



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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August 13, 2014

Colonel Paul E. Owen
District Engineer, New York District
U.S. Army Corps of Engineers
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New York, NY 10278-0090

Dear Colonel Owen :

The U.S. Fish and Wildlife Service (Service) submits the enclosed final document entitled, "Final Fish and Wildlife Coordination Act Report, Downtown Montauk Stabilization Project". This document incorporates the U.S. Army Corps of Engineers New York District Planning Division's (Corps) comments documented in their July 31, 2014, correspondence, on the Service's July 2014 draft document submitted via e-mail on July 24, 2014.

The Service appreciates the Corps' assistance during the completion of this document. If you have any questions or require additional information, please contact Mr. Steven Sinkevich of the Long Island Field Office at (631) 286-0485.

Sincerely,

David A. Stilwell
Field Supervisor

Enclosure

cc: NYSDEC, Stony Brook, NY (R. Marsh)
USFWS, Long Island Field Office, Shirley, NY

**FINAL FISH AND WILDLIFE COORDINATION ACT REPORT
DOWNTOWN MONTAUK
STABILIZATION PROJECT**

**Prepared for:
U.S. Army Corps of Engineers
New York District
New York, New York**

**Prepared by:
Department of the Interior
U.S. Fish and Wildlife Service
Long Island Field Office
Shirley, New York**

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EXECUTIVE SUMMARY

This final Fish and Wildlife Coordination Act (FWCA) report has been prepared at the request of the U.S. Army Corps of Engineers (Corps) in partial fulfillment of section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*). The purpose of the FWCA is to assure equal consideration and coordination of fish and wildlife conservation with other project purposes. This FWCA report provides the U.S. Fish and Wildlife Service's (Service) comments on the biological and procedural issues relevant to the Corps' Downtown Montauk Stabilization Project (DMSP). Section 2(b) of the FWCA requires that the final report of the Secretary of the Interior: (1) determine the magnitude of the direct, indirect, and cumulative impacts of the proposed projects on fish and wildlife resources, and (2) make specific recommendations as to measures that should be taken to conserve those resources.

The Service forwarded the Draft FWCA for this project to the Corps on July 24, 2014. The Corps provided comments in their correspondence dated July 24, 2014 (Appendix A). The Corps' comments were incorporated into this final report. At this time, no comments have been received from the New York State Department of Conservation (NYSDEC), which would normally comprise a portion of this report. However, due to the short schedule required by this project, and at the Corps' request made during a June 11, 2014, coordination call, we are preparing this Final FWCA report. It is our understanding that the NYSDEC will provide their comments to the Corps separately.

The DMSP is the fifth interim action project being proposed under the authorization of the 83-mile Fire Island Inlet to Montauk Point, New York, Beach Erosion Control and Hurricane Protection Project (FIMP). The FIMP, which was authorized in 1960, is currently being reformulated by the Corps in order to develop a programmatic, integrated approach to shoreline protection along the south shore of Long Island. The other four interim projects within the authorized FIMP project area include planning efforts for the on-going Westhampton Interim Project; the Interim Breach Contingency Plan (BCP); the West of Shinnecock Inlet Interim Storm Damage Protection Project; and the Fire Island Inlet to Moriches Inlet, Fire Island, Stabilization Project.

This project has the potential to have adverse ecological impacts to fish and wildlife resources. In the short-term, the Corps' recommended plan will have direct and indirect adverse impacts on fish and wildlife resources and their supporting ecosystems. Initial beach fill will directly impact 3,100 linear feet, or approximately 7.8 acres of subaerial coastal habitats. These impacts include burial of marine beach invertebrates and modification of habitats.

However, this project is: of relatively small scale (less than 1 mile long), abutted by extensive residential and commercial development, which would preclude/limit natural coastal processes (cross-island sediment transport); located on a site that is managed as a recreational beach (bathing beach, beach raking/cleaning, and recreational off-road vehicles) where beach stabilization actions presently occur (beach grass planting and snow fence installation). Accordingly, the implementation of the conservation/mitigation measures proposed by the Corps and the Service, as described in this report and summarized below, will assist the Corps in offsetting the potential adverse impacts presented in this report.

Measures that the Corps could incorporate into the project design to avoid and/or minimize project impacts include:

- The Corps states that the grain size of the sand to be deposited on the beach is the same or slightly larger than the native sand. The Corps should insure that the sand to be placed on the beach and dune shall be consistent with the grain size (minimize/avoid sand larger than the native sand) and color on the naturally occurring beach to the greatest extent practicable.
- The authorized beach placement area shall be finished to the same slope as the surrounding beach. The area shall be graded at a gentle uniform slope with no piles, ridges, or holes left in the final graded beach placement materials.
- The Corps should coordinate with local sponsors to develop and implement a monitoring/management program to address potential GSC exposure and debris removal associated with structure degradation.
- The upland sediment should not be mined from suitable federally and state-listed species habitats or within buffer/adjacent areas of the NYSDEC's tidal or freshwater wetland jurisdictions without a state permit.

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I. PROJECT PURPOSE, SCOPE, AND AUTHORITY

The following project purpose, need and scope description for the DMSP is excerpted from the Corps' Project Description draft document (U.S. Army Corps of Engineers 2014):

Recent storm events, such as the storms in the fall of 2009 and Hurricane Sandy in 2012, have eroded beaches and dunes in the Downtown Montauk project area, creating a potentially imminent hazard that has left many commercial buildings along the shoreline vulnerable to damages from future storms. Beach and dune erosion caused by Hurricane Sandy has partially undermined several shorefront structures in downtown Montauk, leaving the area vulnerable to damage from future storms. This Draft EA documents the impacts associated with implementing the Downtown Montauk Stabilization Project.

A proposed solution to address this vulnerability is the implementation of Stabilization Projects (at Downtown Montauk and also from Fire Island to Moriches Inlet (FIMI) which is discussed in another report). These projects are proceeding on a separate, accelerated path separate from those previously executed as "Interim Projects" along the south shore of Long Island because of the urgency to restore the coastline in this particular reach, thereby addressing the immediate need to reduce risk to life and property that resulted from Hurricane Sandy. The assumption for these Stabilization Projects is that these projects are advancing as unique 100% federally-funded stabilization components and separate from other projects.

The Downtown Montauk Stabilization Project (the Project) has been developed to reinforce the existing dune and berm system along the Downtown Montauk project area. The selected design consists of dune reinforcement along 3,100 ft of the shoreline. Because there are restrictions on placement of hard structures in the coastal zone at East Hampton, dune reinforcement will be accomplished utilizing geobags, which are geotextile bags filled with sand. The sand-filled geobags will be covered with a minimum of 3-ft of sand to reduce the likelihood of bag exposure.

As a consequence of severe coastal erosion during Hurricane Sandy, the dune and berm system at Downtown Montauk is now depleted. The foundations of several shorefront commercial buildings were exposed during Hurricane Sandy and are now vulnerable to future storm events. In response to the increased vulnerability to future events, consistent with the Disaster Relief Appropriations Act of 2013 (Public Law. 113-2; herein P.L. 113-2), and recognizing the urgency to repair and implement immediate storm protection measures, the USACE has proposed an approach to expedite implementation of construction of necessary stabilization efforts at Downtown Montauk independent of the FIMP Reformulation Study. This approach has gained widespread approval from New York State, Suffolk County, NY, and the Town of Easthampton, who recognize the extreme vulnerability of the coast and the need to move quickly to address this need.

The post-Sandy Downtown Montauk Stabilization Project was developed based upon the Engineering, Economic, Environmental, and Planning efforts that have been undertaken through the ongoing FIMP Reformulation Study. The study compared several alternatives to identify the recommended scale and scope of a stabilization project. Stabilization efforts were focused on Downtown Montauk as there is a more urgent need to advance the stabilization of this reach due to its vulnerability and potential for major damage and risk to life and property.

This stabilization effort has been developed as a one-time, stand-alone construction project to repair damages caused by Hurricane Sandy and to stabilize / reinforce the dune. This

Chapter demonstrates that the Downtown Montauk Stabilization Project has its own independent utility, and as developed does not limit the options available in the overall FIMP Reformulation Study or pre-suppose the outcome of the Reformulation Study.

II. RELEVANT PRIOR AND ON-GOING STUDIES/REPORTS/FEDERAL PROJECTS

A. Federal Projects

Additional proposed or constructed federal projects within the FIMP project area are described below. These actions should be considered in the Corps' cumulative effects analysis for the proposed project.

1. 30-year Westhampton Interim Storm Damage Protection Project

The 30-year Westhampton Interim Project is located within Reach II: Moriches Inlet to Shinnecock Inlet of the FIMP project area, adjacently east of the FIMI Study Area (Figure 2). The Corps proposed a 30-year interim project at Westhampton Beach in September 1978. While the Westhampton Interim Project contradicted the Council on Environmental Quality's (CEQ) recommendation that the FIMP area be managed as a single system, federal agencies came to agreement by 1980 that a beach protection project to address the substantial erosion to Westhampton Beach downdrift of the Corps' groin field was mutually acceptable and could be undertaken at Westhampton. That agreement was reached provided that the Corps commit to funding the FIMP Reformulation Study programmatic Environmental Impact Statement (EIS). Subsequent to the agreement, the Service identified existing literature, substantial data gaps, and required field studies as part of the FIMP Reformulation Study Planning Aid Letter (PAL) dated February of 1981 (U.S. Fish and Wildlife Service 1981). The PAL concluded that "In summary, there is insufficient data to assess the potential impacts on the fish and wildlife resources and their habitats from the proposed beach erosion control and hurricane protection project as described in the final environmental impact statement for the subject project."

Ultimately, construction of the Westhampton Interim Project was initiated and completed in summer 1996 and fall 1997, respectively. This project followed a breach during the winter of 1992 and 1993. Initial construction entailed beach fill/dune construction over 21,460 feet (ft) of beach and the realignment of the 2 western-most groins of the 15 groins that were constructed between 1965 and 1970. Over 4,480,000 cubic yards (cy) of sand were dredged from offshore borrow areas to complete the initial phase. Renourishment of the design profile will occur on an average of every 3 years, initially requiring 981,000 cy and approximately 1,179,000 cy for each renourishment thereafter.

2. Breach Contingency Plan (BCP)

In addition to the larger-scale, longer-term interim proposals and projects, the Corps and other interested federal, state, and local governments developed the BCP in 1996 for the 50 miles (mi.) of barrier beach (Fire Island Inlet to Southampton Barrier Spit) within the FIMP Reformulation Study area for the purpose of closing breaches in an expedited manner. This effort was intended to be an interim measure while the FIMP was being completed, however, the Biological Opinion for the BCP has since expired and the Service recommends that the Corps request reinitiation of consultation pursuant to section 7 of the ESA in order to continue to implement this plan consistent with the ESA.

In October of 2012, Superstorm Sandy created three breaches and extensive overwash areas on the eastern end of Fire Island. Three breaches formed on Fire Island at Smith Point (40.750156N, -72.811806W), Old Inlet (40.723509N, -72.894704W), and eastern Fire Island Pines (40.667489N, -73.055264W). Based upon Service personnel observations, the breach at Smith Point was a relatively small breach that did not appear to exhibit exchange of ocean and bay waters at low tide but was closed by the Corps in December of 2012. The breach at Old Inlet remains open and options concerning its management are being explored by the Nation Park Service (NPS) in accordance with the Fire Island Wilderness Act of 1983 (P.L. 95-585) and National Environmental Policy Act (NEPA). The breach at eastern Fire Island Pines did not require any action under the Corps' BCP as no exchange of bay and ocean water was observed after the storm passed and tidal levels subsided.

