinski, Assistant Commissioner, at (609) 292-2795.

Sincerely,



Bob Martin
Commissioner

c: Jane Kozinski, Assistant Commissioner, NJDEP
Chris Salmi, Assistant Director, Division of Air Quality, NJDEP

Attachment B

General Conformity Related Emission Estimates



*US Army Corps of Engineers – Philadelphia District
Manasquan Inlet to Barnegat Inlet ABU Project
General Conformity Related Emission Estimates*

Emissions have been estimated using project planning information developed by the Philadelphia District, consisting of anticipated equipment types and estimates of the horsepower and operating hours of the diesel engines powering the equipment. In addition to this planning information, conservative factors have been used to represent the average level of engine load of operating engines (load factors) and the average emissions of typical engines used to power the equipment (emission factors). The basic emission estimating equation is the following:

$$E = \text{hrs} \times \text{LF} \times \text{EF}$$

Where:

E = Emissions per period of time such as a year or the entire project.

hrs = Number of operating hours in the period of time (e.g., hours per year, hours per project).

LF = Load factor, an estimate of the average percentage of full load an engine is run at in its usual operating mode.

EF = Emission factor, an estimate of the amount of a pollutant (such as NO_x) that an engine emits while performing a defined amount of work.

In these estimates, the emission factors are in units of grams of pollutant per horsepower hour (g/hphr). For each piece of equipment, the number of horsepower hours (hphr) is calculated by multiplying the engine's horsepower by the load factor assigned to the type of equipment and the number of hours that piece of equipment is anticipated to work during the year or during the project. For example, a crane with a 250-horsepower engine would have a load factor of 0.43 (meaning on average the crane's engine operates at 43% of its maximum rated power output). If the crane were anticipated to operate 1,000 hours during the course of the project, the horsepower hours would be calculated by:

$$250 \text{ horsepower} \times 0.43 \times 1,000 \text{ hours} = 107,500 \text{ hphr}$$

The emissions from diesel engines vary with the age of an engine and, most importantly, with when it was built. Newer engines of a given size and function typically emit lower levels of pollutants than older engines. The NO_x emission factors used in these calculations assume that the equipment pre-dates most emission control requirements (known as Tier 0 engines in most cases), to provide a reasonable "upper bound" to the emission estimates. If newer engines are actually used in the work, then emissions will be lower than estimated for the same amount of work. In the example of the crane engine, a NO_x emission factor of 9.5 g/hphr would be used to estimate emissions from this crane on the project by the following equation:

$$\frac{107,500 \text{ hphr} \times 9.5 \text{ g NO}_x/\text{hphr}}{453.59 \text{ g/lb} \times 2,000 \text{ lbs/ton}} = 1.1 \text{ tons of NO}_x$$



*US Army Corps of Engineers – Philadelphia District
Manasquan Inlet to Barnegat Inlet ABU Project
General Conformity Related Emission Estimates*

As noted above, information on the equipment types, horsepower, and hours of operation associated with the project have been obtained from the project's plans and represent current best estimates of the equipment and work that will be required. Load factors have been obtained from various sources depending on the type of equipment. Marine engine load factors are primarily from a document associated with the New York and New Jersey Harbor Deepening Project (HDP): "Marine and Land-Based Mobile Source Emission Estimates for the Consolidated Schedule of 50-Foot Deepening Project, January 2004," and from EPA's 1998 Regulatory Impact Analysis (RIA): "EPA Regulatory Impact Analysis: Control of Commercial Marine Vessels." Land-side nonroad equipment load factors are from the documentation for EPA's NONROAD emission estimating model, "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, EPA420-P-04-005, April 2004."

Emission factors have also been sourced from a variety of documents and other sources depending on engine type and pollutant. The NO_x emission factors for marine engines have been developed primarily from EPA documentation for the Category 1 and 2 standards (RIA, "Control of Emission from Marine Engines, November 1999) and are consistent with emission factors used in documenting emissions from the HDP, while the VOC emission factors for marine engines are from the Port Authority of New York and New Jersey's "2010 Multi-Facility Emissions Inventory" which represent the range of marine engines operating in the New Jersey harbor and coastal region in terms of age and regulatory tier level. Nonroad equipment NO_x emission factors have been derived from EPA emission standards and documentation, while the nonroad VOC emission factors have been based on EPA's Diesel Emissions Quantifier (DEQ, accessed at: www.epa.gov/cleandiesel/quantifier/), run for moderately old equipment (model year 1995). On-road vehicle emission factors have also been developed from the DEQ, assuming a mixture of Class 8, Class 6, and Class 5 (the smallest covered by the DEQ) on-road trucks.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions. Actual project emissions will be estimated and tracked during the course of the project and will be based on the characteristics and operating hours of the specific equipment chosen by the contractor to do the work.

The following pages summarize the estimated emissions of pollutants relevant to General Conformity, NO_x and VOC, in sum for the project and by calendar year based on the schedule information also presented (in terms of operating months per year). Following this summary information are project details including the anticipated equipment and engine information developed by the Philadelphia District, the load factors and emission factors as discussed above, and the estimated emissions for the project by piece of equipment.

U.S. Army Corps of Engineers
 NAP - ABU Sandy-Related Projects
 General Conformity Related Emission Estimates
 DRAFT

1-Nov-13

Summary of emissions estimated using NAP-provided equipment and activity data

Project	Total Emissions	
	NOx (tons)	VOC
Manasquan Inlet to Barnegat Inlet	1,797.7	40.5

Project	Cubic yards	Estimated In-State Emissions, tons per year					
		2013	2014	2015	2016	2017	2018
NOx							
Manasquan Inlet to Barnegat Inlet	10,727,500	0.0	374.5	898.9	524.3	0.0	0.0
VOC							
Manasquan Inlet to Barnegat Inlet		0.0	8.4	20.3	11.8	0.0	0.0

Schedule by month:

Project	Total months	Calendar months of operation					
		2013	2014	2015	2016	2017	2018
Manasquan Inlet to Barnegat Inlet	24		Aug		July		

Months per year:

Project	Total months	Operating months per year					
		2013	2014	2015	2016	2017	2018
Manasquan Inlet to Barnegat Inlet	24		5	12	7		

Months per ozone season (the ozone season is 1 May - 30 Sept each year):

Project	Total O ₃ Season Months	Operating months per ozone season					
		2013	2014	2015	2016	2017	2018
Manasquan Inlet to Barnegat Inlet	10		2	5	3		

U.S. Army Corps of Engineers
 NAP - ABU Sandy-Related Projects
 Conformity Related Emission Estimates
 Manasquan Inlet to Barnegat Inlet
 DRAFT

1-Nov-13

Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors		Emissions	
						NOx (g/hphr or g/mi)	VOC	NOx (tons)	VOC
Marine									
Hydraulic Pipeline Dredge - Main Pump	Hydraulic Pipeline Dredge - Ma	1	9,000	14,760	0.80	9.70	0.20	1,136.3	23.43
Hydraulic Pipeline Dredge - Secondary	Hydraulic Pipeline Dredge - Sec	1	3,310	11,840	0.43	7.50	0.20	139.3	3.72
Hydraulic Pipeline Dredge - El. Generator	Hydraulic Pipeline Dredge - El.	1	830	18,192	0.43	7.50	0.20	53.7	1.43
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	15,160	0.69	9.70	0.37	111.8	4.27
Tugboat - Secondary	Ocean tow - auxiliary	1	50	15,160	0.40	7.50	0.20	2.5	0.07
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	14,760	0.50	9.70	0.37	7.9	0.30
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	14,760	0.40	7.50	0.20	2.0	0.05
Floating Booster Pump - Main Engine	Booster pump	1	5,200	9,200	0.43	9.50	0.20	215.4	4.54
Floating Booster Pump - Secondary	Booster pump	1	200	9,200	0.43	9.50	0.20	8.3	0.17
Derrick Barge - Prime Engine	Dredge auxiliary	1	200	7,380	0.40	7.50	0.20	4.9	0.13
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	7,380	0.40	7.50	0.20	1.0	0.03
Land-side, nonroad									
Crane, Hyd, rough terrain, 20T/70' Boom	Crane	1	105	8	0.43	9.50	0.19	0.00	0.000
LDR, FE, WH 2.75 CY FE Bkt	Rubber tired loader	1	145	48	0.59	9.50	0.19	0.04	0.001
Dozer, Crawler, D-9R	Dozer	3	410	14,760	0.59	9.50	0.19	112.2	2.24
Land-side, onroad									
TRK, (Suburban), 4x4, 2-axle	Truck, small	1		2,952		10.33	0.54	1.2	0.06
TRK, HWY, 6x4, 3-axel	Truck, small	1		72		10.33	0.54	0.0	0.001
TRK, HWY, 4x4, 2-axle, 3/4 ton pickup	Truck, small	1		3,096		10.33	0.54	1.2	0.06
Total project emissions								1,797.7	40.50
On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.									
Assumed average on-road speed: 35 miles per hour									

Attachment C

Public and Agency Comments on Draft Conformity Determination

1. Judith Enck, Regional Administrator, United States Environmental Protection Agency, Region 2 Letter to Lieutenant Colonel John C. Becking, P.E., Commander Philadelphia District, USACE December 13, 2013



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 13 2013

John C. Becking, P.E.
Lieutenant Colonel, District Engineer
US Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

SUBJECT: Comments on draft Statements of Conformity for ABU projects

Dear Mr. Becking:

The US Environmental Protection Agency has reviewed the US Army Corps of Engineers draft Statements of Conformity and associated emissions analyses for the following authorized but unconstructed (ABU) projects:

- Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island) [WRDA 2000, Title 1, §101a (1)],
- Great Egg Harbor Inlet to Townsends Inlet [WRDA 2007, Title 1, §1001 (30)],
- Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island) [WRDA 1996, Title 1, §101 b-13], and
- Manasquan Inlet to Barnegat Inlet [WRDA 2007, Title 1, §1001 (32)].

These projects are within the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE non-attainment area for the ozone National Ambient Air Quality Standards and all within the state of New Jersey. The conformity process ensures that emissions of air pollutants from planned federal activities would not affect New Jersey's ability to achieve and maintain air quality attainment status.

We note and appreciate the extensive coordination in advance of issuing the draft statements. The four options presented there—emission reductions from project/non-project sources, portion of Joint Base McGuire and Lakehurst SIP budget, Clean Air Interstate Rule NOx allowances, and Surplus NOx Emission Offsets from the Harbor Deepening Project—are valid mechanisms for complying with general conformity. EPA believes emission reductions from project or local non-project sources should be implemented.

1.

The construction activity associated with the ABU projects generates a significant amount of harmful air emissions condensed within a relatively short time frame. These emissions include NOx and VOCs, precursors to ozone, which is linked to airway inflammation and irritation, coughing, wheezing, aggravation of asthma, increased susceptibility to respiratory illnesses like pneumonia and bronchitis, and permanent lung damage with repeated exposures. By directly reducing emissions from project sources or other nearby sources, there is a higher confidence of

avoiding any adverse impacts to local populations. Emissions mitigation projects would contribute to lasting air-quality benefits for residents who have already suffered greatly from Hurricane Sandy storm damage.

2.

EPA regulations under 40CFR§93.163 permit an extended timeframe in which to generate offsets under certain circumstances. We believe this flexibility enables the Army Corps of Engineers, in coordination with the Regional Air Team, to investigate and implement emission reduction projects from project and local non-project related sources.

3.

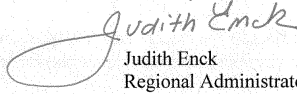
Moving forward, we urge the Army Corps of Engineers to give preference to emission reduction projects as offsets in Statements of Conformity.

4.

Lastly, we note a vagueness with respect to the start date, which is listed as "after March 2014" or "after April 2014" in the draft statements. We encourage Army Corps of Engineers to be as specific as possible with respect to the schedule, caveating as necessary the potential for changes.