3. Fire Island Inlet Federal Navigation Project authorized in 1948 and Shore Westerly Project (Corps; Active)

The following was excerpted from the Corps' web site (<http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/10863/fact-sheet-fire-island-inlet-and-shores-westerly-to-jones-inlet-new-york.aspx>):

DESCRIPTION: This is a multi-purpose project that provides navigation and shore protection benefits through the periodic maintenance dredging of Fire Island Inlet with placement of dredged sand along the shoreline several miles west of the inlet at designated barrier island's critical erosion area (Gilgo Beach). The sand placed at Gilgo is intended to nourish the westerly beaches and provide storm damage protection.

AUTHORIZATION/PROJECT DESCRIPTION: Authorized by the Rivers and Harbors Act of 1937 and subsequently modified by the Rivers and Harbors Acts of 1958 and 1962. In August 1988, the existing project was modified to provide for the maintenance of a realigned channel in the vicinity of the naturally deep channel to a depth of 14 feet plus 2 feet allowable overdepth. The material from the dredged channel will be used as nourishment along the shoreline several miles west of the inlet at the designated beach, Gilgo Beach, for erosion control. This project is cost shared by New York State Department of Environmental Conservation.

STATUS: Work planned for FY14 includes: completion of a contract to replace the 1.2M cubic yards of sand lost during Hurricane Sandy using sand from Fire Island Inlet. The Federal portion of this rehabilitation work is being completed under P.L. 84-99 with 100% Federal funds. The State of NY has also contributed State funds to perform additional work at Tobay and Town of Babylon beaches under this same contract.

Last maintenance dredging cycle was completed in Winter 2007-08. The work included dredging and placement of 619,000 CY along the critical erosion area at Gilgo Beach. Project was completed with a combination of O&M funding and FCCE funding. Dredging and placement at Gilgo Beach was completed on March 26, 2008.

In past cycles, additional sand has been dredged from the channel and deposition area and placed at Robert Moses State Park at full non-Federal cost (NY State).

The previous maintenance dredging cycle was completed in FY03/04. A total of 953,263 cubic yards of sand was dredged and placed as beach nourishment along the Gilgo Beach shoreline. An additional, 135,983 cubic yards of dredged sand was placed as beach nourishment along Robert Moses State Park Beach.

4. Long Island Intracoastal Waterway, New York-Federal Navigation Channel

The following was excerpted from the Corps web site

(<http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/9192/fact-sheet-long-island-intracoastal-waterway-new-york-federal-navigation-channel.aspx>):

DESCRIPTION: Complete plans and specifications, award a contract to perform maintenance dredging, and perform maintenance dredging during this fiscal year due to the channel being impacted by Hurricane Sandy. Dredged sand will be placed at upland locations after coordination with local sponsors.

AUTHORIZATION/PROJECT DESCRIPTION: The Rivers and Harbors Act of August 26, 1937 authorized the Long Island Intracoastal Waterway Federal Navigation Project. The existing project provides for a navigation channel 6 feet deep, 100 feet wide from the Federally improved channel in Great South Bay, opposite Patchogue, to the south end of Shinnecock Canal. The lengthy 33.6 mile project traverses the inland waters through the Great South Bay, the Bellport Bay, the Narrow Bay, the Moriches Bay, the Quantuck Bay and the Shinnecock Bay.

STATUS: Three USCG Stations utilize this waterway for Search and Rescue (SAR) missions. Many commercial and recreational boaters use this sheltered route along the Atlantic Ocean between three of the south shore inlets as a sheltered route parallel to the Ocean coast line.

During this fiscal year, maintenance dredging contract will be completed for the Federal channel in the Moriches Bay area. This Federal channel was used as a borrow source of sand to close the breach at Smith Point Park as a result of Hurricane Sandy. The previous maintenance cycle, a contract for maintenance dredging of approximately 70,000 CY in the Moriches Bay area was completed in FY2010/11. Maintenance dredging was completed in two phases with two separate efforts. First phase in the May-June 2010 time frame for the most critical shoal, and the second phase in the fall of 2010 when the environmental window allowed dredging to continue. Based on a request by Town of Brookhaven, a 5,600 CY stockpile of sand was constructed on Cupsogue beach. Town of Brookhaven transported sand from the stockpile for placement at a bayside beach.

Prior work includes maintenance of the Long Island Intracoastal Waterway performed November 2003 through January 2004. The total volume of dredge material removed from of the Shinnecock Bay Reach in FY2004 was 26,085 cubic yards. Prior to that, the Moriches Bay reach was dredged in FY 2003 with the removal of 53,000 CY with placement of dredged material on East Inlet Island. The East Inlet Island, which was used as a dredged material placement site in FY 2003, was tilled to eliminate areas of hard-packed mud and was then planted with native grassland species. The purpose of this project was to restore and enhance habitat for threatened and endangered shorebirds. The remediation was completed in October 2006.

5. Moriches Inlet Navigation Project

The following was excerpted from the Corps web site

(<http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/8248/fact-sheet-moriches-inlet-new-york-maintenance-and-stewardship.aspx>):

DESCRIPTION: This project is in caretaker status. The last maintenance dredging of the inlet was performed in January 2009 by the Suffolk County Department of Public Works (SCDPW).

AUTHORIZATION/PROJECT DESCRIPTION: The Moriches Inlet Project was authorized by the Rivers and Harbors Act of 1960 and the 1985 Supplemental Appropriation Act. The

existing Moriches Inlet Federal Navigation Project provides for a channel, 10 ft. deep, 200 ft. wide, extending from that depth in the Atlantic Ocean to Moriches Bay, at a length of approximately 0.8 mile, and a channel, 6 ft. deep, 100 ft. wide, to the Long Island Intracoastal Waterway, length approximately 1.1 miles. In addition, the project includes a deposition area at the entrance of the channel, 14 feet deep plus 2 feet overdepth, 350 feet wide, and 3,000 feet in length.

STATUS: During this FY, continued monitoring of the conditions of the Federal channel will be performed and a Controlling Depth Report will be published. Coordination with local stakeholders will also continue.

The inlet was used as a borrow source of sand to close the breach at Cupsogue Beach that was created by Hurricane Sandy. Approximately 200,000 CY of sand were removed from the inlet for this effort.

The last maintenance dredging cycle occurred during the winter of 2009. Approximately 460,000 CY of material was removed by Suffolk County and placed at Cupsogue Beach, Smith Point and other areas. Prior to this last cycle, maintenance dredging of the inlet was last performed by the USACE in February 2004 using Federal/non-Federal cost-share funds. Approximately 250,250 cubic yards of material were removed from the channel and deposition basin and placed along the shoreline west of the jetty. The most recent condition survey of the Inlet and Controlling Depth Report is located on the webpage below.

6. West of Shinnecock Inlet Interim (WOSI) Storm Damage Protection Project

The West of Shinnecock Inlet Storm Damage Protection Project was developed as an interim plan by the Corps to provide protection of the eastern end of Westhampton Island until the FIMP Study was completed. The project includes beach nourishment along the 4000-ft-long shoreline immediately west of Shinnecock Inlet, as a means to mitigate for the loss of beach resulting from the construction of the Federal Shinnecock Inlet Jetty Project. The project initially included periodic renourishment every 2 years for a period of 6 years. The Corps constructed the West of Shinnecock Inlet Interim project in 2005, placing approximately 610,000 cy of sand. The project consisted of dunes with a crest of 15 ft above National Geodetic Vertical Datum (NGVD) and a 90-ft-wide beach berm.

The Corps recently reconstructed this project due to sediment losses resulting from Hurricane Sandy. Even though the project had expired, the Corps indicated that it was authorized through the Disaster Relief Appropriations Act of 2013 to restore projects impacted by Hurricane Sandy to their original design profile and they determined this project was eligible for reconstruction. The Corps placed approximately 301,000 cy of sand at just after Hurricane Sandy using emergency funds from Hurricane Irene. Of that approximately 301,000 cy of sand, approximately 173,000 cy were used to replace sand lost during Hurricane Sandy. The Corps recently awarded a contract in the fall of 2013 for the placement of approximately 450,000 cy of additional sand in the project area to restore the project to its original design profile in the fall of 2013. Sand will be dredged from an offshore borrow area. Work is expected to be completed in the winter of 2014. (http://www.nan.usace.army.mil/Portals/37/docs/civilworks/SandyFiles/Army%20Corps%20West%20of%20Shinnecock%20Inlet_FCCE_FactSheet.pdf)

7. Montauk Point

A Feasibility Cost Sharing Agreement was executed in April 2000 with the New York State Department of Environmental Conservation (NYSDEC). The recommended plan of improvement identified in the Final Feasibility Report and Environmental Impact Statement (dated October 2005) entails the placement of an 840-ft-long stone revetment to cover the most

critically eroding area of Montauk Point, in order to avoid the eventual total loss of the irreplaceable historic lighthouse complex. The Final Report of the Chief of Engineers on the Montauk Point, New York, Hurricane and Storm Damage Reduction Project was provided to Congress on March 31, 2006.

The next action is to complete Hurricane Sandy Limited Reevaluation Report (LRR) and Environmental Assessment (EA). This effort is currently underway. State of New York statute requires that they obtain a local governmental entity to act as a sub-sponsor before proceeding with any agreement with the Corps. Once a sub-sponsor is identified, plans and specifications would commence for construction.

(<http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/11324/fact-sheet-montauk-point.aspx>)

8. Lake Montauk Harbor, Federal Navigation Channel

Authorized by the Rivers and Harbors Act of March 1945. The project provides for a channel 12 ft deep at mean low water and 150 ft in width from the 12-ft contour in Block Island Sound, to the same depth in the existing yacht basin east of Star Island and for a boat basin 10 ft deep, 400 ft wide, and 900 ft long located west of Star Island.

Plans and Specs for the current cycle of maintenance dredging are being completed. Subject to condition survey evaluation, maintenance dredging in the fall of 2014 will be performed using Sandy Supplemental funds under P.L.113-2. Previously, severe storms led to hazardous navigation conditions in the inlet. Acceleration of the maintenance dredging schedule of the federal channel was crucial to navigational safety at the Inlet, including for search and rescue missions of the U.S. Coast Guard fleet, stationed at Lake Montauk. NALCO was the dredging contractor awarded the small business maintenance work which was completed on December 13, 2011. Contract award to NALCO was \$414,500.00. Approximately 12,000 cy of sand were removed.

(<http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/9190/fact-sheet-lake-montauk-harbor-new-york-federal-navigation-channel.aspx>)

9. Fire Island Inlet to Moriches Inlet, Fire Island Stabilization Project (FIMI)

The Corps' FIMI project is an engineered dune and beach system which is planned for 19 mi. of Fire Island's beaches. The proposed project includes dredge material placement in existing overwash habitat in the project area. The volume of sand in the proposed project, approximately 7,000,000 cy, would represent the largest single project ever construction on Fire Island and would be accomplished at a full federal cost.

The proposed action also includes conservation measures for piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) in the form of bay and oceanside habitat maintenance and oceanside habitat restoration at Smith Point County Park. Sand for dune and beach construction would be obtained from designated offshore sand mining areas. The construction schedule would entail continuous dredging, sand placement, dune building, and beach construction over 2 consecutive years. Construction planned to be initiated in the fall of 2014.

B. Federally-Authorized Local Actions

Corps Regulatory Division: Issuance of permits under section 404 of the Clean Water Act and section 10 of the Rivers and Harbor Act, including Suffolk County Department of Public Works Channel Maintenance Dredging and beach disposal.

C. Completed and On-Going Studies/Reports

- 1.) FIMP Borrow Area Benthic Macro-Invertebrate Sampling (Reformulation Benthos: 3 Reports, Fall 2000 – 2003)
- 2.) Aerial Photographic Analysis/Vegetative Mapping, Fire Island Inlet to Montauk Point (Report, 2000)
- 3.) Analysis of Historic Vegetative Zonation Changes Associated with Breach and Overwash Events (First report complete, will be expanded to include 3 breach sites in summer of 2003)
- 4.) Mapping the Submerged Aquatic Vegetation (SAV) Beds in the Back-bay Habitats (1999 – 2003)
 - SAV Report, Phase I (with maps): Complete
 - SAV Report, Phase II (“Shape” and GIS database): Complete
 - SAV Report, Phase III (2003 sampling efforts)
 - SAV Report, Phase IV (2004-5 sampling efforts, entitled, “2006 Evaluation Report”)
 - SAV Report, Phase V (2006 sampling efforts)

Associated Reports:

- Draft Determination of Potential SAV in Great South Bay, Moriches Bay, and Shinnecock Bay (2004, for 2003 data)
 - “SAV Bed Characterization” (Final, with report above)
 - “SAV Evaluation Report” (2006, for years 2004 – 2005)
- 5.) Hard Clam (*Mercenaria mercenaria*) Growth Rates (2001 – 2003)
 - Report No. 1: Complete (2000)
 - Report No. 2: 2001 Efforts
 - Report No. 3: 2003 Efforts
 - 6.) FIMP “Beach Insects” Invertebrate Survey (2003)
 - 7.) Conceptual Model: Phases I, II, III (Final, 2002 – 2006)
 - 8.) FIMP Final Avian (Shorebird) and Terrestrial Summary Survey (Final, 2001 – 2003)
- The following Reports resulted:
- Final Avian Survey Summary Report (October 2003), same as No. 8 above.
(Note: No. 8 on small sheet, on web)
 - Small Mammal and Herpetile Survey Summary Report (May – August 2002)
- 9.) Cultural Projects (2003 – 2004)
 - 10.) Geographic Information System (GIS) Database/Web Coordination (2004 – 2006)
 - 11.) Final Backbay Benthic Invertebrate Survey (2003)

- 12.) EIS Preparation (Starting 2003; Ending 2006/2007)
- 13.) Air Quality Analysis Report (Starting 2004)
- 14.) Water Quality Report (1999)
- 15.) Borrow Area Comparison (2003 – 2004)
- 16.) Piping Plover Habitat Suitability Index (HIS) Model (1996 – 2001)
- 17.) FIMP Shorebird HEP Analysis (2001 – 2003)
- 18.) FIMP Analysis of Breach and Overwash Sediment Transport: Summary of Known Impacts Physical and Biological (Position Paper, 2001)
- 19.) Atlantic Coast of Long Island: FIMP Storm Damage Reduction Reformulation Study, Mitigation Screening (1999)
- 20.) Atlantic Coast of Long Island: FIMP Storm Damage Reduction Reformulation Study, Data Gap Analysis/Interim Progress Memorandum (1999)
- 21.) Atlantic Coast of Long Island: FIMP Reformulation Study, Intertidal Wetland and Estuarine Finfish (backbay botany and finfish – borrow sites) (One Report for Year 1 and Year 2, 2000 – 2002)
- 22.) CREEL Surveys (Draft 2000)
- 23.) Surf Clam Survey (2002)
- 24.) “Cover Type” Mapping (1) of Fire Island (FIMP) Vegetation (2001 – 2003)
- 25.) “Cover Type” Mapping (2) of Fire Island (FIMP) Vegetation (2003 – 2004)
- 26.) FIMP Storm Damage Reduction Reformulation Study: Reach Delineation
- 27.) Atlantic Coast of Long Island, FIMP Reformulation Study: Fire Island and WOSI Storm Damage Reduction Projects (1999)
- 28.) Environmental Scoping Document: Atlantic Coast of Long Island, FIMP Storm Damage Reduction Reformulation Study (1996)
- 29.) Atlantic Coast of Long Island, FIMP Reformulation Study: Alternatives Screening (1998)
- 30.) Planning Aid Letter, Restoration (2004)
- 31.) HEP/Restoration Site Selection, 2004-2005 (Continued, Part 2, 2006)
(Note: This is a 2-part study.)

Westhampton/WOSI Project, Etc.:

- 1.) Westhampton Dunes Intertidal Benthic Invertebrate Survey
 - Year 1 Westhampton (post placement)

- Year 2 Westhampton (post placement)
- “Eastern Shore Zone” sampling 1998 – 1999 (Final, 2003)
- 2.) Surf Clam Study (Summer 2001 and pre-dredging events)
- 3.) Finfish in the Backbay (Pikes Breach) (Completed 2001)
- 4.) Pikes Breach Closure Area Backbay Benthic Habitat Survey (2003)
- 5.) FIMP (Reformulation Study) WOSI and Cherry Grove, “Offshore Borrow Area Multi-Species Sampling,” (3 Separate reports - 6 month report, 1 year report [2000] and the upcoming 2003 data)
- 6.) Comparative Study of Beach Invertebrates on the Westhampton Barrier Island for Reformulation Study (Final, 1999)
- 7.) Monitoring Study: Effects of the Westhampton Interim Storm Damage Protection Project on Piping Plover Habitat at Pikes Beach 1993 – 2004
- 8.) General Investigation of Infauna from the Westhampton Borrow Areas (Final Report, CEB/Corps, 1996)
- 9.) WOSI EA (1999)
- 10.) Shinnecock Bay Finfish Survey (1986 – Present)
- 11.) Fire Island Interim and West of Shinnecock Borrow Area Benthic Invertebrate (and Water Quality Sampling):
- 12.) Atlantic Coast of Long Island, FIMP Reformulation Study: WOSI Multi-species Sampling (2000)

Fire Island and Others:

- 1.) Fire Island Interim EIS (Complete, 1999)
- 2.) FIMP: BCP (EA and Executive Summary, 1996)
- 3.) FIMP: Moriches to Shinnecock Inlet Reach, Interim Plan for Storm Damage Reduction Protection (Technical Support Document with Final EA: Corps, 1995)
- 4.) FIMP: Reach 1: Fire Island Inlet to Moriches Inlet, Interim Plan for Storm Damage Reduction Protection (Technical Appendices, volumes 1 and 2: Corps, 1996 – 1999)
- 5.) Fire Island Draft EIS: Atlantic Coast of Long Island (FIMP: Preliminary Draft EIS for Fire Island Interim Plan: 1999) - For related, see Final EIS, No. 1c.
- 6.) Jones Inlet Study: Basic Services Report (1982)
- 7.) EA: Moriches Inlet Sand Stockpiling Modification: Cupsogue County Park (1996)
- 8.) Benthic Invertebrate Survey: Napeague to East of Fire Island Inlet (2001)

- 9) Virginia Tech Shorebird Project (Response of Piping Plovers and their Invertebrate Prey to Habitats Created By Hurricane Sandy [On-going, initiated in 2013]): The goal of this project is to provide a broader ecological understanding of the ways in which breaches and Corps breach-fill projects affect piping plover populations and their invertebrate prey communities by comparing the dynamics of bird use and invertebrate densities in a breach area, two filled breach areas, overwash areas, and other areas. Ultimately Virginia Tech results will help refine the understanding of the time-frame and manner in which piping plover habitat develops and persists.

In addition to monitoring breeding piping plovers, a key goal in the first year of the study was to band piping plover adults and chicks to allow us to compare the relative contribution of local recruitment versus immigration to population growth in storm-created habitat and artificially closed breaches in subsequent years of the study.

Additional Reports:

- 1.) Surface Water Quality Monitoring (1976 – Present)
- 2.) U.S. Environmental Protection Agency (USEPA) Water Quality Monitoring (1970 – present)
- 3.) EA for Proposed Maintenance Dredging at Fire Island Pines: Town of Brookhaven (2002)
- 4.) Fire Island: EA, Rehabilitate Beach Facilities and Habitats at Barrett Beach and Talisman Beach (2001)
- 5.) Impacts of Barrier Island Breaches on Selected Biological Resources of Great South Bay, NY (NY SeaGrant, Final 2001)
- 6.) Estuarine Resources of the FIIS and Vicinity (NY SeaGrant, 1993)
- 7.) Fish and Wildlife Resource Studies for the FIMP Beach Erosion Control and Hurricane Protection Project Reformulation Study: Estuarine Resource Component (USDOI: Fish and Wildlife Service, Region 5, 1983)
- 8.) Peconic Estuary Program: SAV Study (1996)
 - Benthic sampling conducted in Westhampton Interim Project Area Borrow Area in spring/fall of 1996 and 1997;
 - Piping Plover Monitoring Study at Village of Westhampton Dunes (1995 – present);
 - Formulation of Habitat Suitability Index for the Piping Plover at Selected Locations (in progress);
 - Multi-species finfish sampling of WOSI and FIIP off-shore borrow areas;
 - WOSI intertidal placement area benthic invertebrate sampling;
 - WOSI off-shore borrow area surf clam and benthic invertebrate sampling;
 - Intertidal benthic invertebrate sampling for the FIMP;

- Vegetation mapping for the FIMP;
- Vegetation Change Analysis for the FIMP;
- Shinnecock and Easthampton Creel Surveys for the FIMP;
- Submerged Aquatic Vegetation surveys for the FIMP;
- Marsh/backbay finfish surveys for the FIMP;
- Pikes Beach Benthic recovery for the FIMP; and
- Hard Clam growth analysis (backbay) for the FIMP.

III. DESCRIPTION OF THE STUDY AREA

A. Study Area

The following project area description for the DMSP is excerpted from the Corps' Project Description draft document (U.S. Army Corps of Engineers 2014):

The Montauk Reach is the eastern most of the five designated Reaches within the overall FIMP study area; the location of the DMSP Study Area is shown on Figure 1. Montauk is the eastern most hamlet in the Town of East Hampton. It extends from Hook Pond in Easthampton to Montauk Point, a distance of about 20 miles. The Downtown Montauk project area consists of the business area in the hamlet of Montauk and is approximately 1 mile long by 0.25 mile wide. The Downtown Montauk project area is shown on Figure 2.