Thank you for the opportunity to review the draft Statements of Conformity. EPA remains committed to continue collaborating with Army Corps on the disaster recovery projects in our joint efforts to ensure adequate protection for human health and safety and the environment.

Sincerely,


Judith Enck
Regional Administrator

cc: Bob Martin, Commissioner,
NJ Department of Environmental Protection

USACE RESPONSE (Items 1 - 4): The Philadelphia District, U.S. Army Corps of Engineers (USACE), is generally in agreement with the comments submitted by the Regional Administrator. In implementing the options enumerated in the Statement of Conformity, the Philadelphia District will also initiate a joint evaluation, in conjunction with the New York District, USACE, of potential emissions reduction opportunities. The evaluation of potential opportunities, which will be coordinated with the Regional Air Team, will consider options that are feasible, that are cost effective, and that can be able to be accomplished within our timeframe for project execution.

APPENDIX B

COMMENTS AND RESPONSES ON DRAFT ENVIRONMENTAL ASSESMENT

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Comment on Draft Environmental Assessment for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project, Ocean County, New Jersey.

On December 12, 2013, the Philadelphia District of the U.S. Army Corps of Engineers released for public comment its Draft Environmental Assessment (Draft EA) for the Manasquan Inlet to Barnegat Inlet Coastal Storm Damage Reduction Project. As stated in the public notice, "the Draft EA was prepared to evaluate changes to the affected environment and changes to the project since completion of the June 2002 Final Environmental Impact Statement."

The American Littoral Society ("ALS") is a national, coastal conservation organization based in Sandy Hook, New Jersey. Having carefully reviewed the Draft EA, ALS disputes the Corps' conclusion that a Supplemental Environmental Impact Statement ("Supplemental EIS") is not required. This appears to be a convenient answer to a difficult question—how does the Corps implement comprehensive storm damage reduction measures in a manner that does not negatively impact sensitive environmental areas that have been greatly impacted and altered by Superstorm Sandy? While capturing some of the intricacies of the problem—including disturbances to prime fishing habitat and dramatic changes to the project area since the 2002 Environmental Impact Statement—this Draft EA offers no cogent answer. A Supplemental EIS is clearly appropriate and necessary in this instance and the final EA should contain such a conclusion.

Consistent with the above, ALS offers the following specific comments on the Draft EA, as provided through the public notice:

The notice describes several major changes to the project which were not evaluated in the previously published National Environmental Policy Act (NEPA) document for this project, which is the Final Feasibility Report and Integrated Environmental Impact Statement (EIS) dated June 2002 (ACE 2002).

The Draft EA concludes that there are no significant environmental impacts associated with the changes necessitating further review, however, there are no substantive data, evaluations or studies provided to demonstrate this conclusion, particularly as regards the addition of an over 4 mile sheet pile steel wall within the dune proposed as a central element of the ACE project, nor of the expansion of over 2000 acres of potential borrow areas for periodic future nourishment within areas identified as "prime fishing areas." Both of these changes are fundamental, significant changes to the project requiring a demonstration of no impact beyond a simple assertion of such by the Corps.

Section 4.2 "Project Changes" describes certain changes to the project:

Since the completion of the Feasibility report in 2002, changes to the existing project conditions and further detailed analyses have resulted in changes to the selected plan, but these changes do not impact the overall scope of the project. Changes to the project involve the borrow area utilization and quantities of beachfill required. However, there have been no changes to the project design template, beachfill placement locations or changes in the overall scope of the project. [page 6]

In the aftermath of Hurricane Sandy, the Federal Highway Administration and the State of New Jersey have begun a project that will reconstruct a 12.5 mile stretch of Route 35 from Point

1.

1. The EA has sufficient information to conclude that there is no significant impact to the environment that will result from this proposed project that was not already addressed in the original EIS.

2.

2. As discussed in more detail below, the sheet pile wall is not a part of the Corps project and will be located landward of the Corps' dune and therefore will not affect the functionality or the storm damage reduction capabilities of the Corps project. With regard to borrow areas, Borrow Area F2 was identified as a future sand source in the 2002 Feasibility report and EIS and therefore does not constitute a change in conditions. The Corps has been continuing with coordination with BOEM and cultural, biological and geotechnical investigations in order to determine the future use of this site. The new borrow areas being proposed (Borrow Areas D and E) amount to an additional 554 acres. These borrow area had been coordinated with resource agencies since the 2002 documents but had not gone through the NEPA process. Borrow Area B was previously approved for use for this project but was subsequently identified as a "prime fishing area".

Pleasant to Island Beach State Park. As part of this plan, the New Jersey Department of Transportation has proposed a plan to construct a steel sheet pile wall along the oceanfront of the Borough of Mantoloking and Brick Township. The wall would run parallel to, and be covered by, the dunes proposed in the USACE (2002) project (emphasis added). The sheet pile wall would be similar to the one installed at the Herbert Street breach and would be driven 30 feet into the ground and stand 16 feet above the existing grade (Figure 5). The sheet pile would serve as a last line of defense against wave attack and storm surge if the proposed dunes were to be eroded by a storm similar to Hurricane Sandy in the future. The main purpose of the sheet pile wall would be to protect Route 35 and prevent another breach from occurring in these two municipalities, which are the narrowest populated section of the Barnegat Peninsula.

As noted earlier in this section, the erosion of the dunes in Bay Head during Hurricane Sandy uncovered a relic seawall that had been buried within the dune for approximately 100 years. Since the presence of this seawall appears to have given Bay Head a higher degree of protection than the dunes that were composed solely of sand and completely lost in the adjacent Mantoloking, the NJDEP has permitted beach front homeowners to extend the existing seawall. The structure has been extended approximately 1,600 feet to the south from Egbert Street to Mathis Place on the beach side of 17 properties. The relic seawall and the new extension will be covered by the dunes proposed in the USACE (2002) project. Current plans specify that the seawall extension in Bay Head will connect to the proposed sheetpile wall in Mantoloking with no gaps, resulting in a contiguous line of protection that utilizes underlying hard structures within the dune system. [page 11]

The underlined sentence seems to be the sole rationale for the ACE's conclusion that the wall construction within the dune of the federal project is without significant impact. It should be noted, that the dune system, and beach berm in question had not been maintained or nourished for a significant period of time – primarily due to local opposition to providing public access mandated by federal guidance; if they had been, it is entirely possible that a comparable level of protection may have been provided. The Draft EA notes several instances throughout the project area where significant dune systems in existence at the time of Hurricane Sandy provided protection to the adjacent built communities.

The existing project design and environmental impact assessment included beach nourishment and dune construction, and did not include a structural core (metal sheet pile wall) for the dune. The state of NJ now plans to construct a 4 mile long steel sheet pile wall in Mantoloking Borough and Brick Township. The EA document provides no analysis undertaken by the ACOE to evaluate the impact of this structure on the beachfill, the dune, the long-term performance of the fill, the potential erosion and scouring of the nourished beach under either storm conditions or long term, impact to renourishment schedules, changed or increased need for replacement materials, modification to periodic renourishment schedules and other potential adverse impacts of the wall.

The Draft EA provides no indication that the ACOE conducted an analysis of the impact of the wall on the nourished beach and dune, along its length and particularly at the terminus of the wall, where increased scour and erosion might occur. Further, there is no discussion of mitigation that might be

3.

3. The proposed Route 35 protection project including the steel sheet pile wall in Mantoloking and Brick is not part of the Army Corps of Engineers Manasquan Inlet to Barnegat Inlet Storm Damage Reduction (SDR) project. Any reports or information that you may have seen that indicate that it is in any way part of the Corps SDR Project are not accurate. The project is being designed and constructed by the State of New Jersey and the local municipalities separately from the Corps. Based on information provided by the State of New Jersey, the structure, as proposed, will be placed upland above the current regulatory high water line, therefore the Corps is not involved in the formal permitting or review of the wall, nor did we undertake any modeling to assess impacts that may or may not be caused by the State and Local project, with or without the separate Corps beachfill project being constructed. To obtain further information on the Route 35 protection project and any studies that may have been done, you should contact the NJDEP-Office of Engineering and Construction for information regarding the planning, permitting, engineering and design of the Rt. 35 protection project.

In terms of any impact to our project, at the time of conducting our analysis for the Hurricane Sandy Limited Reevaluation Report for the Manasquan Inlet to Barnegat Inlet SDR project all existing conditions post Sandy were taken into consideration. The proposed New Jersey Rt. 35 protection project was only a proposal and remains unconstructed even at this time. We did note that there is the possibility the wall will be constructed at some point in the future. Through coordination with NJDEP, the sheet pile wall, as proposed, will be constructed landward of the protective dune in our project and therefore will not affect the functionality or the storm damage reduction capabilities of our project. If constructed, the proposed State sheet pile wall can be viewed as a betterment to the SDR project that will act to enhance the sustainability of the Corps project and the long-term resilience of the New Jersey shoreline. The sheet pile wall in combination with the Corps SDR project will act to reduce damages over the long term above what our project alone would reduce. This is consistent with the policies of Executive Order 13632 in that they contribute to the plan for rebuilding of critical infrastructure damaged by Hurricane Sandy in a manner that accounts for current vulnerabilities to extreme weather events and increases community and regional resilience in responding to future impacts.

incorporated to protect the project and structures immediately adjacent to and downdrift from the terminus of the wall. In fact, there is no map or locational description that relates to the overall length and location of the proposed wall, despite the fact that it is being integrated into a federally authorized project.

The fact that the project is funded by the US Department of Transportation, in partnership with the State of New Jersey, does not obviate that fact that it is located within a federally approved Corps project area.

Did the state of New Jersey consult with the ACOE on the design and location of the proposed wall prior to approval? If so, relevant consultative documents, memos, and other relevant documentation should be included in the Draft EA. If not, how can the ACOE proceed with the nourishment and dune restoration project without fully evaluating the potential impacts of the proposed wall that was never part of the previously authorized federal project?

4.

Did the ACOE obtain an amended Federal Consistency determination for the amended project, including the wall? If not, the project has essentially changed to a degree that a revised approval should be obtained, since the public review and comment opportunity was based on a different project. The fact that the wall is not a "Corps" project does not moot the need for a revised approval with adequate opportunity for public notice and comment.

5.

The newly hardened core of the dune system within the approved project may significantly change the dynamic response of the project under storm conditions. The Draft EA, in its failure to discuss the effect of the wall on the rest of the nourishment project does not evaluate or discuss how the ACOE will ensure that the wall remains covered with sand, as contemplated as part of the amended project, so that the structure does not adversely impact the Federal project through increased erosion, scour and sand loss. Neither is a rationale for the omission of that information provided.

6.

Has the ACOE evaluated the potential adverse impacts of the wall on habitat for threatened and/or endangered beach nesting birds? What was the result of this analysis?

7.

Finally, the draft EA does not demonstrate that the ACE completed a wave runup and overtopping analysis associated with the proposed vertical wall, as this is likely to change from the original project design and FEIS evaluation sans hardened core for the dune system.

In regards to Section 5.0 "Affected Environment", ALS notes that one of the reasons one needs to supplement an EIS is because the affected environmental has experienced significant change in one or more respects. Section 5.0 makes clear that the project area has experienced significant change in many respects since 2002. Given the devastating impacts of Superstorm Sandy, this conclusion should come as a surprise to no one. However, Table 3 ("Status of Affected Resources") details these changes, finding "Significant Changes" to 12 of the 27 resources listed on the Table since the 2002 EIS. With this amount of significant changes, it is really unthinkable that the Corps would attempt to undertake this project without supplementing an EIS that is more than 10 years old and clearly outdated.

8.

4. See response to comment 3 above.

5. An updated Federal Consistency Determination was received from NJDEP on April 24, 2014 and is included in this comment/response section. While the updated Consistency Determination is based on the information provided in the Draft EA and other supplemental information, the sheet pile wall was not part of the Federal Determination since this element is not part of the Corps project. Any permits that are required for this State and FHA project are the responsibility of those agencies.