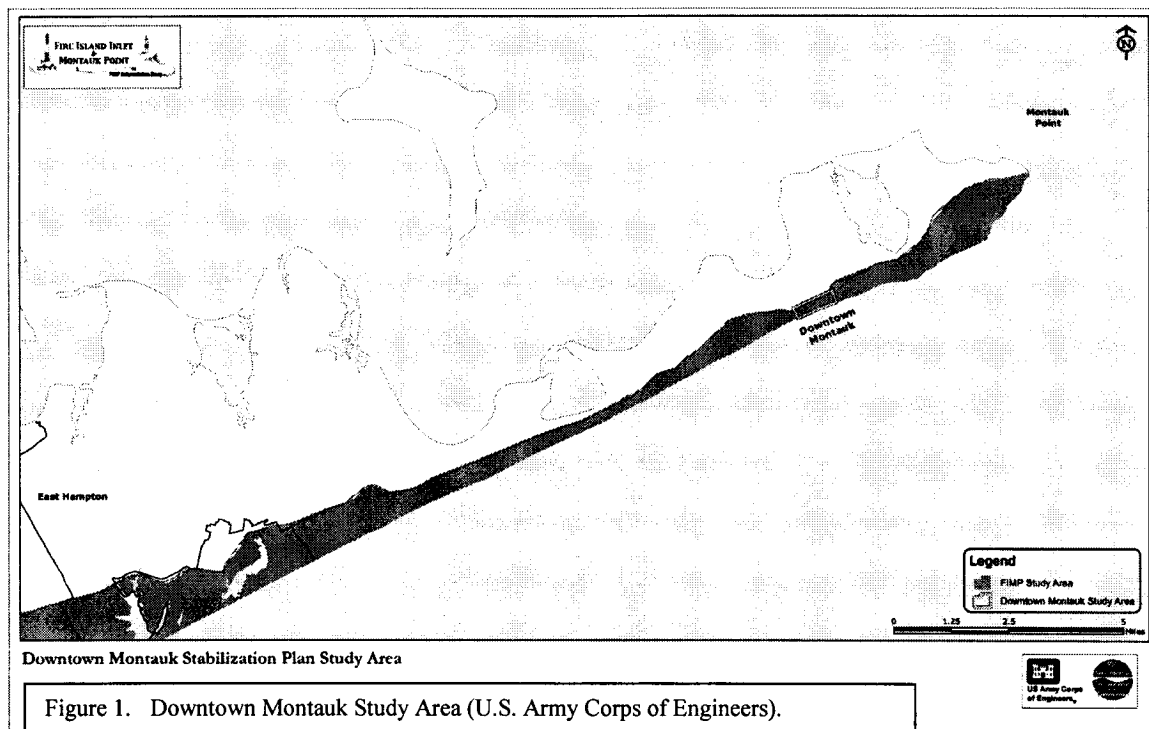




Figure 2: Downtown Montauk Project Area (Corps 2014)

Downtown Montauk is the largest business area in the hamlet of Montauk. The land use in the Downtown Montauk project area consists of motels, restaurants and shops for transient visitors making Montauk the most seasonal of the hamlets in East Hampton. Residential development is also present in the project area. The layout of downtown Montauk has largely been governed by its unique oceanfront setting and the development pattern. Dense development has resulted from the small size of the lots and the high appeal of a coastal resort community along the Atlantic Ocean.

Within the project area, ocean shoreline sand generally moves east to west alongshore, in response to waves and currents during normal conditions and during storms. This alongshore movement of sand maintains the prevailing shoreline conditions. In addition to alongshore movement, sediment is also exchanged in the cross-shore direction, through erosion and accretion of the beach and dune, exchange of sand through and across tidal inlets, continued erosion of the inner continental shelf, redistribution of reworked sediments, and during large storm events through the episodic transport of sand across the island.

The Service conducted an inspection of the project area and vicinity on July 8, 2014. The site consists of Atlantic Ocean shoreline, beach and dune habitats. The beach is a heavily used bathing beach and residential/beach resort buildings are located through the central and eastern portions of the project area back-dune areas. Some undeveloped narrow back-dune areas exist in

the western portion of the project area, but are abutted by a roadway (South Edgewater Avenue) and adjacent residential buildings/resorts. A major thoroughfare, Route 27/Montauk Highway is also adjacently north of the proposed action.

Fort Pond is also located adjacently north of the immediate project area in the western portion of the project area. Fort Pond is a freshwater pond further described in Section VI.(B) below.

Sand fencing and beach grass plantings were observed along the beach fronting hotels/resorts in the central and eastern portion of the project site.

Federal Lands

The Service's Amagansett National Wildlife Refuge is a 36-acre (ac) refuge located on the Atlantic Ocean shoreline in East Hampton, consisting of marine beach and dune and swale habitats. This Refuge is located approximately 10 mi. west of the project area.

State Lands

(<http://nysparks.com/regions/long-island/default.aspx>)

Napeague State Park: This 1,364-ac park, located west of the project area along the Atlantic Ocean shoreline, consists of dune and swale areas, marine beach, and ocean shoreline.

Hither Hills State Park: This 1,755-ac park, located west of the project area along the Atlantic Ocean shoreline, consists of dunes, swales, freshwater and tidal wetlands, woodlands, and ocean shoreline.

Montauk Point State Park: This 724-ac park, located east of the project area on the eastern tip of the south shore of Long Island along the Atlantic Ocean shoreline, consists of the lighthouse, parking areas and concession buildings, woodlands, tidal wetlands, and ocean shoreline.

Camp Hero State Park: This 415-ac park, located east of the project area along the Atlantic Ocean shoreline, consists of maritime forests, ocean shoreline, freshwater wetlands and historic structures.

Shadmoor State Park: The 99-ac Shadmoor State Park, located east of the project area and one quarter-mile east of Montauk Village, features more than 2,400 ft of ocean beach accessed by two stairways. The park, named for its open, rolling geography and the shadbush (*Amelanchier* spp.) that grows there, also has bluffs, freshwater wetlands that are part of the preserve, and hiking trails.

Town of Easthampton Lands

(<http://www.town.east-hampton.ny.us/DocumentsPDF/Recreation/Parks/MontaukParks.pdf>)

Kirk Park Beach: This beach, located within the western portion of the project area, consists of Atlantic Ocean shoreline and associated dune habitat.

Hither Plain Reservation: This reservation overlooks the ocean and is located just before entering Montauk Village, just west of the project area, consisting of Atlantic Ocean shoreline and associated dune habitat.

Hither Woods Preserve: This preserve contains over 500 ac of preserved maritime woodlands located west of the project area.

Turtle Cove: This cove is located east of the project area between Camp Hero and the Montauk Lighthouse on the oceanfront; this park consists of Atlantic Ocean shoreline.

Ditch Plains Beach: This beach, located just east of the project area, consists of Atlantic Ocean shoreline and associated dune habitat.

Audubon Important Bird Areas (IBA)

The Audubon Society has designated 2 areas within the vicinity of the DMSP as IBA's. The IBA program is a bird conservation initiative whose goal is to identify the most important places for birds and conserve them (Burger and Liner 2005). The IBA's and descriptions (excerpted from Audubon website: <http://iba.audubon.org/iba/stateIndex.do?state=US-NY>) are listed as follows:

1) Napeague Harbor and Beach

Site Description: This site includes the Napeague State Park, administered by NYSOPRHP, and surrounding wetlands and beaches, including Napeague Harbor.

Ornithological Summary: This site provides important habitat for the northern harrier (*Circus cyaneus*, male and female have been observed), piping plover, and common and least tern (*Sterna hirundo* and *S. antillarum*, respectively).

2) Montauk Point

Site Description: This site includes the easternmost point of land on Long Island, extending from Lake Montauk in the west to Montauk Point State Park and including the offshore waters. A large portion of the area is under public ownership, including Montauk Point State Park and Camp Hero State Park. The site contains an impressive diversity of maritime upland, wetland, and shoreline habitats. According to the NY-GAP land cover data, over 35 percent of this site is shrub habitat, which includes pitch pine-oak, shrub swamp, and successional hardwoods. The waters off of the point contain extensive blue mussel (*Mytilus edulis*) and kelp (*Laminaria agardhii*) beds and are an important feeding area for juvenile Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), and leatherback sea turtles (*Dermochelys coriacea*). Marine mammals including gray seals (*Halichoerus grypus*), harbor seals (*Phoca vitulina*), northern right whales (*Eubalaena glacialis*), finback whales (*Balaenoptera physalus*), humpback whales (*Megaptera novaeangliae*), and minke whales (*Balaenoptera acutorostrata*) regularly forage in or migrate through the near-shore waters.

Ornithological Summary: The point is an important waterfowl wintering area, with the largest winter concentration of sea ducks in the State. A waterfowl count in January 1997 documented 17,514 common eiders (*Somateria spectabilis*), 120 long-tailed ducks (*Clangula hyemalis*), 1,900 surf scoters (*Melanitta perspicillata*), 2,402 white-winged scoters (*Melanitta fusca*), 1,000 black scoters (*Melanitta nigra*), and 320 red-breasted mergansers. The 1996 NYSDEC mid-winter aerial waterfowl survey documented 4,300 scoters and 250 long-tailed ducks. The December 1995 CBC tallied 1,500 greater scaup, over 5,000 common eiders, over 500 white-winged scoters, over 600 common golden-eyes (*Bucephala clangula*), and over 600 red-breasted mergansers. King eiders (*Somateria spectabilis*) and harlequin ducks (*Histrionicus histrionicus*) occur here regularly in winter. Montauk is the southernmost wintering area for common eiders and harlequin ducks on the East Coast. Sizable concentrations of pelagic seabirds occur in the waters off the point. For example, 250 northern gannets (*Morus bassanus*) were counted in the December 1995 CBC. Wetland areas around Big and Little Reed Ponds support confirmed or probable breeding at-risk species, including the American black duck (*Anas rubripes*), least bittern (*Ixobrychus exilis*), northern harrier, and red-shouldered hawk (*Buteo lineatus*). Upland areas host characteristic shrub breeding species including the northern bobwhite (*Colinus virginianus*),

American woodcock (*Scolopax minor*), eastern kingbird (*Tyrannus tyrannus*), gray catbird (*Dumetella carolinensis*), brown thrasher (*Toxostoma rufum*), blue-winged warbler (*Vermivora cyanoptera*), prairie warbler (*Dendroica discolor*), eastern towhee (*Pipilo erythrophthalmus*), and field sparrow (*Spizella pusilla*).

IV. FISH AND WILDLIFE RESOURCE CONCERNS AND PLANNING OBJECTIVES

The purpose of consultation under the FWCA is to ensure equal consideration of fish and wildlife resources in the planning of water resource development projects. The Service's emphasis in this regard is to identify means and measures to mitigate potential adverse impacts of the proposed project and to make positive contributions to fish and wildlife resource problems and opportunities.

From the Service's perspective, a desired output of the proposed project is to ensure the protection of healthy marine, estuarine, and terrestrial ecological communities. Specifically, the Service recommends that conservation of fish and wildlife resources be accomplished by: (1) ensuring that the proposed project evaluate alternatives which achieve and maintain high biological diversity; (2) ensuring natural areas are protected and monitored throughout the life of the project; (3) ensuring construction designs promote high value habitats for Service trust species; (4) establishing conservation easements over the life of the project; and (5) incorporating education and outreach activities to the project to inform the public about the uniqueness and fragility of the coastal ecosystem.

Ultimately, the Service's Mitigation Policy (January 23, 1981, Federal Register v. 46 n. 15 pp. 7644-7663) establishes a number of criteria which, if met, would allow the Service to support a water resource development project. These criteria are:

- 1) The projects are ecologically sound.
- 2) The least environmentally damaging alternative is selected.
- 3) Every reasonable effort has been made to avoid or minimize damage or loss of fish and wildlife resources and uses.
- 4) All mitigation recommendations have been adopted with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal.
- 5) For wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need.

V. EVALUATION METHODS

The Corps' planning schedule and funding limitations precluded the Service from conducting field surveys and investigations for significant wildlife resources, such as migratory birds, in the study and FWCA analysis areas. As a result, descriptions of natural resources are based on previous studies for similar projects, relevant grey and peer-reviewed literature, local, state, and federal fish and wildlife reports and plans, and personal communications with knowledgeable biologists, planners, coastal geologists, and engineers.