6. See response to comment 3 above.

7. Endangered species coordination is the responsibility of the agencies carrying out the work, in this case, NJDEP and FHA. Updated endangered species coordination was completed for the Corps project with the circulation of the Draft EA however, and no concerns were raised regarding the possible placement of the wall within the boundaries of the Corps project.

8. Many of the changes referred to in Table 3 are related to coordination and additional studies that have taken place since 2002 and are documented in the Draft EA. This was meant to identify that aspects of this project have been "active" since the completion of the Feasibility study and EIS. The other changes were due to Hurricane Sandy. While this storm greatly changed the appearance of the beach and dune in the project area, impacts were not significant enough to change the selected plan or design of the project. In addition, the implementation of the Corps project will serve to return the area to a state closer to pre-storm conditions while protecting the area from future storm damages.

Section 5.6.3 "Prime Fishing Areas" of The Draft EA notes that

Several locations within or near the project area are classified as Prime Fishing Areas (NJAC 7:7E-3.4) by NJDEP (Figure 9). One of these features lies within Borrow Area B and one lies within Borrow Area F2 ("The Manasquan Ridge"). These areas were originally delineated by Long and Figley (1984) in a publication titled "New Jersey's Recreational and Commercial Ocean Fishing Grounds". The mapping was updated by the NJDEP in 2003 when they surveyed charter boat, party boat and private boat captains to identify the areas they consider recreationally significant fishing areas.

Prime Fishing Areas include tidal water areas and water's edge areas, which have a demonstrable history of supporting a significant local quantity of recreational or commercial fishing activity. [page 23]

Further, the Draft EA acknowledges that the expansion of the project to include these areas is new information beyond that assessed in the ACE 2002 document (Figure 9, page 25).

9.

In the section discussing impact associated with changes to the project design from 2002, Section 6.5.2 Prime Fishing Areas/Fisheries Resources, the following discussion is included:

Prime Fishing Areas (as identified in NJAC 7:7E-3.4) have been updated since 2002. As depicted in Figure 9, currently both Borrow Area B and the proposed F2 borrow area contain features identified as NJ Specific Sport Ocean Fishing Grounds. Prior to construction, further coordination with the NJ Division of Fish and Wildlife and NMFS will be required to develop a plan to minimize impacts to these prime fishing areas (emphasis added). The plan may include modifying the dredging depths to maintain some of the bottom area relief or avoiding portions of the borrow area.

This section clearly demonstrates that the Corps has not assessed the impact of the proposed changes to the project, thus undermining any basis on which a finding of no significant impact may be made. If the ACE has conducted assessments that have investigated potential impacts to these prime fishing areas, they have not been included or referenced in the Public Notice. The adequacy of any "plan to minimize impacts to these prime fishing areas" should be subject to review under the Public Notice, and must logically precede any finding of no significant impact. If the ACE has conducted specific studies which support its conclusion as they relate to the impact of the expanded use of area F2 on its value as a prime fishing area, they should be provided.

10.

We also would raise the following questions regarding necessary public access to the project, which we did not see discussed:

Public Access:

- (a) Have all beach access locations been identified within the project area? How will all beach access locations be marked for the benefit of public use?
- (b) Have the project sponsors sited beach access locations proximate to public parking areas?

(a).

(b).

9. As stated previously, the EIS identified Borrow Area F2 as a potential future sand source for the project. The Corps is still in the process of investigating this area to determine if it is a feasible source of additional sand. The EA states that further coordination with BOEM, as well as additional NEPA work will be required before this borrow area can be approved for use. Based on quantities that would be needed for future nourishment, only a portion of the area identified as F2 would be needed. In addition, it should be noted that this area was previously identified as prime fishing habitat. It is only the designation of Borrow Area B that changed.

10. Through coordination with NJDEP and NMFS, a comprehensive pre- and post- construction monitoring plan for Borrow Area B has been developed. In addition, as discussed in the Draft EA, the dredging plan has been modified to reduce the amount of sand removed from Borrow Area B and to maintain a minimum of 9 feet of relief within the borrow area. A final plan was not included in the Draft EA because it was unclear at the time the exact plan and configuration that would be acceptable to the applicable agencies. Several alternatives were presented to them during the coordination period.

(a) – (f). Based on the current plan, approximately 118 pedestrian, 17 vehicle and 24 handicap beach access/crossover locations are being proposed for the project area. Identifying the exact location and maintaining public access points are the responsibility of the non-Federal sponsor (NFS). The NFS has developed a public access and parking plan that meets all Federal requirements for public access points and parking. The NFS is aware of their obligation and has committed to implementing all aspects of the public access and parking plan prior to completion of project construction.

- (c) Has the non-Federal sponsor demonstrated that parking restrictions (resident only, timing, etc) have been eliminated within the project area?
- (d) How will all parking areas be identified and marked for the benefit of public use?
- (e) What ordinances or municipal resolutions have been adopted to ensure that parking restrictions have been eliminated and will be precluded during the project lifetime?
- (f) Has the non-Federal sponsor ensured that parking is available along State Highway Route 35 through all project municipalities? Parking is currently provided along Route 35 in a number of project municipalities, but not all.
- (g) Has the non-Federal sponsor demonstrated that rest room facilities have been provided at reasonable intervals within the project area? Have these locations been identified and will they be marked for the benefit of public use? What entity has responsibility for maintenance of these facilities during the project lifetime? How will maintenance of these facilities be assured?

- (c).
- (d).
- (e).
- (f).
- (g).

Thank you for the opportunity to comment.

Tim Dillingham, Executive Director
American Littoral Society

(a)-(f) continued. The state of New Jersey (NJDEP) does not have requirements for public access and parking. NJDEP allows private beach clubs to remain private and allow them to sell badges to the public for a reasonable fee. Through these easements the state plans on allowing these clubs to operate in the same manner i.e. selling badges to the public. NJDEP has removed all crossovers from private property from the project plan. These are not required for the NFS to meet the project access requirement.

(g). Federal Storm Damage Reduction Projects, (SDRP), do not include nor require any facilities to be constructed as part of the project. Any improvements to enhance the recreational value of shore protection projects such as bathhouses, access roads, toilet facilities, and concession areas are at the discretion of the Non Federal Sponsor, (NFS), and the local Municipalities. Provision of those facilities is not eligible for Federal assistance under the SDRP authorization, and costs for those facilities are 100% the responsibility of the NFS and are not included as project costs.

Brandreth, Mary E NAP

From: Culbertson, Jennifer [jen [REDACTED]]
Sent: Tuesday, January 21, 2014 4:45 PM
To: Brandreth, Mary E NAP
Cc: Wikel, Geoffrey L
Subject: [EXTERNAL] Manasquan Inlet to Barnegat Inlet SDRP EA comments from BOEM

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Beth,

The following are our comments on the Manasquan Inlet to Barnegat Inlet SDRP EA. I thought overall it was really clear and well done. We appreciate you working with us on it! I believe we still need to establish formal cooperating agency status so I will work on writing a letter to you confirming that for this project. Hopefully in the next couple of weeks!

Comments:

Under the Purpose and Need - It would be helpful to note that BOEM's purpose is to respond to an OCS sand use request under the authority granted to the United States Department of the Interior (USDOI) by the Outer Continental Shelf Lands Act (OCSLA).

Page 6 - Are these estimates the amount to be dredged or the amount to be placed? BOEM needs to consider the amount you may request from a borrow site and recognizes there is a n approx. 15-20% possible loss during dredging and transit.

Page 22 - were any surf clam studies done in F2? Are any proposed?

When consulting with NMFS (HCD and PRD), FWS, SHPO and other resource agencies about the use of the offshore borrow site we would appreciate you referencing our involvement as a cooperating agency with this project. If you would like I can send you our standard language that we have used with other districts in the past.

Also, we would appreciate being CC'ed on any correspondence you may have with other agencies for these consultations. I am particularly interested with the reinitiation of the NMFS Sec 7 and also the NMFS HCD and the potential concerns with F2 including NJ specific sport ocean fishing grounds.

Do we have any information about the benthic environment in F2? We do not require a survey but addressing the likely affected environment is still needed. This comment universally applies to several other areas within Chapters 5 and 6 such as the cultural resources section. There is no mention of F2 and any surveys done or even the lack of surveys and/or consultations for F2 with the SHPO. We can keep as is but we may have to do a supplemental EA addressing the affected environment and potential impacts in F2 or we can address this within this current EA. As it stands I don't think it adequately addresses NEPA requirements for F2 so that we could issue a MOA. However, since you are not intending to use F2 for this dredging cycle it may not be an issue. We defer to you on this. I see on page 39 you alluded to the possibility of an additional NEPA document for the use of F2 anyway.

1.

2.

3.

4.

5.

6.

1. BOEM's role in obtaining sand resources and as a cooperating agency for this project will be fully discussed in the EA for Borrow Area F2.
2. Once initial construction of the project is completed, the Corps will have a better idea of the quantity of sand that may be required from Borrow Area F2. We will make sure that these quantities represent the amount to be removed from the borrow area, not just the placement quantities.
3. Yes. Surf clam, benthic and cultural surveys were conducted in F2. Once the reports are finalized, they will be forwarded to your office.
4. Concur. For all agency correspondence and coordination, we will discuss BOEM's role as a cooperating agency for this project.
5. Concur. The Corps will and provide copies of all coordination related to F2. Section 7 consultation for this project is currently underway in the form of a programmatic BA in which BOEM is listed as a cooperating agency.
6. The current plan is to do an additional EA to address the use of F2 for future nourishment cycles. The results of all benthic, cultural and surf clam surveys will be discussed in that document to address potential impacts associated with the use of this area.

Section 6.5.3 discusses biological monitoring of the borrow sites. Do you have a monitoring plan for this in place that we could take a look at?

7.

We are working with ERDC on the final technical edits on a report examining noise from offshore hopper dredging. I thought you may find it helpful in your analysis or future work. I will forward it along when it becomes available, hopefully pretty soon.

8.

Thanks again for including us on this review! I know you guys have been really working hard and we appreciate being kept in the loop. I look forward to working further with you on this in the future.

Jen

Jennifer Culbertson, Ph.D
Oceanographer

Department of the Interior, Bureau of Ocean Energy Management Headquarters,
Division of Environmental Assessment
381 Elden Street
Herndon, VA 20170-4817

7. The Corps has numerous monitoring plans and many years of benthic reports for our proposed and ongoing projects that we would be happy to share with BOEM.

8. Thank you. We would appreciate getting a copy of that report.

Brandreth, Mary E NAP

From: Rochette, Stephen NAP
Sent: Monday, December 16, 2013 12:51 PM
To: Brandreth, Mary E NAP; Allen, Steven D NAP; Watson, Keith D NAP
Subject: FW: Public Comments - manasquan
Attachments: USACE Sand Borrow Areas - Manasquan to Barnagat Dec 2013 from EA Report.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

See below (first comment on the draft EA for M to B). This individual is on our Public Notification list. He said his company maintains several of the undersea international telecommunications cables on the coasts of the US.

~Steve

Steve Rochette
Public Affairs Office
U.S. Army Corps of Engineers
Philadelphia District
215-656-6432
<http://about.me/usacePhilly>

-----Original Message-----

From: Rapp, Ronald [REDACTED]
Sent: Monday, December 16, 2013 11:55 AM
To: Rochette, Stephen NAP
Subject: [EXTERNAL] Public Comments

1.