In this report, the Service provides a discussion of federal trust resources (i.e., migratory birds, wetlands, endangered species, and anadromous fish), as well as shellfish, for the project area. The Corps will need to coordinate with the National Oceanic and Atmospheric Administration NOAA to complete an Essential Fish Habitat assessment for a number of marine shellfish and finfish species and consult with them pursuant to section 7 of the ESA, if applicable.

In developing mitigation recommendations, the Service relied on information in our files,

literature searches, and local, state, and federal conservation plans (e.g., bird conservation plans and local, state, and federal land and water conservation plans), and special designations (e.g., federally and state-identified Significant Fish and Wildlife Habitat Complexes) to derive appropriate recommendations for mitigation and fish and wildlife enhancement opportunities.

Fish and wildlife enhancement opportunities are presented which represent actions that are recommended as part of existing conservation plans, which would benefit migratory birds and the habitats in the study area that support them.

As discussed in more detail in the following section, this report discusses fish and wildlife resources which use the three major ecological systems (marine, estuarine, and terrestrial) found in the significant land and water complexes of the proposed project area.

VI. DESCRIPTION OF FISH AND WILDLIFE RESOURCES

The following text includes descriptions within the context of the entire FIMP study area and, where specific information is available, descriptions within the specific DMSP project area

A. Coastal Marine Ecosystem

1. Offshore

The offshore marine community consists of benthic organisms such as worms (*Polygordius triestinus*), sand dollar (*Echinarachnius parma*), small clam (*Tellina agilis*), surf clam (*Spisula solidissima*), and finfish such as summer flounder (*Paralichthys dentatus*) and little skate (*Raja erinacea*) (U.S. Army Corps of Engineers 1999). Marine mammals such as the harbor seal and sea turtles, such as the leatherback sea turtle have been reported to utilize the open marine community, as well (U.S. Army Corps of Engineers 1999).

Surf clams are a dominant species of inshore benthic infauna and also an important commercial fishery resource. Most surf clam beds off of Long Island occur from the beach zone to a depth of approximately 150 ft (Fay *et al.* 1983). Adult surf clams rarely voluntarily vacate their burrows, usually only being displaced by oceanic storms (Fay *et al.* 1983). Corps surveys, conducted in August and September of 2001 (most recent known comprehensive surveys), of 9 sampling areas distributed along the FIMP study area shoreline indicated that many survey areas had very small or no localized surf clam populations with the exception of areas off Fire Island Pines (borrow area 2AD) and areas east of Shinnecock Inlet (U.S. Army Corps of Engineers 2002). Surf clams were found in the FIMP borrow areas 2c (maximum of 2 bushels of clams in one of the survey stations) and in the vicinity of area 4c (FIMP borrow area 4A - maximum of 11 bushels) during these 2001 surveys, but the abundance was relatively low when compared to the borrow 2AD area that had a maximum of 67 bushels. Although these results indicate general trends in surf clam distribution within the FIMP area, these surveys occurred in potential borrow areas and sampling points were not necessarily distributed to quantify surf clam populations for the entire FIMP study area.

Many benthic macro-invertebrate species within the offshore marine substrate are important prey/forage for commercially and ecologically important finfish species. The Corps conducted benthic invertebrate surveys of potential borrow areas in the fall of 2000 and the spring of 2001 (U.S. Army Corps of Engineers 2004a). Dominant species observed in the fall of 2000 included amphipods (*Gammarus oceanicus* and *Protohaustorius wigleyi*), polychaete worms (*Magelona rosea* and *Tharyx acutus*), archiannelid worms (*Polygordius triestinus*), tanaid/crustaceans (*Leptochelia savignyi*), sand dollars, and bivalves (*Tellina agilis*). Dominant benthic invertebrate species observed during the spring of 2001 surveys included amphipods (*G. oceanicus*, *P. wigleyi*, and *Amphiporeia gigantea*), Nematoda, archiannelid worms (*P. triestinus*), bivalves (*T. agilis*), and polychaete worms (*Spiophanes bombyx* and *Syllidae* spp.). The Corps concluded that

abundances and diversity of benthic invertebrates were generally consistent among borrow areas and between seasons (U.S. Army Corps of Engineers 2004a).

Dominant fish species observed during Corps surveys of four potential borrow areas in 1999-2002 included Atlantic silverside (*Menidia menidia*), striped anchovy (*Anchoa hepsetus*), bay anchovy (*A. mitchilli*), spotted hake (*Urophycis regia*), butterfish (*Peprilus triacanthus*), scup (*Stenotomus chrysops*), Atlantic herring (*Clupea harengus*), silver hake (*Merluccius bilinearis*), winter flounder (*Pseudopleuronectes americanus*), winter skate (*Raja ocellata*), and little skate (U.S. Army Corps of Engineers 2004b). The Corps found that the greatest abundance of finfish occurred in the fall months at depths greater than 30 ft and that the off-shore bottom predominantly consisted uniformly of sand. A review of the Corps' finfish database indicate that the areas within the vicinity of Shinnecock Inlet and borrow area 2b (offshore of Fire Island Pines) had the highest diversity of finfish species (U.S. Army Corps of Engineers 2004b).

The Corps also surveyed the same four borrow areas for squid (*Teuthida* spp.), a carnivore that feeds upon small fish, crustaceans, benthic worms and shrimp, that is an important commercial fishery resource and prey species for many finfish species, including bluefish (*Pomatomus saltatrix*) and silver hake. Squid were observed at each of the borrow areas with the greatest numbers occurring in the fall months (U.S. Army Corps of Engineers 2004b). Squid abundance appears to be evenly distributed, except for a slightly higher abundance at the Shinnecock borrow area in summer and borrow area 2c (offshore of Sailors Haven) in the winter and spring.

Essential Fish Habitat (EFH)

The EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act authorize the National Marine Fisheries Service (NMFS) to evaluate development projects proposed or licensed by Federal agencies, including the Corps. If coastal development projects have the potential to adversely affect marine, estuarine, or anadromous species or their habitat, the NMFS makes recommendations on how to avoid, minimize, or compensate these impacts (National Oceanic and Atmospheric Administration website <http://www.nero.noaa.gov/hcd/webintro.html>).

This Act also establishes measures to protect EFH. NMFS must coordinate with other federal agencies to conserve and enhance EFH, and federal agencies must consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. In turn, NMFS must provide recommendations to federal and state agencies on such activities to conserve EFH. These recommendations may include measures to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from actions or proposed actions authorized, funded, or undertaken by that agency.

EFH areas are depicted in NMFS's website (<http://www.nero.noaa.gov/hcd/webintro.html>). Several of the dominant species discussed above are designated as EFH species by NMFS, including the Atlantic butterfish, scup, and winter flounder. The Corps will need to complete EFH consultation with NMFS for this project.

2. Nearshore

The Service (U.S. Fish and Wildlife Service 1996) defines the nearshore zone as the aquatic area between the offshore 20-meter depth contour and the mean low water (MLW) line. The nearshore bottom is a gently sloping terrace composed of a uniform sand sediment surface (U.S. Fish and Wildlife Service 1996). The NYSDEC's New York Natural Heritage Program (NYNHP) defines the community within this area as the Marine Subtidal Community (New York Natural Heritage Program 2002).

The nearshore community within the project area is also a sandy, sparsely-vegetated aquatic community dominated by benthic organisms such as the polychaete worm (*Mageloma papillicornis*) and dwarf tellin (*Tellina agilis*), and sea turtles, such as the Kemp's ridley sea turtle (U.S. Army Corps of Engineers 1999). Finfish observed in the nearshore zone include bluefish, striped bass (*Morone saxatilis*), alewife (*Alosa pseudoharengus*), Atlantic menhaden (*Brevoortia tyrannus*), northern kingfish (*Menticirrhus saxatilis*), and striped sea robin (*Prionotus evolans*) (U.S. Fish and Wildlife Service 1981).

3. Marine Intertidal

The marine intertidal gravel/sand beach community is characterized by tidal or wave inundation and has sand or gravel substrates (New York Natural Heritage Program 2002). This community is present along the majority of the Atlantic shoreline within the FIMP study area. The marine rocky intertidal community is also influenced by tidal and wave inundation, but its substrate consists of boulders/rocks. This community is present in the eastern portion of the FIMP study area, specifically along the south shore of the Montauk Peninsula (New York Natural Heritage Program 2002). The marine riprap/artificial shore community is present at the groins and jetties located along the FIMP area, Atlantic Ocean shoreline, including the jetties at Fire Island, Moriches, and Shinnecock Inlets, and groins at Westhampton Beach. One groin is also present at Ditch Plains Beach to the east of the project area.

Corps Surveys

The Corps contracted EEA, Inc. to survey benthic invertebrates from Shinnecock Inlet east to Montauk Point (a total of 24 transects), within the marine intertidal community, from the wrack line, mid-tide zone and surf zone. The survey was segmented into four reaches: the Montauk Headlands (described as shorelines with large boulders and rocks on short beaches below heavily eroded bluffs), Ditch Plains (described as areas with sandy beaches and areas with rocks and boulders), Coastal Ponds (in front of Mecox Bay, Sagaponack Pond, and Georgica Pond, described as being influenced by washout events and materials from the ponds), and east of Shinnecock Inlet (described as sandy beach). Surveys were conducted in May and November/December of 2000 (EEA, Inc. 2003).

May 2000 Survey

East of Shinnecock Inlet: Polychaete worms (*Scolecopsis squamata*), and amphipods (*Gammarus oceanicus* and *Amphipoda* spp.) were the dominant species, both found more in the mid-tide zone.

Coastal Ponds: Nematoda (*Nematoda* spp.), found in the wrack line and mid-tide zones; polychaete worms (*S. squamata*), found more in the surf and mid-tide zones; and bivalves/blue mussel found in the mid-tide zones, were the dominant species.

Ditch Plains: Blue mussel, found primarily in the mid-tide and surf zones, was most dominant, followed by polychaete worms (*S. squamata*), found more in the surf and mid-tide zones, and amphipods, found in the wrack line and surf zone.

Montauk Headlands: Blue mussel, found primarily in the mid-tide and surf zones, was most dominant, followed by amphipod species, found primarily in the surf zone; and Gastropoda (*Littorina littorea*), found in the mid-tide zone.

November/December 2000 Survey

East of Shinnecock Inlet: Amphipods (*G. oceanicus*), found primarily in the mid-tide and surf zones, were most dominant, followed by polychaete worms (*S. squamata*), found in the surf zone.

Coastal Ponds: Polychaete worms (*S. squamata*), found in the mid-tide and surf zones, were most dominant, followed by Nematoda (*Nematoda* spp.), found in the mid-tide zone.

Ditch Plains: Polychaete worms (*S. squamata*, *Ophelia bicornis*), found primarily in the mid-tide and surf zones, were most dominant, followed by Nematoda (*Nematoda* spp.), found in the wrack line.

Montauk Headlands: Polychaete worms (*Ophelia bicornis*, *Glycera* spp.), found primarily in the surf zone, were most dominant, followed by Nematoda (*Nematoda* spp.), found in the wrack line.

EEA, Inc. concluded that: a) abundance and diversity of infauna generally increased from west to east; b) most biomass was attributable to polychaete worms, with the exception of the Montauk Headlands Reach, where mollusks and periwinkle (*Littorina littorea*) were dominant; c) surf and mid-tide zones had higher abundances than the wrack line; and d) organisms in the eastern reaches (Ditch Plains and Montauk Point) were dissimilar to those in the western reaches (Shinnecock Inlet east and the Coastal Ponds) (EEA, Inc. 2003).