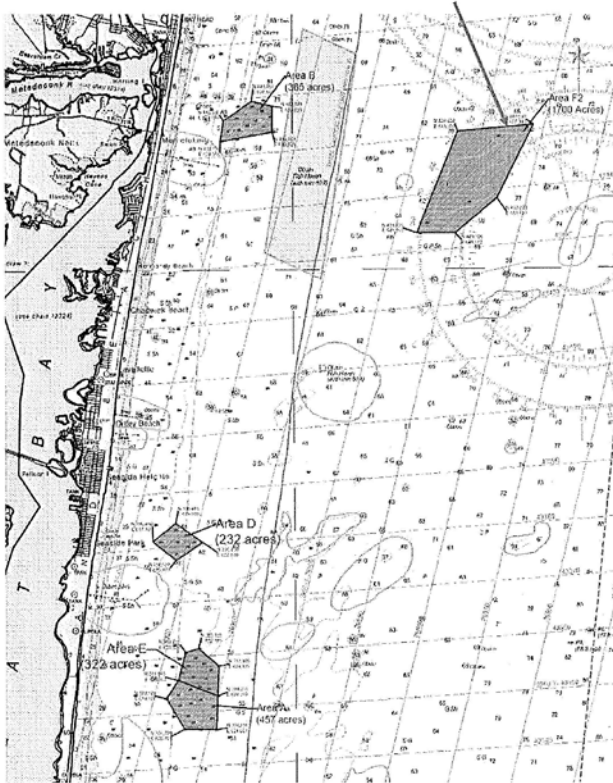
Dear Steve - As a heads up, note the attached page 8 from the EA report. I annotated it to show the location of the international submarine cables. The proposed F2 borrow area is over the Apollo cable and near TAT14 and TGN cable. This area should be changed to avoid these cables so not to damage them.

Thanks,
Ron

Ronald J Rapp - Director, TE SubCom
[REDACTED]

1. Thank you for this information. The configuration of the borrow area will be adjusted and appropriate proper buffer areas will be utilized to ensure that the cables are not damaged by any proposed dredging activities.

Borrow Area F2 is over international telecommunications cables Apollo and near TAT14 and TGN which could be damaged.



Proposed sand borrow areas for USACE project for beach replenishment from Manasquan Inlet to Barnegat Inlet. From Dec 2013 Environmental Assessment Report USACE Page 8.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1868

DEC 13 2013

John C. Becking, P.E.
Lieutenant Colonel, District Engineer
US Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

SUBJECT: Comments on draft Statements of Conformity for ABU projects

Dear Mr. Becking:

The US Environmental Protection Agency has reviewed the US Army Corps of Engineers draft Statements of Conformity and associated emissions analyses for the following authorized but unconstructed (ABU) projects:

- Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island) [WRDA 2000, Title 1, §101a (1)],
- Great Egg Harbor Inlet to Townsends Inlet [WRDA 2007, Title 1, §1001 (30)],
- Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island) [WRDA 1996, Title 1, §101 b-13], and
- Manasquan Inlet to Barnegat Inlet [WRDA 2007, Title 1, §1001 (32)].

These projects are within the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE non-attainment area for the ozone National Ambient Air Quality Standards and all within the state of New Jersey. The conformity process ensures that emissions of air pollutants from planned federal activities would not affect New Jersey's ability to achieve and maintain air quality attainment status.

We note and appreciate the extensive coordination in advance of issuing the draft statements. The four options presented there—emission reductions from project/non-project sources, portion of Joint Base McGuire and Lakehurst SIP budget, Clean Air Interstate Rule NOx allowances, and Surplus NOx Emission Offsets from the Harbor Deepening Project—are valid mechanisms for complying with general conformity. EPA believes emission reductions from project or local non-project sources should be implemented.

The construction activity associated with the ABU projects generates a significant amount of harmful air emissions condensed within a relatively short time frame. These emissions include NOx and VOCs, precursors to ozone, which is linked to airway inflammation and irritation, coughing, wheezing, aggravation of asthma, increased susceptibility to respiratory illnesses like pneumonia and bronchitis, and permanent lung damage with repeated exposures. By directly reducing emissions from project sources or other nearby sources, there is a higher confidence of

1.

1. No response required.

avoiding any adverse impacts to local populations. Emissions mitigation projects would contribute to lasting air-quality benefits for residents who have already suffered greatly from Hurricane Sandy storm damage.

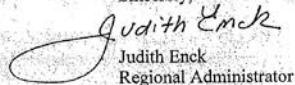
EPA regulations under 40CFR§93.163 permit an extended timeframe in which to generate offsets under certain circumstances. We believe this flexibility enables the Army Corps of Engineers, in coordination with the Regional Air Team, to investigate and implement emission reduction projects from project and local non-project related sources.

Moving forward, we urge the Army Corps of Engineers to give preference to emission reduction projects as offsets in Statements of Conformity.

Lastly, we note a vagueness with respect to the start date, which is listed as "after March 2014" or "after April 2014" in the draft statements. We encourage Army Corps of Engineers to be as specific as possible with respect to the schedule, caveating as necessary the potential for changes.

Thank you for the opportunity to review the draft Statements of Conformity. EPA remains committed to continue collaborating with Army Corps on the disaster recovery projects in our joint efforts to ensure adequate protection for human health and safety and the environment.

Sincerely,



Judith Enck
Judith Enck
Regional Administrator

cc: Bob Martin, Commissioner,
NJ Department of Environmental Protection



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Use Regulation
Mail Code 501-02A
P.O. Box 420
Trenton, New Jersey 08625-0420
www.state.nj.us/dep/landuse

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

ad

APR 24 2014

Peter R. Blum, Chief
Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

RE: Federal Consistency Determination and Section 401 Water Quality Certification
Division of Land Use Regulation File No. 1500-02-0007.1 CDT 140001
Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project

Dear Mr. Blum:

This letter modifies and supersedes the Federal Consistency Determination the Department issued on March 21, 2014. Specifically the modifications include revisions to Special Conditions 1 through 4 associated with Borrow Area B.

1.

The New Jersey Department of Environmental Protection, Division of Land Use Regulation, acting under Section 307 of the Federal Coastal Zone Management Act (P.L. 92-583) as amended, has reviewed the Army Corps of Engineers (ACOE) Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project Draft Environmental Assessment (DEA) dated December 2013, and additional information submitted by the ACOE during the review process. Based on the above, the Division has determined that the project, is consistent with New Jersey's Rules on Coastal Zone Management N.J.A.C. 7:7E-1.1 et seq., (amended on June 17, 2013), and the applicable Rules guiding issuance for a Section 401 Water Quality Certificate, provided that the conditions discussed below are met to the satisfaction of the Department of Environmental Protection.

Project Description

DLUR File No. 1500-02-0007.1 (CDT 020001)

On September 26, 2003, the NJDEP Division of Land Use Regulation (DLUR) conditionally issued a Federally Consistency (DLUR File Number 1500-02-0007.1 (CDT 020001)) to the ACOE for a beach nourishment project intended to provide hurricane and storm damage

1. The Corps agrees to abide by all the conditions outlined in this Federal Consistency Determination. The Corps will continue to work with NJDEP to develop the required monitoring plans prior to initial construction.

DLUR File No. 1500-02-0007.1 (CDT 140001)

2

reduction for communities located on the Atlantic coast of New Jersey between Manasquan Inlet and Barnegat Inlet. This project consisted of berm and dune restoration, utilizing sand obtained from two offshore borrow sources, Borrow Area A and B. This project required an estimated 10,689,000 cubic yards of sand material for the initial construction and approximately 961,000 cubic yards of sand material for periodic nourishment every four (4) years. This project was never constructed.

DLUR File No. 1500-02-0007.1 (CDT 140001) – Current File Review

In October 2012, as a result of Hurricane Sandy, Congress passed a Public Law 113-2, Disaster Relief Appropriation Act, 2013, which would provide ACOE funding to construct the ACOE previously approved authorized projects that were intended to reduce flood and storm damage risks, which included the Manasquan to Barnegat ACOE beach nourishment project. Consequently, on January 9, 2014, the ACOE submitted this Federal Consistency request for the construction of this nourishment project, which included revisions to the previously authorized project. Revisions from the original project include the modification of the sand quantities needed for both the initial and periodic nourishments, and the frequency of the re-nourishments. The initial sand quantity required is estimated at 10,728,000 cubic yards. Periodic nourishment was increased to 1,364,000 cubic yards, and is scheduled to occur every 4 years. The proposed sand sources include four offshore borrow areas (A, B, D, and E). A fifth borrow area (F2) located offshore of Mantoloking in the outer continental shelf, OCS, was also identified by the ACOE as a potential sand source for the project. At this time (F2) is not part of this determination. Before (F2) can be used the ACOE must complete additional coordination with the Bureau of Ocean Energy Management for the permission to use the Outer Continental Shelf resources in area F2..

The project involves the placement of sand, which will be obtained from offshore sources to construct a berm and dune for the purpose of storm damage reduction in the following municipalities located in Ocean County: Borough of Point Pleasant Beach, Borough of Bay Head, Borough of Mantoloking, Brick Township, Toms River Township, Borough of Lavallette, Borough of Seaside Heights, Borough of Seaside Park, and Berkeley Township.

The nourishment project extends approximately 13.7 miles along the oceanfront area and will result in a continuous dune line extending from the northern municipal boundary of Point Pleasant Beach to the northernmost boundary of Island Beach State Park in Berkeley Township. The design template includes a +22 foot NAVD dune, with a 25 foot crest width, slopes of 1V:5H from the crest of the berm, which extends 75 feet seaward with an elevation of +8.5 feet NAVD in the municipalities of Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Park and Berkeley Township. The municipalities of Point Pleasant Beach and Seaside Heights will have a lower dune, with an elevation of +18 feet NAVD, and a berm width of 100 feet. Point Pleasant Beach will have a berm height of +11.5 feet NAVD, and Seaside Heights will have a berm elevation of +8.5 feet NAVD. The beach fill continues from MHW to MLW with slopes of 1V:10H. The profile is expected to maintain the existing shape from MLW to the depth of closure, at approximately -26 feet NAVD. The northern end the project will terminate at the Manasquan Inlet south jetty with no taper, and the southern end the project will taper at Island Beach State Park.

2.

2. It should be noted that the frequency of re-nourishment for this project has not changed. Re-nourishment will occur every 4 years as outlined in the 2002 Feasibility Report and EIS.

The following discussion includes an evaluation of project compliance with the rules on Coastal Zone Management (N.J.A.C. 7:7E-1.1 *et seq.*), and identifies the conditions under which the project is found consistent with the rules. This evaluation only considers the revised aspects of the project, which include the change in quantity of sand needed, the frequency for re-nourishment and the reevaluation of the borrow areas. This consistency determination is issued subject to compliance with these specific conditions.

Prime fishing areas (NJAC 7:7E-3.4)

Prime fishing areas include tidal water area and water's edge areas, which have a demonstrable history of supporting a significant local quantity of recreational or commercial fishing activity. These areas include all coastal jetties, groins, public fishing piers or docks and artificial reefs. Prime fishing areas also include features such as rock outcroppings, sand ridges or lumps, rough bottom, aggregates such as cobblestones, coral, shell and tubeworms, slough areas and offshore canyons. Prime fishing areas also include areas identified in "New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay and the Shellfish Resources of Raritan Bay and Sandy Hook Bay" (1988) and those areas identified on the map titled, "New Jersey's Specific Sport Ocean Fishing Grounds". Prohibited uses include sand or gravel submarine mining which would alter existing bathymetry to a significant degree so as to reduce the high fishery productivity of these areas.

During the review of the previously issued Federal Consistency, only certain portions of the project were identified as Prime fishing areas, specifically the groin areas located within the project area. However, based on comment received from the New Jersey Division of Fish and Wildlife (NJDFW) for this Federal Consistency, the proposed Borrow Area B has been identified as a stand-alone ridge located in an area of relatively featureless ocean floor. Due to the abrupt rise in contour, the feature has historically been an attracting structure for summer flounder and striped bass, among other fish species, and has and continues to support recreational fishing activity. Therefore, the area of Borrow Area B is designated as a prime fishing area.

The ACOE plans to dredge five million cubic yards of sand from Borrow Area B for this project. In an effort to keep the ridge intact the borrow area has been divided into 3 sections. Sections 1 and 3 will be dredged to a maximum depth of -81 feet NAVD. Section 2 will be dredged to a maximum depth of -72 feet NAVD. Dredging in this manner will maintain a minimum of 9 feet of relief between the top of the ridge and the surrounding flat bottom.

The following conditions must be strictly adhered to in order to avoid impacts to this special area, and will require continued coordination with the NJDFW and the National Marine Fisheries Service (NMFS).

Conditions for Borrow Area B:

1) Finfish Assessment Plan

- a. An assessment plan of finfish stocks utilizing Borrow Area B shall be developed prior to the commencement of the initial phase of the project.

- b. In order to facilitate the development of the assessment plan prior to the commencement of the initial phase of the project, the DLUR and/or NJDFW will provide to the ACOE all previous finfish studies completed in the vicinity of Borrow Area B a minimum of 90 days prior to the advertisement of the project. This information shall include the scope of work, the agency or contractor that did the studies, all data collected, and the assessment reports developed for each of the studies.
 - c. The Corps will consult with NJDFW and NMFS to develop an assessment plan for finfish population densities, species composition, and other parameters important to the evaluation of finfish utilization of Borrow area B.
 - d. This assessment plan shall require that a finfish survey be conducted during the following intervals:
 - i. Prior to the commencement of the initial phase of the project; and
 - ii. After two consecutive productivity seasons following the completion of the initial phase of the project within Borrow Area B.
 - e. The assessment plan shall include success standards and performance guidelines for finfish stocks developed in coordination with ACOE, DLUR, NJDFW and NMFS.
 - f. If the survey results do not indicate a negative impact to finfish stocks as established by 1(e) above, no additional monitoring is required.
 - g. Should survey results demonstrate a negative impact to finfish stocks as established by 1(e) above then additional surveys for each subsequent nourishment event is required and further action pursuant to Condition 3 below will be required.
 - h. The ACOE shall prepare assessment reports for each monitoring event required under Condition 1(d).
 - i. Assessment reports shall be submitted to DLUR within a reasonable time from the date of monitoring. If reports are expected beyond 60 days of completion of the monitoring, then the ACOE shall provide DLUR with notice of an expected time for report submission
- 2) Bathymetric surveys**
- a. Pre-dredge and post-dredge bathymetric surveys shall be performed by ACOE.
 - b. Survey reports shall be submitted within 60 days of completion of the surveys to DLUR.
 - c. Shoal integrity shall be in conformance with survey specifications detailed in the final ACOE document entitled "Survey Requirements", Document #W912BU-14-

B-0013. At the time of the issuance of this Federal Consistency, the referenced document has yet to be finalized. It is the DEP's understanding that the final document will outline specific target contours at Borrow Area B.

3) Improvement Plan

- a. Following the initial phase of construction, if reporting required under Condition (1) demonstrates a negative impact to finfish stock, then the ACOE shall develop a habitat improvement plan.
- b. The plan shall be developed in coordination with the DLUR, NJDFW, and NMFS.
- c. The plan shall include a list of potential strategies to reduce the impacts of using Borrow Area B, including, but not limited to using alternate materials to rebuild lost habitat in the vicinity of Borrow Area B, or the siting of alternate locations for habitat creation.
- d. The plan shall be implemented if the DLUR determines the success standards developed as part of Conditions (1) and (3), are not met. DLUR, in consultation with NJDFW and NMFS, will use the monitoring and survey reports required in Conditions (1) and Condition (2) above to make this determination.

Endangered or Threatened Wildlife Species Habitat (N.J.A.C. 7:7E-3.38)

Endangered or threatened wildlife or plant species habitats are terrestrial and aquatic areas known to be inhabited on a seasonal or permanent basis by or to be critical at any stage in the life cycle of any wildlife or plant identified as "endangered" or "threatened" species on official Federal or State lists of endangered or threatened species, or under active consideration for State or Federal listing. The definition of endangered or threatened wildlife or plant species habitats includes a sufficient buffer area to ensure continued survival of the population of the species. Development of endangered or threatened wildlife or plant species habitat is prohibited unless it can be demonstrated that endangered or threatened wildlife or plant species habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected.

The proposed dredge operation may potentially impact several species of threatened and/or endangered sea turtles, particularly the loggerhead sea turtle, Kemp's Ridley sea turtle, green sea turtle and leatherback sea turtle. In addition, endangered Atlantic sturgeon are known to occur within the nearshore, coastal waters. The proposed dredge operations may potentially impact several species of threatened and/or endangered marine mammals, particularly the right whale, humpback whale, finback whale and harbor porpoise. The DEA indicates that monitoring for sea turtles and marine mammals will be conducted pursuant to the Biological Opinion (NMFS 1996) if a hopper dredge is used for the project.

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The State and Federally threatened piping plover, least tern and black skimmer have been identified as beach nesting birds within the project area, and that the beach replenishment has the potential to affect. Sand placement can bury nests, machinery can crush eggs, nestlings and adults. In addition, noise disturbance can disrupt the nesting of these birds.

The federally listed seabeach amaranth occurs within the project area, and has been documented within the last five years.

The following conditions to avoid impacts to these species will require continued coordination with the NJ Endangered and Nongame Species Program (ENSP), and shall be accomplished during the Preconstruction, Engineering and Design (PED) phase of the project, either by the ACOE or the State Aid Agreements.

Conditions:

- 4) If beach nesting bird (piping plover, least tern and black skimmer) nesting activities are detected by the NJDFW (ENSP) within the project area during the breeding season (March 15 through August 31 of any given year), the ACOE shall employ a biologist to monitor construction during the breeding season under protocol established by the United States Fish and Wildlife Service (USFWS) and ENSP.
- 5) If seabeach amaranth is detected by the ACOE prior to, or during construction of the project, the ACOE shall contact the USFWS New Jersey Field office immediately at 609-646-9310, in order to coordinate protective measures. These protective measures must be implemented within these habitat areas during any phase of construction of the project.
- 6) The ACOE shall require all municipalities within the project area to coordinate with the USFWS and ENSP prior to placing sand fencing and planting dune stabilizing native vegetation following each re-nourishment event.

Sand and Gravel Extraction (N.J.A.C. 7:7E-4.12)

Sand extraction for beach nourishment is conditionally acceptable provided that special areas, as defined in the CZM rules, are not directly or indirectly impacted, and marine fish and fisheries impacts are minimized. The mining is not anticipated to increase shoreline erosion or create anoxic water conditions.

Provided that the conditions above concerning the protection of Prime fishing areas (N.J.A.C. 7:7E-3.4) and Endangered or Threatened Wildlife Species Habitat (N.J.A.C. 7:7E-3.38) are satisfied, this project is acceptable pursuant to section 4.12(c) of this rule.

Should the ACOE disagree or fail to adhere to the conditions of this Federal Consistency Determination, this conditional concurrence will be treated as an objection. Pursuant to Section 930, Subpart H of the Federal Coastal Zone Management Act, the

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ACOE may appeal the State agency decision. See section 930.120 through 930.131 of 15 CFR for Federal appeal procedures.

This Federal Consistency is authorized pursuant to all parties following the guidelines set forth, and agreed upon, for the proposed activities. It should be noted that new or expanded borrow areas are subject to prior approval of a Coastal Zone Management Federal Consistency Determination by the DLUR.

Pursuant to 15 CFR 930.44, the DLUR reserves the right to object and request remedial action if this proposal is conducted in a manner, or is having an effect on, the coastal zone that is substantially different than originally proposed. Please be advised that changes to the DEA and project herein reviewed and approved, including new or expanded borrow area, would require further Determination for Federal Consistency with regard to the amended portion of the plan and the applicable Coastal Zone Management Rules.

Thank you for your attention to and cooperation with New Jersey's Coastal Zone Management Program. If you have any questions regarding this determination, please do not hesitate to contact Division staff at (609) 777-0454.

Sincerely,


David B. Fanz, Assistant Director
Division of Land Use Regulation

4/24/14
Date

c: Marty Rosen, Division of Coastal and Land Use Planning
John Gray, Office of Permit Coordination and Environmental Review



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

JAN 16 2014

Peter Blum, Chief
Planning Division
Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Beth Brandreth, Project Biologist
RE: Draft Environmental Assessment, Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project

Dear Mr. Blum:

We have reviewed the draft environmental assessment (DEA) for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project dated December 2013. The proposed project area extends approximately 13.7 miles along the Atlantic coast of Ocean County, New Jersey from the Manasquan Inlet south to the northernmost portion of Island Beach State Park. The 50-year plan selected by your agency involves the placement of approximately 9.9 million cubic yards (cy) of sand for the initial berm placement and beach nourishment. Periodic renourishment of 1.3 million cy of sand is expected every four years over the life of the project. Proposed sand sources include four offshore borrow areas (A, B, D and E) located between 1.75 and 2.5 miles offshore of the project area. A fifth borrow (F2) area located 4.6 miles offshore of Mantoloking in the outer continental shelf (OCS) has been identified as a sand source for the periodic renourishment. Use of this area will require coordination with and approval from the Bureau of Ocean Energy Management (BOEM), as well as a separate environmental assessment.

The DEA evaluates new information and modifications to the project subsequent to the Final Feasibility Report and Integrated Environmental Impact Statement (EIS) dated June 2002. Changes and new information include the modification of the sand quantities needed for the both the initial and periodic nourishments; the addition of new borrow areas (D and E), the listing of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) as a federally endangered species, and changes in the region as a result of storms including Hurricane Sandy in 2012, Hurricane Irene in 2011, and the Nor' Ida Storm of 2009.

In August 2001, we provided your agency with comments on the EIS. Although our comments at the time provided technical assistance on the contents of the EIS including the section addressing essential fish habitat (EFH), the EIS did not contain a complete EFH assessment. At this point, an EFH consultation pursuant to Magnuson-Stevens Fishery Conservation and Management Act (MSA) has not been completed for this project. As you are aware, the MSA and the Fish and Wildlife Coordination Act require Federal agencies to consult with one another

1.

1. A complete EFH assessment was included in the 2001 DEIS as well as the 2013 EA. Comments were received by NMFS on the 2001 assessment.



on projects such as this. Because this project affects EFH, this process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments, lists the required contents of EFH assessments, and generally outlines each agency's obligations in this consultation procedure. We offer the following comments and recommendations on this project pursuant to the above referenced regulatory process.

General Comments

The EFH assessment included in the DEA evaluates some of the impacts to EFH that will result from this project, but cumulative effects of the repeated dredging in the borrow areas, and the potential permanent loss of sand shoals and changes in sediment characteristics are not evaluated fully. Overall, the dredging and placement of sand along the coastline will have an adverse effect on EFH and some federally managed species due to the entrainment of early life stages in the dredge, alteration or loss of benthic habitat and forage species, and altered forage patterns and success due to increased, noise, turbidity and sedimentation. We agree that some effects will be temporary, however, there are several potential adverse effects that are not evaluated adequately in the EFH assessment including the long-term or permanent alteration of the sediment characteristics and topography of the borrow area, and the individual and cumulative effects to surf clams and their EFH.

2.

2. Comment noted.

The dredging of sand for beach nourishment has the potential to impact both the EFH of a particular species as well as the organisms themselves in a variety of ways. Dredging can damage fishery resources and their habitats through direct impingement of eggs and larvae, through the creation of undesirable suspended sediment levels in the water column, and through deposition of sediments on immobile eggs and early life stages. Such suspended sediment levels can also reduce dissolved oxygen, can mask pheromones used by migratory fishes, and can smother immobile benthic organisms and newly-settled juvenile demersal fish (Auld and Schubel 1978; Breitburg 1988; Newcombe and MacDonald 1991; Burton 1993; Nelson and Wheeler 1997). Sustained water column turbulence can reduce the feeding success of sight-feeding fish such as winter flounder, tautog, and summer flounder. According to Olla *et al.* (1974 and 1975 in Collette and Klein-MacPhee 2002), tautog are opportunistic sight feeders. Winter flounder are also sight feeders and are diurnally active in both inshore and offshore waters (Pearcy 1962 in Collette and Klein-MacPhee 2002).