EEA, Inc. also compared their results with previous studies of ocean shoreline benthic infauna conducted on Fire Island (Kluft 1999), Westhampton Beach (EEA, Inc. 1999), and along the New Jersey shoreline (Vittor 1999). EEA, Inc. concluded that their study findings were similar to those on the Long Island barrier beaches but differed from those on New Jersey beaches, where Rhyncocoela (nemertean worms – *Nemertean* spp.) was dominant and overall abundances were higher, as were the number of sampling stations (twice as many). The nemertean worms, which live under rocks or burrow in soft substrates, were rarely collected in EEA, Inc.'s efforts and none were collected in the Fire Island study. It was not clear to EEA, Inc. why this species was found in large numbers in some areas and not in others (EEA, Inc. 2003a).

EEA, Inc. observed extensive tire ruts across the western beaches of the study area (just east of Shinnecock Inlet). These areas were open to vehicular traffic, which may have accounted for the low numbers of organisms observed in the wrackline zone (EEA, Inc. 2003).

Refer to EEA, Inc. (2003) for a complete listing of species observed and a more comprehensive discussion of study findings.

A comparison of the findings of this study and the study of the eastern portion of the FIMP study area described above, indicated seasonal similarities in abundances and taxa, but differences along the transects. In this study of the western portion of the study area, there were a higher number of benthic invertebrates found in the high and wrack locations, while the study of the eastern portion of the study area showed higher organism abundances in the mid and surf zones than the wrack (U.S. Army Corps of Engineers 2005). This phenomenon may be due to the fact that the shoreline of the eastern portion of the study area, primarily Montauk Point and Ditch Plains, is armored with stones, boulders, and coarse sand, while the western portions consist of sand. Additionally, off-road vehicle (ORV) traffic affects wrackline abundances (Kluft and Ginsberg 2009).

Refer to U.S. Army Corps of Engineers (2005) for a complete listing of species observed and a more comprehensive discussion of study findings.

B. Ocean Beach and Dune Ecosystem

1. Marine Beach

Vegetation

Dominant vegetation observed during a July 8, 2014, site inspection included American beach grass (*Ammophila breviliqulata*), dusty miller (*Artemisia stelleriana*), seaside goldenrod (*Solidago sempervirens*), and beach pea (*Lathyrus japonicus*). Other species associated with this habitat that is likely to occur include sea-rocket (*Cakile edentula*) and seaside spurge (*Chamaesyce polygonifolia*) (New York Natural Heritage Program 2002).

Benthic Species

Dominant species/taxa observed in pitfall traps (in the wrackline, supratidal, and grass zones) from above-described surveys conducted in the spring and fall of 2003, included brine fly (*Ephydriidae* spp.) and ground beetle (*Clivina* spp.), beach flea amphipods (*Talorchestia longicornis* and *T. megalopthalma*), and incidental collections of blue mussel (U.S. Army Corps of Engineers 2005a). In the spring, *T. longicornis* was more dominant while *T. megalopthalma* was more dominant in the fall. Generally, *T. longicornis* was more dominant in the wrack line and supratidal zone while *T. megalopthalma* was more dominant in the grass zone. There was a greater abundance of invertebrates captured/observed in the spring than the fall, with the greatest abundance along the beaches fronting the Great South Bay (Old Inlet).

Significant Habitats

The project area and vicinity are within the Service's Montauk Peninsula significant habitat complex (Service designated complex No. 7) (U.S. Fish and Wildlife Service 1996). The following description is excerpted from the Service's Significant Habitats and Habitat Complexes of the New York Bight Watershed document ([http://nctc.fws.gov/resources/knowledge-resources/pubs5/web_link/text/mp_form.htm#Montauk Peninsula](http://nctc.fws.gov/resources/knowledge-resources/pubs5/web_link/text/mp_form.htm#Montauk%20Peninsula)) (USFWS 1996):

The maritime moorlands and forest communities of the Montauk Peninsula are regionally significant and noteworthy not only for their uniqueness and restricted geographical occurrence, but also for their relatively pristine condition. Some upland areas on the Montauk Peninsula, especially on Hither Hills, contain some of the largest undeveloped tracts of maritime deciduous forests in the region, including stands of the globally rare maritime oak-holly forest. This forest type is restricted in the New York Bight region to undeveloped barrier beaches of Long Island and New Jersey and the eastern end of Long Island. Montauk contains the larger of two remaining maritime heathlands in New York: Montauk Mountain and the East Hampton Heathland. Maritime grasslands occur only on Long Island, Block Island, Martha's Vineyard, Nantucket, and Cape Cod on land formed from the terminal moraine of the Wisconsin glaciation. These communities on Montauk, including those found at Shadmoor Ditch Plains, Montauk Downs, Hither Hills, and the Big Reed Oyster Pond complex, provide essential habitat for a number of regionally and globally rare plant species, including two of only twelve known remaining populations of sandplain gerardia in the world. Nantucket juneberry and bushy rockrose are endemic to these maritime sandplain communities. A successional maritime forest along with maritime shrublands, a small example of a coastal plain poor fen, and an occurrence of the rare swamp pink occur at Caswell Cliff (Montauk Moorlands). Other rare plants found in the maritime grasslands/heathlands include New England blazing-star, lance-leaved loosestrife, pine barren gerardia, Emmon's sedge, dwarf plantain (Plantago pusilla), whorled mountain-mint, grassleaf ladies'-tresses, fringed boneset (Eupatorium hyssopifolium var. lacinatum), sandplain flax, and orange fringed orchid (Platanthera ciliaris). Grassland birds such as the upland sandpiper (Bartramia longicauda) were once abundant on the grasslands on Montauk, but have disappeared as the grasslands succeeded into shrubs and forest. The blue-spotted salamander, a rare glacial relict, is found in this region only on the Montauk Peninsula, where it may occur locally in fairly high densities.

This disjunct population is one of the few locations in the Northeast where this species has not hybridized with the Jefferson's salamander (Ambystoma jeffersonianum). The small freshwater ponds that are interspersed throughout the upland areas of the peninsula support several rare aquatic plant species such as featherfoil, water-pennywort, dwarf bulrush, and northeastern smartweed (Polygonum hydropiperoides var. opelousanum).

Napeague Beach is one of the largest remaining areas of undeveloped beach and back dune ecosystems on Long Island, with extensive dunes and maritime interdunal swale communities. These beaches, dunes, and swales support breeding by about 30 species of birds, including grasshopper sparrow which nest in the grassy dune areas at Napeague Beach. Seven species of amphibians and reptiles, including a large population of eastern spadefoot toad (Scaphiopus h. holbrookii) as well as Fowler's toad (Bufo woodhousei fowleri), eastern box turtle (Terrapene c. carolina), and eastern hognose snake (Heterodon platyrhinos) are all known to occur in the swales and surrounding uplands. Abundant small mammal populations provide prey for raptors that feed in the area during fall migration; these include American kestrel (Falco sparverius), merlin (Falco columbarius), sharp-shinned hawk (Accipiter striatus), northern harrier, osprey, peregrine falcon, and Cooper's hawk (Accipiter cooperii). Northern harrier, merlin, and short-eared owl (Asio flammeus) also feed in this area in the winter. Dunes and interdunal swales at Napeague Beach, Walking Dunes, and Napeague Meadows (Promised Land) include some of the largest and most intact examples of pitch pine-dominated maritime dune woodlands in New York, and support several rare plant species, including pine barren sandwort, New England blazing-star, evening primrose (Oenothera oakesiana), and the best occurrence in New York of curly-grass fern. A large brackish/salt marsh area at Napeague Meadows supports several of the plant species occurring in the interdunal swales as well as necklace sedge, coast flatsedge, marsh fimbry, slender crabgrass, heart-winged sorrel (Rumex hastatulus), and seaside plantain (Plantago maritima ssp. juncoides).

Sand beaches along the Atlantic Ocean at Napeague Beach support nesting by piping plover and small colonies of least tern. The Hicks Island and Goff Point Beaches, at the entrance to Napeague Harbor along Block Island Sound, support nesting by these two species as well as roseate tern, common tern, black skimmer (Rynchops niger), American oystercatcher (Haematopus palliatus), herring gull (Larus argentatus), and great black-backed gull (Larus marinus). Piping plover and least tern have also historically nested at the entrance of Oyster Pond near the tip of Montauk Point. The globally rare seabeach knotweed (Polygonum glaucum) occurs on both the Atlantic Ocean and Block Island Sound beaches; the federally listed threatened seabeach amaranth (Amaranthus pumilus) historically occurred on several of these beaches and this annual plant could potentially reestablish here or be reintroduced from other south shore populations.

The open waters of the embayed ponds and harbors along Block Island Sound, including Napeague Bay, Napeague Harbor, Fort Pond Bay, and Lake Montauk, are important waterfowl wintering areas for greater and lesser scaup (Aythya marila and A. affinis), red-breasted and common mergansers (Mergus merganser and M. serrator), Canada goose (Branta canadensis), American black duck (Anas rubripes), bufflehead (Bucephala albeola), and common goldeneye (Bucephala clangula). These same areas and associated marshes are productive nesting and feeding areas for American black duck, least bittern (Ixobrychus exilis), mallard (Anas platyrhynchos), osprey, and northern harrier. Finfish and shellfish populations in both nearshore and embayed aquatic habitats in this area are diverse and abundant. The species composition varies over the area; silversides (Menidia spp.), killifish (Fundulus spp.), menhaden (Brevoortia tyrannus), and bay anchovy (Anchoa mitchill) are abundant forage species which make these areas important feeding and nursery areas for a number of estuarine-dependent commercially and

recreationally important species, including bluefish (Pomatomus saltatrix), weakfish (Cynoscion regalis), summer flounder (Paralichthys dentatus), winter flounder (Pleuronectes americanus), striped bass (Morone saxatilis), northern quahog (Mercenaria mercenaria), American oyster (Crassostrea virginica), and bay scallop (Argopecten irradians).

Fort Pond is one of the largest freshwater ponds (65 hectares [160 acres]) on Long Island. It has a maximum depth of 7.9 meters (26 feet). Although there is significant shoreline development, this pond supports one of the three major smallmouth bass (Micropterus dolomieu) populations on Long Island. There is a significant recreational warmwater fishery here, augmented by stocking. Striped bass hybrid species were formally stocked; a new management strategy is to stock walleye (Stizostedion vitreum) in the future. The pond is also an important waterfowl wintering area, especially for Canada geese.

The complex of freshwater and brackish wetlands around Big and Little Reed Ponds support confirmed or probable nesting by northern harrier, red-shouldered hawk, least bittern, Canada goose, mallard, redhead (Aythya americana), American black duck, and blue-winged teal (Anas discors), as well as feeding by these species, other waterfowl, herons, egrets, and songbirds. Blue-spotted salamanders occur in the swales around Big Reed Pond. The pond and stream system of Big and Little Reed Ponds is one of the few spawning areas on Long Island for alewife (Alosa pseudoharengus) which migrate from the ocean to spawn in shallow water in spring. Big Reed Pond also contains an excellent largemouth bass fishery.

Oyster Pond is probably the best example of a brackish and coastal salt pond with an undeveloped watershed in New York. The wetlands around the pond support blue-spotted salamander and southern leopard frog, as well as nesting and feeding by a variety of waterfowl and waterbirds. Rare plants along the shoreline include Mitchell's sedge and the only known population of seabeach purslane in New York.