Dredging can also remove the substrate used by federally managed species as spawning, refuge and forage habitat. Benthic organisms that are food sources for federally managed species may also be removed during the dredging. These impacts may be temporary in nature if the substrate conditions return to preconstruction condition and benthic community recovers with the same or similar organisms. The impacts may be permanent if the substrate is altered in a way that reduces its suitability as habitat, if the benthic community is altered in a way that reduces its suitability as forage habitat or if the dredging occurs so often that the area does not have time to recover.

The mining of sand from the borrow areas may change the geomorphic characteristics of the borrow area. Offshore shoals are irreplaceable geologic features of the near shore continental shelf. Shoals are dynamic features that diversify the sea floor, producing a variety of substrate types and foraging opportunities for finfish and epibenthic fauna. These areas also serve as

congregating features for finfish and provide guiding features for coastal migratory species.

To determine if any long-term adverse effects have occurred, you should conduct sampling of each of the borrow areas at regular intervals to monitor sediment characteristics and use of the area by benthic organisms, including surf clams. To more fully characterize the cumulative effects of the numerous beach nourishment projects you have in various stages of planning and construction, the monitoring program should include all projects along New Jersey's Atlantic coast that are being planned, studied or under construction. The scope of work for this regional monitoring program should be developed in consultation with us and the New Jersey Department of Environmental Protection.

3.

We also remain concerned about the direct and cumulative effects on surf clams and their EFH. The repeated dredging may alter the sediment characteristics of the borrow areas and change the topography in a manner that may make the areas less suitable for surf clams. To address this concern, we recommend that you include sampling of surf clam densities within each borrow area as part of the regional monitoring program discussed above. Current sampling data should be displayed on a map over the borrow area. Depths and sediment data should be included on the map as well. A similar map should be produced after each monitoring event. Areas of high densities of surf clam should be avoided.

4.

Over the 50-year life of the project, the EFH in the project area will be adversely affected numerous times as each dredging and beach nourishment event occurs. Currently, there is no reporting of acres affected annually or notification to us when construction commences for each project segment or cycle. EFH designations may be modified, the status of a species' stock may change in a manner that warrants additional management measures, or other new information may become available that may change the basis of our EFH conservation recommendations during the life of this project. To ensure that we meet our joint responsibilities to protect, conserve and enhance EFH and minimize adverse effects to living marine resources and their habitats, you should notify us prior to the commencement of each dredging event so that we may confirm that the EFH determinations and EFH conservation recommendations remain valid and a full reinitiation of the EFH consultation is not required. This notification should be done prior to the solicitation of bids for the contract so sufficient time is allowed for any recommended modifications to be including in the bid documents. It should also include the location of the segment to be nourished, the borrow area to be used, volumes of sand to be dredged, depth of sand to be removed and the boundaries of the dredging within the borrow area.

5.

To track the cumulative effects of the project on EFH and to monitor the recovery of the borrow area, bathymetric mapping of the borrow area should be provided to us following the completion of each dredging event to demonstrate that the dredge contractor has maintained the ridge and valley structure of the borrow areas used. You should also provide us with annual reporting of the acres of area dredged, volumes removed and depth of removal so that the annual adverse effects to EFH can be quantified.

6.

Essential Fish Habitat Conservation Recommendations

Our ability to thoroughly assess potential impacts to EFH and associated marine resources was complicated by the absence of an EFH Assessment. As you know, Section 305(b)(2) of the

7.

3. The USACE, Philadelphia District has been conducting benthic and surf clam sampling on proposed and active borrow areas for approximately the past 17 years in coordination with NJDEP. In addition, the NY District conducted a large comprehensive, multi-year monitoring study in 2001 to assess impacts associated with beach nourishment projects. The results of these studies indicate that borrow areas and placement sites recover quickly from dredging and placement activities. Based on the years of available sampling data, additional monitoring is not warranted at this time.

4. As stated previously, many years of surf clam data has been collected for proposed and active borrow areas within the District boundaries. Dredging is conducted in such a way as to minimize changes in substrate and topography. Monitoring has shown surf clam recruitment occurs quickly following dredging activities. In 2008, the District worked with NJDEP to digitize approximately 20 years of surf clam surveys conducted by the State of New Jersey to produce maps showing historic density patterns of surf clams in New Jersey. The District uses these maps to avoid productive surf clam habitat to the greatest extent possible when choosing borrow areas and conducting dredging operations. Based on coordination with NJDEP and the current status of the surf clam population in NJ, further sampling is not warranted at this time.

5. Concur. The District will notify NMFS of all upcoming dredging activities and provide them with the requested information for each contract.

6. Concur. The District will provide NMFS with the results of bathymetric surveys that are conducted following each dredging event.

7. As stated previously, a complete EFH assessment was included in the 2001 DEIS as well as the 2013 EA. Comments were received from NMFS on both assessments.

MSA requires all Federal agencies to consult with us on any action authorized, funded or undertaken by that agency that may adversely affect EFH. Although an EFH Assessment was not provided, in this instance we are able to provide our EFH Conservation Recommendations using the best scientific information available. Pursuant to Section 305 (b) (4) (A) of the MSA, we recommend the following EFH conservation recommendations be incorporated into the project:

1. Dredging should be limited to borrow areas A, D and E and should be designed and undertaken in a manner that maintains geomorphic characteristics of the shoals
2. Areas of high surf clam densities within each borrow area should be avoided.
3. Notification should be provided to our office prior to commencement of each dredging event. Annual reporting to our office should occur regarding acres of borrow area disturbed, the location of the dredging, cubic yardage removed, depth of removal and post-dredging bathymetry of the borrow area.
4. A regional monitoring program of all sand borrow sites should be developed to evaluate recovery of benthic communities (including surf clams) at all borrow areas used by your agency.

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Please note that Section 305 (b)(4)(B) of the MSA requires you to provide us with a detailed written response to these EFH conservation recommendations, including the measures adopted by you for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with our recommendations, Section 305 (b) (4) (B) of the MSA also indicates that you must explain your reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with us over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate or offset such effect pursuant to 50 CFR 600.920 (k).

Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CRF 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above EFH conservation recommendations.

Fish and Wildlife Coordination Act Comments

New Jersey's Recreational and Commercial Fishing Grounds (Long and Figley 1982) and the New Jersey Department of Environmental Protection's statewide digital database at: <http://www.nj.gov/dep/gis/stateshp.html> identify numerous specific sport and commercial fishing grounds and prime fishing areas along the coasts of New Jersey including borrow area B and F2 (Manasquan Ridge). New Jersey's Rules on Coastal Zone Management (CZM) (7:7E-3.4), which have been approved by NOAA, define prime fishing areas as tidal water areas and water's edge areas which have a demonstrable history of supporting a significant local intensity of recreational or commercial fishing activity. These areas include coastal jetties, groins, public fishing piers or docks, and artificial reefs. Prime fishing areas also include features such as rock outcroppings, sand ridges or lumps, rough bottoms, aggregates such as cobblestones, coral, shell and tubeworms, slough areas and offshore canyons.

8. Borrow Area B is critical to the success of the project and cannot be eliminated from use at this time. In order to minimize potential impacts to EFH and other fishery resources, the District has coordinated with NJDEP to revise the proposed dredging plan for this borrow area. The revised dredging plan involves the removal of approximately 5.3 million cubic yards of material from Borrow Area B for initial construction. A portion of the borrow area will be excavated to -81 feet NAVD while the remainder will be excavated to -72 feet NAVD in order to maintain a minimum of 9 feet of relief within the borrow area. In addition, the District has agreed to perform fisheries studies before and after dredging in order to better assess potential fishery impacts.

9. As previously mentioned, historic NJDEP data will be used to determine areas historically high surf clam densities and these areas will be avoided to the greatest extent possible.

10. Concur.

11. As stated previously, the USACE, Philadelphia District has been conducting benthic and surf clam sampling on proposed and active borrow areas for approximately the past 17 years in coordination with NJDEP. In addition, the NY District conducted a large comprehensive, multi-year monitoring study in 2001 to assess impacts associated with beach nourishment projects. The results of these studies indicate that borrow areas and placement sites recover quickly from dredging and placement activities. Based on the years of available sampling data, additional monitoring is not warranted at this time.

12. A written response to these conservation recommendations will be provided to NMFS.

New Jersey's federally approved CZM rules prohibit sand or gravel submarine mining which would alter existing bathymetry to a significant degree so as to reduce the high fishery productivity of these areas. In addition, while the rules also state that sand and gravel mining for beach nourishment is conditionally acceptable in prime fishing areas, there are several conditions including the minimization of direct and indirect impacts to special areas and marine fish and fisheries. From the information presented in the DEA, it appears that substantial direct impacts will occur. In the DEA, it states that maximum depth of disturbance in the borrow areas will be to approximately -81 feet NGVD. This equates to approximately -65 to 63 feet NAVD, or depths similar to the surrounding areas. While this will avoid creating deep areas that could become anoxic or filled with finer grained sediments, it will also remove the ridges and shoals that contribute to the areas' value as fishing grounds and habitat for marine fish.

13.

13. In order to minimize potential impacts to EFH and other fishery resources, the District has coordinated with NJDEP to revise the proposed dredging plan for Borrow Area B which is currently designated as a prime fishing area. The revised dredging plan involves the removal of approximately 5.3 million cubic yards of material from Borrow Area B for initial construction. A portion of the borrow area will be excavated to -81 feet NAVD while the remainder will be excavated to -72 feet NAVD in order to maintain a minimum of 9 feet of relief within the borrow area. In addition, the District has agreed to perform fisheries studies before and after dredging in order to better assess potential fishery impacts.

The sand ridges and other features that compose these sport fishing grounds offer a habitat type that is uncommon in the offshore waters of New Jersey. As a result, they are often areas where fish congregate. Recreational fishermen have also identified these areas as important and valuable fishing locations. As a result, areas identified in Long and Figley (1982) and on New Jersey's sportfishing database as prime fishing areas should not be used as sand borrow areas. Accordingly, we recommend that borrow areas B and F2 be eliminated as a sand source for the project. This is consistent with the approach used for your agency's Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project where borrow areas were eliminated from consideration due to their designation as a prime fishing areas under New Jersey's CZM rules.

14.

14. See above response regarding Borrow Area B. The use of Borrow Area F2 is not being proposed at this time. Due to concerns related to prime fishing habitat, F2 will be re-evaluated prior to any proposed work. Additional NEPA work will be required prior to its use.

New Jersey's CZM rules (7:7-3.3) also require that in areas with commercially harvestable quantities of surf clams (*Spisula solidissima*), it be demonstrated that there are no prudent and feasible alternate offshore borrow sites that would result in less impact to marine fish and fisheries and that the impacts to surf clam areas are minimized through the following:

1. The beach nourishment project is designed to minimize the volume of sand borrowed from the surf clam area;
2. The borrow cut is designed to minimize the area disturbed, for example, by designing a deeper cut; and
3. The borrow site is located to avoid those more productive surf clam areas.

From the information provided in the DEA, it appears that all of the proposed borrow areas contain areas of commercially harvestable surf clams, but area B had the highest densities of clams when compared to areas D, and E. No data was provided for area F2 because it is located in the OCS, and if its use is approved by BOEM, a separate EA will be prepared. From the information in the current DEA, it is not clear if your agency has demonstrated that there are no less damaging alternatives to the proposed project

15.

15. There are not currently harvestable quantities of surf clams in any of the proposed borrow areas. Coordination will continue with NJDEP to minimize impacts to surf clams and their habitat throughout the life of the project.

Endangered Species Act

A number of federally listed threatened or endangered species under our jurisdiction are known to occur in the vicinity of the project area. Listed sea turtles are also found seasonally in the waters off of New Jersey, typically between April and November. The species that are likely to


be present include threatened loggerhead (*Caretta caretta*) sea turtles as well as endangered Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*) and green (*Chelonia mydas*) sea turtles. In addition, endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are known to occur within the nearshore, coastal waters of the Atlantic Ocean.


The federally endangered North Atlantic right (*Eubalaena glacialis*), fin (*Balaenoptera physalus*), and humpback whales (*Megaptera novaeangliae*) are found seasonally in the waters off of New Jersey. North Atlantic right whales are likely to occur in the identified waters between November 1 and April 30. Humpback whales feed during the spring, summer, and fall over a range that encompasses the eastern coast of the United States. Fin whales may also be present off the coast of New Jersey year round. Sei (*Balaenoptera borealis*) and sperm (*Physeter macrocephalus*) whales may also be present in the deeper offshore waters but are unlikely to occur in the project area.

Section 7 of the Endangered Species Act of 1973 (ESA), as amended requires federal agencies to consult with us to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or adversely modify or destroy designated critical habitat. You have initiated coordination with our Protected Resources Division (PRD) on this and other beach nourishment projects along the New Jersey coast. PRD is currently awaiting the receipt of a programmatic biological assessment from your office. Once the assessment is received, PRD will begin its review. We expect that a formal consultation will be necessary resulting in the issuance of a Biological Opinion, which may contain an Incidental Take Statement. If you have any questions regarding the section 7 process, or section 7 coordination, please contact Julie Crocker of our Protected Resources Division at (978)282-8480 or julie.crocker@noaa.gov.

We look forward to continued coordination with your office on this project as it moves forward. If you have any questions or need additional information, please do not hesitate to contact Karen Greene at karen.greene@noaa.gov or (732) 872-3023.

Sincerely,



 Louis A. Chiarella,
Assistant Regional Administrator
for Habitat Conservation

cc: NJDEP - Office of Dredging - S. Dietrick
Bureau of Shellfisheries - J. Normant
FWS- Pleasantville- C. Popolizio
EPA - Region II - D. Montella
MAFMC
NEFMC/ASMFC
NERO PRD - Crocker

16.

16. A programmatic Biological Assessment was prepared and submitted to NMFS in March 2014. The District will include all pertinent Terms and Conditions resulting from the issuance of a Biological Opinion in the plans and specifications for this project.

Literature Cited

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DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

RECEIVED

DEC 16 2013

PHILADELPHIA DISTRICT, CORPS OF ENGINEERS

Environmental Resources Branch

DEC 12 2013

Daniel Saunders, Deputy State Historic Preservation Officer
Mail Code 501-04B
State of New Jersey
Department of Environmental Protection
Historic Preservation Office
PO Box 420
Trenton, NJ 08625-0420

14-1078-R JWR
HPO-A2014-147

Dear Mr. Saunders:

The US Army Corps of Engineers, Philadelphia District (USACE) in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, are requesting your review and comment of the draft Environmental Assessment (EA) for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project. This environmental assessment is intended to present and evaluate new information for this project subsequent to the previously published Final Feasibility Report and Integrated Environmental Impact Statement (EIS) (dated June 2002). A Record of Decision (ROD) was signed on July 2, 2008. After a review and evaluation of changes in the affected environment and the proposed project plan, the draft EA concludes that a Supplemental EIS is not required.

1.

1. No response required.

This project is currently being funded in accordance with The Disaster Relief Appropriations Act of 2013, reference 1(a) (PL 113-2), which was passed by Congress and signed into law on 29 January 2013 in response to the devastating coastal storm, known as Hurricane Sandy that struck the Eastern region of the United States in October 2012. The legislation provides funding and authority for the Corps of Engineers related to the consequences of Hurricane Sandy, which may include previously authorized but unconstructed projects and any projects under study for reducing flooding and coastal storm damage risks.

The project area extends approximately 13.7 miles and would result in a continuous dune line extending from Manasquan Inlet south to the northernmost portion of Island Beach State Park. The selected design template included a +22 ft NAVD dune, with a 25 ft crest width, slopes of 1V:5H from the crest to the berm which extends 75 ft seaward with an elevation of +8.5 ft NAVD for the municipalities of Bay Head, Mantoloking, Brick Township, Tom's River Township, Lavallette, Seaside Park and Berkeley Township. The design template for the municipalities of Point Pleasant Beach and Seaside Heights included a dune with an elevation of +18 ft NAVD, and a berm width of 100 ft. The Point Pleasant Beach and Seaside Heights design included a berm height of +11.5 ft NAVD and +8.5 ft

NAVD respectively. The beach fill would continue from MHW to MLW with slopes of 1:10H. The profile is expected to maintain the existing shape from MLW to the depth of closure, at approximately -26 ft NAVD. At the northern end, the project terminates at the Manasquan Inlet south jetty with no requirement for a taper. At the southern end, the project will taper to the existing beach within Berkeley Township and will avoid the need for any construction activity within Island Beach State Park.

For initial construction sand will be obtained from the offshore borrow areas identified as "A", "B", "D" and "E". Sand for periodic nourishment would be obtained from these borrow areas as well as Borrow Area F2, which is currently under investigation. Borrow Area F2 is located entirely within Federal waters, and would be used for periodic nourishment upon approval from the Bureau of Ocean Energy Management.

Since the 2002 publication of the Environmental Impact Statement, additional Phase I surveys were conducted in Borrow Areas D and E and a Phase II investigation was conducted on several previously recorded sensitive anomalies/wreck sites to determine their potential eligibility in the National Register of Historic Places (NRHP).

A Phase II investigation of the Lizzie Brayton Shipwreck, the Seneca Dunes Shipwreck and nine previously recorded magnetic anomalies was conducted in 2005. The report was titled, *Phase I and II Underwater Archaeological Investigations, Manasquan Inlet to Barnegat Inlet, Ocean County, New Jersey* and was prepared by Dolan Research, Inc. Only three of these nearshore sites (3-249, 3-1401 and 33-1048) appear to meet the criteria of eligibility for inclusion in the NRHP. The remaining anomalies/wreck sites do not appear to be potentially significant; however, a buffer was recommended to avoid unnecessary impacts. The wreck of the Seneca Dunes was not located during the investigation.

At the time of the investigation, sites 3-249 and 3-1041 were almost completely buried and site 33-1048, located approximately 300 feet offshore, was partially buried. The proposed beach nourishment may result in the migration of sand over the three eligible sites but should not adversely affect them. In fact their reburial will act to protect the sites from sport divers and possible looting. In order to ensure that no dredging, pipe placement, mooring or anchoring occurs, a 200-foot radius buffer was recommended around each of the potentially eligible site centroids, and around both major aspects of the wreck of the Creole (33-1048). A 100-foot buffer around the other existing wrecks will be applied to ensure no further impacts. These avoidance areas will be depicted on our project plans and specifications.

In addition to the Phase II analysis, a Phase I survey was conducted in Borrow Areas D and E. No significant remote sensing anomalies with characteristics that could be considered indicative of submerged historic properties were identified in either Borrow Area D or Borrow Area E.

The USACE submitted the results of the investigations and the determination of *No Adverse Effect* pursuant to 36 CFR 800.4(d) to the New Jersey State Historic Preservation


Officer (SHPO) on January 23, 2006. Your office concurred with the determination in a letter dated February 22, 2006.

Since the proposed project will not be impacting any new areas but will be utilizing previously assessed and coordinated areas, we request your review of the referenced document and your concurrence in our determination that the proposed beach nourishment activities will have *No Adverse Effect* on historic properties eligible for or listed on the National Register of Historic Place pursuant to 36 CFR Part 800.5(d)(1).

Thank you for your cooperation in this review process. If you have any questions concerning our review or if we can be of further assistance, please contact Nicole Cooper Minnichbach via email at nicole.c.minnichbach@usace.army.mil, or phone (215) 656-6556, or fax (215) 656-6543.

Sincerely,

for 
Peter R. Blum
Chief, Planning Division

CONCUR
 1/14/14

Daniel B. Saunders
DEPUTY STATE HISTORIC
PRESERVATION OFFICER DATE



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Telephone Number (609) 292-3600
FAX NUMBER (609) 633-2102

CHRIS CHRISTIE
Governor

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

January 28, 2014

Mr. Peter R. Blum
Chief, Planning Division
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

RE: **Manasquan Inlet to Barnegat Inlet Coastal Storm Damage Reduction Project**
Point Pleasant Beach, Bay Head, Mantoloking, Brick Township, Toms River
Township, Lavallette, Seaside Heights, Seaside Park and Berkeley Township,
Ocean County

Comments on Draft Environmental Assessment

Dear Mr. Blum:

The New Jersey Department of Environmental Protection's (NJDEP) Office of Permit Coordination and Environmental Review (PCER) distributed, for review and comment, the Draft Environmental Assessment (EA) for the proposed **Manasquan Inlet to Barnegat Inlet Coastal Storm Damage Reduction Project**. We received this EA, prepared by the Army Corp of Engineers (ACOE) on December 17, 2013. Based on the information received, we offer the following comments for your consideration.

Cultural Resources

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the potential for the above-referenced project to affect historic and archaeological resources. The HPO has previously had the opportunity to comment on the proposed undertaking through consultation with the United States Department of the Army, Corps of Engineers (Corps) under their obligations pursuant to Section 106 of the National Historic Preservation Act, as amended. In a response dated January 14, 2014 (14-1078-1/A2014-147), the HPO concurred with the Corps determination that, as proposed, the undertaking will have no adverse effect on historic properties within the project's area of potential effects. As a result, no further cultural resource consideration is necessary prior to permit issuance. However, if project plans change or additional resources are discovered during project implementation, pursuant to 800.13 of the National Historic Preservation Act, further review by the Historic Preservation Office will be necessary.

1.

1. No response required.

If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 14-1078 in any future calls, emails, submissions or written correspondence to help expedite your review and response. If you have any additional questions, please contact Jesse West-Rosenthal at: (609) 984-6019

In addition, HPO's cultural resources GIS data is now available in GeoWeb:
<http://www.state.nj.us/dep/gis/gcwebsplash.htm>

Natural Resources

Shellfisheries concerns regarding this project:

The new proposed borrow area (F2) off of Mantoloking in federal waters, F2 is Manasquan Ridge, which is a very popular recreational and commercial fishing area and may also be productive surf clam habitat (since it is not in state waters, it hasn't been surveyed during the NJ surf clam inventory, but may have been surveyed during the Federal survey.)

2.

2. The use of F2 will be coordinated at a later date. Surf clam surveys have been conducted and will be coordinated with Bureau of Shellfisheries.

The other approved borrow areas in state waters should be closely monitored so as the bottom relief is kept intact. These are prime fishing and shellfish areas. These borrow areas were picked too last 50 years while still maintaining the structural integrity of the lumps/ridges.

3.

3. Borrow Area B is the only proposed borrow area that has any significant relief. Coordination has been conducted with NJDEP to maintain approximately 9 feet of relief along the shoal complex in this borrow area.

Marine Fisheries concerns:

1. Since their review was performed prior to the listing of Atlantic Sturgeon, they are not present on their list of federally managed species.
2. Longfin Squid and Spiny Dogfish are present, but not "checked" in their list of federally managed species when their presence is documented by the ocean trawl survey in and around the sand borrow sites.

4.

4. The Philadelphia District is currently undergoing formal Section 7 consultation with NMFS with regard to potential impacts to the Atlantic sturgeon for this project.

5.

5. The list of federally managed species found in the document comes directly from the NMFS Guide to Essential Fish Habitat Designations found at <http://www.nero.noaa.gov/hcd/index2a.htm>. Data was confirmed following receipt of this comment.

If you have any additional questions, please contact:

Kelly Davis, Biologist - Fisheries
N.J. Division of Fish and Wildlife - Office of Env. Review P.O. Box 394, 1255 County Rt. 629 Lebanon, NJ 08833
Tel: (908) 236-2118
kelly.davis@dep.state.nj.us

Air Quality

The Bureau of Air Quality Planning (BAQP) has reviewed the Manasquan Inlet to Barnegat Inlet Project and will not be submitting any comments on this project.