The nearshore open waters surrounding Montauk Point provide regionally significant and critical wintering waterfowl habitat and concentration areas; they also contain extensive beds of blue mussel (Mytilus edulis) and kelp (Laminaria agardhii). Found here in significant numbers, particularly in winter, are several species of special emphasis in the region, such as common loon (Gavia immer), common eider (Somateria mollissima), white-winged scoter (Melanitta fusca), surf scoter (Melanitta perspicillata), black scoter (Melanitta nigra), bufflehead, common goldeneye, great cormorant (Phalacrocorax carbo), and red-breasted merganser. Harlequin duck and king eider (Somateria spectabilis) occur here regularly during the winter, and this is the southernmost regular wintering population of harlequin ducks on the East Coast. On the Block Island Sound side of the peninsula, in somewhat more protected areas, American black duck (Anas rubripes) and oldsquaw (Clangula hyemalis) occur in large wintering concentrations. The sea duck concentrations around Montauk Point are the largest nearshore winter concentrations in New York, and notable concentrations of pelagic seabirds occur in the spring, summer, and fall. The Christmas bird count on Montauk Point consistently tallies from 125 to 135 species, one of the best totals in the Northeast.

The nearshore waters off Montauk Point are one of the most important nearshore areas for sea turtles and marine mammals in the New York Bight region. Recent studies indicate that the nearshore waters within Peconic and Gardiners Bays, Block Island and Long Island Sounds, and off Montauk Point are critical developmental habitat for juvenile Atlantic ridley sea turtles, one of the rarest of the marine turtles, and a major feeding area for the loggerhead sea turtle. A regular feeding area for leatherback sea turtles also occurs just to the east of Montauk Point. Gray and harbor seals (Halichoerus grypus and Phoca vitulina)

often use the rocks around Montauk Point and other shoreline areas, including Culloden Point, as haulout areas during the winter. Northern right whales (usually individuals) are regularly sighted migrating through the area, mostly from March through June. Small aggregations of finback whales feed close to shore from Shinnecock Inlet to Montauk Point from January to March. Minke whales (*Balaenoptera acutorostrata*) occur along the south shore throughout the year but are more abundant in the summer. Humpback whales feed all around Montauk Point, primarily between June and September. An inshore population of bottlenosed dolphin (*Tursiops truncatus*) feed along Long Island's south shore from June through September. Regular sightings of harbor porpoise (*Phocoena phocoena*) in nearshore waters off Montauk Point and Block Island Sound occur from December to June.

Corps Avian Surveys

The Corps of Engineers conducted a one-year survey of avian species within the FIMP study, specifically along the barrier islands from Fire Island Inlet to just east of Shinnecock Inlet, along 20 transects from May 2002 – May 2003 (U.S. Army Corps of Engineers 2003). Beach habitat, including intertidal and supratidal areas, consisted of the largest percentage of habitat surveyed. Dominant species observed during these surveys include:

- Black-bellied plover (*Pluvialis squatarola*), forages in beach habitat during winter and migration;
- Dunlin (*Calidris alpina*), forages in beach habitat during winter and migration;
- Great black-backed gull (*Larus marinus*), year-round foraging;
- Herring gull (*Larus argentatus*), year-round foraging;
- Least tern, forages and breeds in spring/summer;
- Piping plover, forages and breeds in spring/summer; and
- Sanderling (*Calidris alba*), forages during winter and migration.

Other species regularly observed in the beach habitat include the American oystercatcher (*Haematopus palliatus*), which forages and breeds in the spring/summer, and semi-palmated plover (*Charadrius semipalmatus*), which forages during migration.

The Service conducted avian surveys for the FIMP project from May – July of 1982, from Moriches Inlet to Montauk Point. These surveys identified many of the above listed species as dominant in the marine beach habitat, as well as the American kestrel (*Falco sparverius*) and horned lark (*Eremophila alpestris*), both year-round residents (U.S. Fish and Wildlife Service 1983).

Federally- and State-listed Species

Beach habitat also provides essential foraging and nesting habitats for nesting shorebirds, including the federally-listed threatened piping plover, endangered roseate tern (*Sterna dougallii*), and New York State-listed threatened least tern, common tern, and species of special concern black skimmer (*Rhynchops niger*). The red knot (*Calidris canutus rufa*), a candidate species for ESA protection, does utilize sandy beaches within the FIMP/DMSP study area as stop-over/foraging habitat during spring and fall migrations. Seabeach amaranth (*Amaranthus pumilus*) is a federally-listed threatened plant that grows in this habitat.

There are no records of any of the described federally or state-listed ground-nesting shorebirds breeding or seabeach amaranth growing in the project area (New York State Department of Environmental Conservation 2002).

The Endangered Species Act section 7 consultation for this project will be addressed in a separate

document.

2. Dunes and Swales

Vegetation

Dominant vegetation observed in the dune and swale habitat during a July 8, 2014, site inspection included poison ivy (*Rhus radicans*), bayberry (*Myrica pensylvanica*), seaside goldenrod, shadbush (*Amelanchier* spp.) and salt-spray rose (*Rosa rugosa*).

Corps Avian Surveys

Dominant species observed within the dune/swale habitats during Corps surveys (U.S. Army Corps of Engineers 2003) from May 2002-May 2003 as part of the FIMP study included:

Brown-headed cowbird (*Molothrus ater*), year-round resident;
Common yellowthroat (*Geothlypis trichas*), summer resident, spring and fall migrant;
Mourning dove (*Zenaida macroura*), year-round resident;
Dark-eyed junco (*Junco hyemalis*), winter resident, spring and fall migrant;
Northern mockingbird (*Mimus polyglottos*), year-round resident;
Rufous-sided towhee (*Pipilo erythrophthalmus*), year-round resident;
Red-winged blackbird, year-round resident;
Sharp-tailed sparrow, year-round resident;
Song sparrow (*Melospiza melodia*), year-round resident; and
Yellow-rumped warbler (*Dendroica coronata*), winter resident, spring and fall migrant.

Corps Small Mammal and Herpetile Surveys

The Corps conducted small mammal and herpetile (reptiles and amphibians) surveys in May through August of 2002 as part of the FIMP study. The white-footed mouse (*Peromyscus leucopus*) and meadow vole (*Pennsylvaniana maniculatus*) were the most dominant small mammals observed in the dune and swale habitats. Other mammals observed within this habitat include the house mouse (*Mus musculus*), white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*) and red fox (*Vulpes vulpes*). The eastern garter snake (*Thamnophis sirtalis*) and Fowler's toad (*Bufo woodhousei*) were the only herpetiles observed within this habitat (U.S. Army Corps of Engineers 2004c).

The Corps' herpetile surveys echo the findings of the Service in herpetile surveys conducted in April-July 1982 for the FIMP study (from Moriches Inlet to Montauk Point), in which the Fowler's toad and eastern garter snake were dominant (U.S. Fish and Wildlife Service 1983). An additional species observed during Service surveys within dune and swale habitats was the eastern spadefoot toad (*Scaphiopus holbrookii*).

C. Fort Pond

See Section VI (B) for a description of the freshwater Fort Pond.

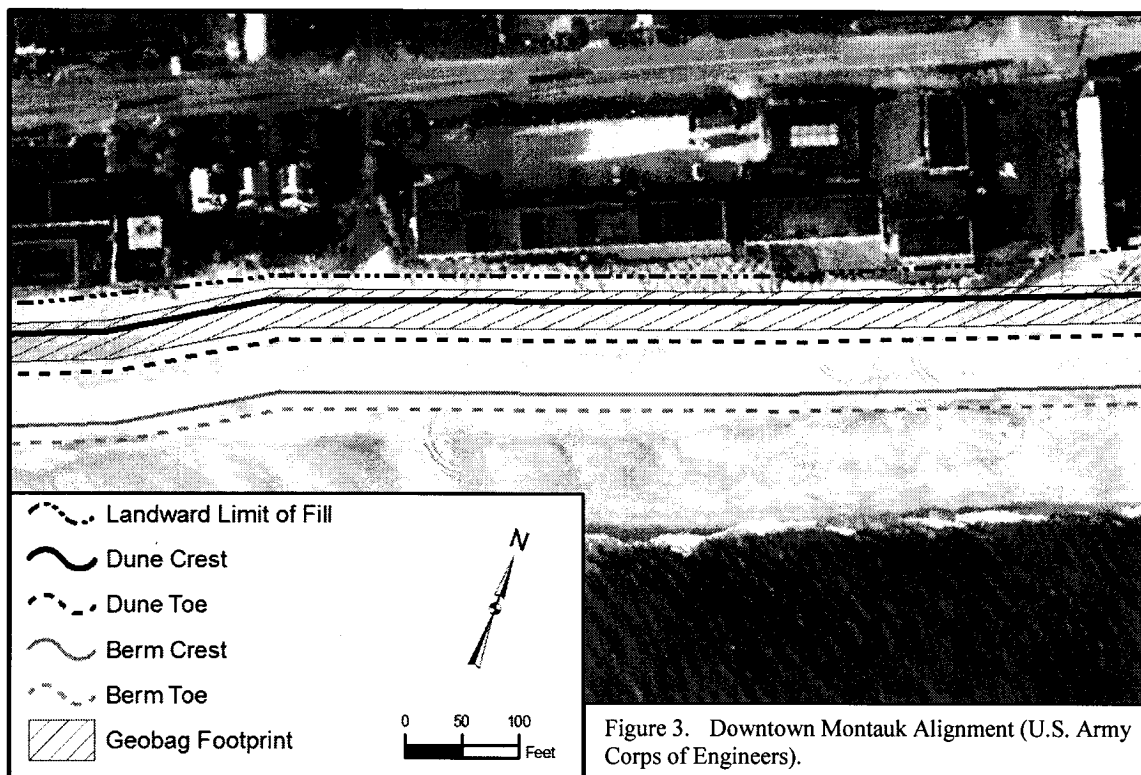
VII. DESCRIPTION OF SELECTED PLAN

A. Description of the Proposed Project

The following project description for the DMSP is excerpted from the Corps' Project Description draft document (U.S. Army Corps of Engineers 2014):

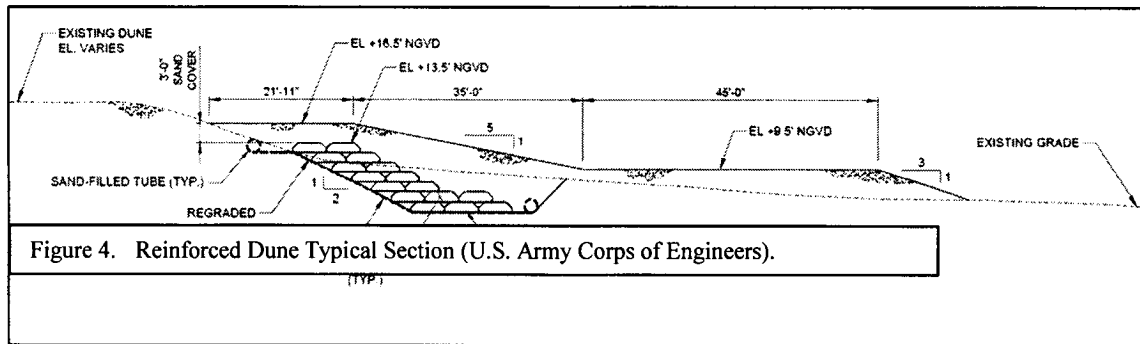
The proposed design includes 3,100 feet of reinforced dune extending from South Emery Street to Atlantic Terrace Motel and tapers into high dunes at both ends of the Project Area. The extent of the proposed plan was selected to provide protection to all of the shorefront commercial buildings in Downtown Montauk.