6.

6. No response required.

NJ State Park Service

There has been some public comment requesting that Island Beach State Park be included in the project. At the southern end of the proposed project, a suggestion was made to consider tapering the engineered dune into the northernmost portion of the park's extensive natural dune system. This option would require further review by the ACOE, the NJDEP Bureau of Coastal Engineering and the NJDEP Office of Natural Lands Management. For any additional questions, please contact Ray Bukowski, Park Manager, Island Beach State Park at 732-793-0506 or Bill Dixon at the Bureau of Coastal Engineering at 732-255-0767.

7.

7. This option is currently being discussed with NJDEP and the State Park. If the taper is approved, coordination with the appropriate entities will take place.

Land Use

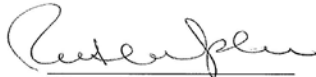
The NJDEP Division of Land Use Regulation is currently reviewing a Federal Consistency Determination and expects to complete their review by February 6, 2014. For additional information, please contact Colleen Keller at (609) 984-0846.

8.

8. No response required.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the Draft Environmental Assessment for the proposed **Manasquan Inlet to Barnegat Inlet** Coastal Storm Damage Reduction Project.

Sincerely,



Ruth Foster, PhD., Section Chief
Office of Permit Coordination
and Environmental Review

C: John Gray, NJDEP-PCER
Jesse West-Rosenthal, NJDEP- HPO
Kelly Davis, NJDEP – DFW
Angela Skowronek, NJDEP – BAQP
Colleen Keller, NJDEP – Land Use
Ray Bukowski, Island Beach State Park
Bill Dixon, Bureau of Coastal Engineering



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1868

JAN 23 2014

John C. Becking, P.E.
Lieutenant Colonel
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3391

Dear Mr. Becking:

This letter is in response to the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project, Draft Environmental Assessment, (EA) located in Ocean County, New Jersey. The draft EA presented and evaluated new information for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project updated from the previously published Final Environmental Impact Statement (FEIS) dated June 2002.

The purpose of the project is to provide storm damage reduction by creating a dune and berm system for the coastal municipalities located in the project area. The sand quantities to be used have been updated since the 2002 FEIS. The design fill quantity has been reduced from 10,689,000 cubic yards to 9,728,000 cubic yards and the periodic nourishment (4 years) increased from 961,000 cubic yards to 1,364,000 cubic yards. The original feasibility report for the project identified two borrow areas to be used for initial construction and several nourishment cycles for the project (Borrow Area A, which is 2.25 miles off the northern end of Island Beach State Park and Borrow Area B, which is 1.75 miles offshore of Mantoloking). Further evaluation completed after the 2002 FEIS indicated that additional supplies would be necessary for subsequent nourishment, which resulted in the addition of two new borrow areas (Borrow Area D, which is 1.75 miles offshore of Seaside Park, and Borrow Area E, which is 2.5 miles offshore of the northern end of Island Beach State Park and adjacent to Borrow Area A). There is a fifth potential borrow area (F2) being evaluated which is located entirely in Federal waters (about 4.6 miles offshore of Mantoloking). Use of Borrow Area F2 would be contingent upon approval from the Bureau of Ocean Energy Management.

The draft EA includes information on the changes to the Storm Damage Reduction Project since the FEIS, dated 2002 and as a result of Super Storm Sandy. National Environmental Policy Act (NEPA) documents are intended, in part, as a mechanism to inform and educate the public regarding environmental impacts of projects carried out by the federal government. As such, the

1.

1. The analysis of additional data indicates that the initial fill quantity will be 10,728,000 cubic yard.

document should include, at a minimum, cursory information regarding the details of the original project. A project description should be included in the final EA that describes the dredging effort and the transport of sand from the borrow pits to the beach, in addition to the specifications of the dune and berm system.

2.

The draft EA did not include a discussion of entry points/access paths along the dune. Though access paths are often created perpendicular to the shore, these paths can result in significant dune erosion during intense storms. High force waves gain power as they push through the narrow passages causing increase erosion and flooding. Reduced flooding was seen after Super Storm Sandy behind dunes that had paths at a 45 degree angle rather than perpendicular to the shoreline. This finding, and a discussion of dune access paths should be included in the final EA.

3.


In addition, the draft EA did not indicate whether or not the dunes would be planted with appropriate stabilizing vegetation. Manmade dunes, as opposed to naturally occurring dunes, have less organic material and hold less water and thus need to be planted with appropriate vegetation to help stabilize them. The leaves of vegetation help trap airborne sand grains during wind events and thus help grow the dune. Leaves also help protect the dune from wind, thereby reducing the amount of sand that is blown away. Lastly, the roots and rhizomes trap and stabilize the sand further fortifying the dune and making it resistant to erosion. Dune plants are a key component of an effective dune restoration plan and should be discussed in the final EA. For further technical information on dune creation and stabilization, we recommend speaking with Dr. Louise Wootton, Director of Sustainability at Georgian Court University. Dr. Wootton can be reached at (732) 987-2349.

4.

Thank you for the opportunity to comment. Should you have any questions concerning this letter please feel free to contact Stephanie Lamster of my staff at 212-637-3465.

Sincerely,



 Grace Musumeci, Chief
Environmental Review Section

2. A full description of the selected plan can be found in Section 4.1. Additional information regarding the dune plantings has been added.

3. Per USACE regulations, public access is required at a minimum of every ½ mile for Storm Damage Reduction Projects. Based on the public access plan developed by the NJDEP, who is responsible for providing the necessary accesses, the project meets or exceeds the federal regulations with the inclusion of approximately 118 pedestrian, 17 vehicle and 24 handicap dune crossovers within the project area. The location of all public access is detailed in the construction plans and specifications and are not included in the EA. In addition, all USACE dune crossovers for this project are angled to the south at a 45 degree angle per USACE design guidance.

4. Dune plantings are a standard component of all dunes constructed by the USACE, Philadelphia District. Additional information regarding the dune plantings has been added to Section 4.1.



In Reply Refer To:
14-CPA-0076

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice>



Peter R. Blum, Chief
Planning Division
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

JAN 23 2014

Dear Mr. Blum:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office has reviewed the *Draft Environmental Assessment for the Manasquan Inlet to Barnegat Inlet Storm Damage Reduction Project* (DEA) presenting and evaluating new information pertaining to the U.S Army Corps of Engineers' (Corps) 2002 Final Feasibility Report and Integrated Environmental Impact Statement for the placement of beachfill sand within the 13.7-mile-long study area.

The Corps proposes to create a 75-foot-wide beach berm at elevation +8.5 North American Vertical Datum (NAVD) and a dune at an elevation of +22 feet NAVD. The dune would be 25-foot wide. For initial construction of the project, the Corps proposes to obtain approximately 9,865,000 cubic yards (cy) from Borrow Areas A and B and approximately 1,364,000 cy for periodic re-nourishment every four years from Borrow Areas A, B, D, and E. The borrow areas are located offshore within State waters. Borrow area F2 (outside of State Waters) is also proposed to be used, pending approval from the Bureau of Ocean Energy Management.

1.

1. Current volume estimates are 10,728,000 cubic yards for initial construction. The nourishment quantity remains unchanged.

AUTHORITY

The following comments are provided pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*), the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), and the Migratory Bird Treaty Act of 1918 (40 Stat. 755; 16 U.S.C. 703-712) as amended, ensuring the protection of federally listed endangered and threatened species, and migratory birds.

FEDERALLY LISTED SPECIES

Piping Plover

The federally listed (threatened) piping plover (*Charadrius melodus*) nested at Island Beach State Park (IBSP), Ocean County, New Jersey in 2005. The IBSP is not included in the project area, which has provided almost entirely unsuitable habitat for nesting piping plovers. The likelihood of nesting activity in the project area is very low prior to the initial beach nourishment. However, the Service cannot rule out possible nesting, if construction activity occurs during the breeding season (March 15-August 31). Rather than requiring the Corps to hire a biological construction monitor for any work during the breeding season under the protocol established by the Service and the New Jersey Endangered and Nongame Species Program (ENSP), we recommend that the Corps hire a monitor only if nesting activity is detected in 2014 during the initial re-nourishment event. If any nesting activity is detected by the ENSP, the Corps shall coordinate/consult with the Service and ENSP to ensure adequate protection of piping plovers, least terns (*Sterna antillarum*), and black skimmers (*Rhyncops niger*).

2.

2. Concur. If any piping plover nesting activity is detected by ENSP during initial construction, further coordination will be done to ensure the protection of the nests and chicks.

As stated in the DEA, individual Tier 2 consultation with the Corps remains required prior to construction and for each periodic nourishment cycle. The Corps shall not rely on Service Tier 2 letters for any nourishment cycle that is later cancelled, delayed, or otherwise modified, but shall rather re-submit updated project information to the Service for further individual Tier 2 consultation.

3.

3. Concur. Tier 2 consultation will be completed prior to initial construction.

We also wish to remind the Corps of the long-term (semi-permanent) habitat degradation for nesting piping plovers that is perpetuated by the subject project design. From piping plover nesting data collected in 2013 by the Conserve Wildlife Foundation of New Jersey on behalf of the ENSP, we note that nesting habitat of the piping plover and other shorebirds has been reduced in several engineered shoreline protection projects. In many respects the re-creation of engineered storm protection beach designs may prevent high quality beach nesting habitat from forming. However, federal agencies are directed, under Section 7(a)(1) of the ESA, to use their authorities to carry out programs for the conservation of threatened and endangered species. Using this proactive conservation approach, one prudent beach management strategy could include using some of the funding sources associated with these projects that may reduce habitat quality to help support intensive protection of piping plovers and other beach nesting shorebirds in the remnant suitable habitats in New Jersey.

4.

4. Comment noted. The District will continue to work with the Service and ENSP to improve habitat quality for piping plovers along the coast in areas such as the Lower Cape May Meadows where restoration activities have greatly benefited plovers and other beach nesting shorebirds.

Seabeach Amaranth

The federally listed (threatened) seabeach amaranth (*Amaranthus pumilus*) occurred within the project area in the last five years. Occurrences were documented on beaches as follows: Point Pleasant (1 plant in 2011); Bay Head (1 plant in 2009, 1 plant in 2011); Mantoloking (1 plant in 2012); and Brick (5 plants in 2009). Additional occurrences were documented at IBSP, outside of the project area. If seabeach amaranth is detected by the Corps in 2014, please contact this office to coordinate protective measures for this species.

5.

5. Concur. If sea beach amaranth is detected within the project area prior to, or during initial construction, further coordination with the Service will be conducted to coordinate protective measures for the species.

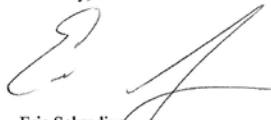
OTHER COMMENTS AND RECOMMENDATIONS

As a condition for receiving Federal assistance for beach nourishment, all municipalities are required to develop a Beach Management Plan (BMP) approved by the Service and the New Jersey Division of Fish and Wildlife. At the moment, only Surf City and Harvey Cedars, Ocean County, New Jersey, are the towns within the project area that have such plans.

The Corps shall require all municipalities within the study area to coordinate with the Service and ENSP prior to placing sand fencing and planting dune-stabilizing native vegetation following each re-nourishment event, and as necessary develop or update a BMP.

Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you have any questions pertaining to this correspondence.

Sincerely,



Eric Schradung
Field Supervisor

6.

6. The District and NJDEP (the project's non-federal sponsor) will continue to work with the municipalities to create and/or update BMPs.

cc: todd.pover@conservwildlifenj.org
kara.turner@dep.state.nj.us
Anne_Hecht@fws.gov

NJFO:ES:cpopolizio:RP:ES:cap:RP:ES:cap:1/10/14

P:/Shared/Carlo/14-CPA-0076