The design alignment defines the cross-shore location of the design section. For the Stabilization Project the alignment closely follows the existing dune (+ 12 ft NGVD contour). In some locations the alignment was adjusted to ensure that the footprint of the GSCs is seaward of shorefront structures. Figure 3 shows an example of the alignment in the Project Area.



Design Section

A typical section of the proposed Reinforced Dune is shown in Figure 4. The core of dune consists of sixteen 2.4 ton GSCs with filled dimensions of approximately 5.5 ft long, 3.5 ft wide, and 1.5 ft tall. For greater stability the GSCs are aligned with the long side perpendicular to the shoreline with an overlap of 50% of the filled width. The GSCs are stacked along the existing dune at a 1V:2H slope. The GSCs extend from a toe elevation of +3 ft to a crest elevation of +13.5 ft NGVD. In order to increase the resiliency of the design and reduce the potential for undermining, the proposed design includes a 45 foot wide berm cap at +9.5 ft NGVD. The additional sand will provide protection to the toe of the structure and decrease the likelihood of exposure of the GSCs during small storm events.



Geotextile Sand Containers

Geotextile Sand Containers (GSC) are an emerging technology and design guidance for the use of GSC in coastal protection structures is still evolving. Large scale model tests and field tests have shown that the dislodgment and pullout of the slope containers by wave action, including the sliding and the overturning of crest containers, are strongly affected by the deformation of the sand containers (Dassanayake and Oumeraci, 2012). Recent advances in understanding the hydraulic stability of the GSC under wave attack (Wouters, 1998; Pilarczyk, 2000; Oumeraci et al, 2003; and Dassanayake and Oumeraci, 2012) have led to several design formulae for GSC structures. Most of the design formulae relate the stability of the GSC to the surf similarity parameter and wave height. An increase in the wave height and wave period results in decreased stability of the GSCs and increases the required size and weight of the GSC.

The aforementioned design guidance led to selection of 2.4 ton GSCs with filled dimensions of approximately 5.5 ft long, 3.5 ft wide, and 1.5 ft tall. In order to increase the stability of the GSCs the long side of GSCs is laid out perpendicular to the shoreline with an overlap of 50% of the filled width. A total of 14,171 GSC are required to construct the reinforced dune core.

Sand Fill Volumes

A total of 65,000 cy of sand are required to construct the reinforced dune. Approximately two-thirds of the sand fill will be used to fill the GSCs or placed in the dune. The remaining one-third will be used to construct the berm cap. A portion of the sand, 20,000 cy, will be obtained from excavation and re-grading of the existing dune. The remaining 45,000 cy will be obtained from upland sediment sources.

Upland Sediment Sources

Due to the relatively small quantity of sand fill needed to construct the project it is recommended that the sand fill be obtained from upland sediment sources. The cost of mobilizing a dredge, approximately \$4 million, would not be cost-effective considering the relatively small quantities of sand fill required.

Two upland sediment sources that could meet the sediment demands of the project were identified within 25 miles of the Project Area. The compatibility of the upland sediment and native sediment was evaluated based on the grain size distribution and color. The analysis indicated that the median grain size of the upland sediment sources (0.51 and 0.44 mm) is the same or slightly larger than the native sediment (0.42 mm). In addition, the grain size distribution of the upland sediment sources and native sediment are similar.

Effective Project Life

The Stabilization Project has been evaluated over a 15 year period. In the absence of a sediment management solution as part of the overall FIMP Reformulation Study, long-term erosion will lead to a reduced level of protection increasing the likelihood of undermining and displacement of the reinforced dune core. In addition, degradation and failure of the Geotextile Sand Containers (GSC) is inevitable as the GSCs will breakdown over time from UV radiation, vandalism, and debris. Continued maintenance over the effective project life is required to maintain the sand dune cover and increase the longevity of the GSCs.

In a letter dated July 31, 2014 (attached), the Corps further clarified that sand will only be placed above the Ordinary High Water (OHW) mark, avoiding the intertidal ecological zone.

B. Future Without Project Conditions

For the purposes of this analysis, it is assumed, in the Future Without Project condition, that the projects described in Section II (A) shall continue to be implemented within the FIMP study area.

The recent acceleration of sea-level rise, coupled with the vulnerable shoreline as described by the Corps in Section I above, will result in continued beach erosion and dune displacement. Future sea levels are expected to rise at a greater rate, causing increased frequency of erosion, overwash and potential creation of new inlets/breaches. Small-scale storm damage protection projects would stabilize the ocean shoreline to some extent, which may minimize/limit the occurrence of overwash and new inlet formation, but presumably at a smaller-scale than the DMSP project would due to the smaller volumes of sand.

Increased frequency of overwash and/or breach events could result in the creation of early successional habitat/sparsely vegetated habitat preferred by many shorebirds (piping plovers, least tern, etc.) and annual coastal plants, such as seabeach amaranth, which, if left undisturbed, could result in an increase in abundance and productivity of these species (provided areas are properly managed). However, non-federal storm damage protection measures (beach nourishment, beach scraping, beach grass planting, and/or sand fencing installation) are likely to occur, or continue to occur in light of the infrastructure, commercial and residential development, and recreational activity in the vicinity.

VIII. DESCRIPTION OF PROPOSED ACTION IMPACTS ON FISH AND WILDLIFE RESOURCES

A. Direct and Indirect Impacts

The proposed action has the potential to directly and indirectly adversely impact fish and wildlife resources within the project area and the overall condition of the barrier island due to the reduced likelihood of natural processes resulting from the Corps' stabilization project.

Direct impacts include:

- Burial of marine beach invertebrate species; and
- Potential habitat alteration of dune habitat.

Indirect impacts include:

- Acceleration of vegetative succession in the dune habitat;

- Development of habitat preferred by mammalian and avian predators;

1. Marine Beach

The primary direct impact of the proposed action on the marine beach communities is the burial of marine beach invertebrates associated with the placement of sand. The DMSP entails dune reinforcement through the placement of geotextile sand containers and deposition of 65,000 cy of sand on 0.60 mi. (3,100 ft) of beach in the primary beach fill/dune construction area, burying the existing profile to an average depth of approximately 3-5 ft.

Although this action is a one-time, stand-alone construction project, the project will require continued maintenance, likely in the form of additional sand placement and/or beach scraping (U.S. Army Corps of Engineers 2014).

The beach present within the project area is currently a public bathing beach that is adjacent to beach resorts, hotels, and private residences and is used by a large number of patrons (hundreds), especially on weekends and holidays in the summer months. Therefore, the amount of recreational activity is not expected to significantly increase as result of this project due to the heavy recreational use that currently occurs. However, migratory shorebirds that may utilize the project site during spring and fall migrations, are particularly vulnerable to disturbance at roosting sites at high tides where the habitat available for roosting is diminished (U.S. Fish and Wildlife Service 1998). Human activities, such as project construction activities, may adversely affect foraging activity of some shorebird species (Burger and Gochfeld 1991). This potential impact is not expected to be significant due to the relatively small project area (less than 1 mile long).

The recovery of marine invertebrates will vary depending on the timing of the fill activity relative to the periods of highest biological activity in these zones of the beach, as well as compatibility of the dredged material with the existing beach substrate. Areas receiving sand in autumn will likely have a longer beach invertebrate recovery period than areas receiving fill in the winter and early spring. Geotextile sand containers could also inhibit/limit invertebrate burrowing which could result in these invertebrates avoiding the project area after the project is complete (Bessa *et al.* 2013).

In conclusion, the proposed action will bury the marine beach invertebrates present within this community and/or limit invertebrate burrowing. The loss of these organisms will impact shorebirds which feed on these organisms. These impacts could be compounded by local sponsor maintenance of the project area.

2. Dunes and Swales

The proposed project could also result in changes to the existing dune structure with the installation of the GSC's, as well as burial of dune vegetation and the acceleration of vegetation succession which could alter the dune habitat. Densely-vegetated areas serve as habitat for the red fox (*Vulpes vulpes*) and raccoon (*Procyon lotor*), two highly effective mammalian predators that have flourished on beaches associated with human recreation and development. The presence of both the gull and mammalian predators has contributed to the decline of shorebird populations. However, the Service recognizes that the Town of Easthampton's current management of the site as a recreational beach (bathing beach, recreational ORV access permitted) as well as dune stabilization practices (beach grass planting and snow fencing), while important from a cultural and economic perspective, are limiting factors in shorebird and coastal plant habitat suitability on the project site.

The installation of GSC could alter the structure of the dune. New York SeaGrant concluded that armoring structures designed to protect adjacent properties have minimal impact on the behavior of the shoreline over long geologic time scales due to their limited area of coverage and relatively short functional lifetime. However, these structures could cause substantial short-term, localized impacts if used improperly or in the wrong place (Tanski 2007). Since the degradation of the GSC is inevitable (U.S. Army Corps of Engineers 2014), these structures could be exposed and result in associated debris in the dune and beach habitats which could degrade the habitat value in the project area, including, but not limited to, the potential for the indigestible GSC material to degrade to small particles that could be consumed by foraging shorebirds, fish and invertebrates.

B. Cumulative Impacts

NEPA and Agency Planning/Environmental Analysis

The NEPA requires consideration of all reasonable alternatives (including a comparison of their environmental impacts) in addition to the No Action and Preferred Alternatives. The Corps' Policy and Planning: Planning Guidance (ER 1105-2-100, December 1990), Appendix F, paragraph 16, describes the level of review necessary for the Corps to fulfill NEPA requirements for environmental consequences. In regard to potential impacts of alternatives, it states, "Impacts should be quantified and clearly described as beneficial or adverse. The discussion shall identify direct, indirect, and cumulative impacts as defined in 40 CFR 1508.8, etc., and the mitigation measures...incorporated into the alternatives to avoid, minimize, rectify, reduce or compensate for those impacts." The discussion should include:

- "(1) Impacts of all alternatives including the proposed action;
- (2) Unavoidable adverse environmental impacts which cannot be avoided should the proposal be implemented;
- (3) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
- (4) Any irreversible or irretrievable commitments of resources which would be involved in the alternative should it be implemented."

As described in the Service's Mitigation Policy, the Service must consider project impacts as part of its review, including: (1) the total long-term biological impact of the project, including any secondary or indirect impacts regardless of location; and (2) any cumulative effects when viewed in the context of existing or anticipated projects. Direct impacts occur in the same place and location. Indirect impacts can occur later in time or farther removed in distance, but are still reasonably foreseeable. CEQ defines cumulative impact (40 CFR 1508.7) as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions..." Also, "...cumulative impacts can result from individually minor, but collectively significant actions taken place over a period of time."

With the exception of the Montauk Point Shoreline Stabilization Project, shoreline stabilization projects described in Section II above are west and down-drift (long-shore current and ocean shoreline sand generally runs east to west (U.S. Army Corps of Engineers 2014) of the project site and would not contribute to the cumulative impacts of this project. The Montauk Point project involves the installation of stone revetment which, while it could cause down-drift erosion adjacently west of that project area, is approximately 4.5 mi. east of the DMSP project area is therefore not expected to significantly contribute to the cumulative impacts of the proposed action.

Other than beach nourishment projects, local/state actions that are reasonably certain to occur in the project area that could potentially affect fish and wildlife resources include beach cleaning, the installation of sand fencing, continued recreational activity, and the maintenance of the proposed action to maintain the sand dune cover to increase the longevity of the GSCs.

The installation of snow fencing or the planting of beach grass are common practices in attempting to stabilize nourished beaches and have occurred on other sites on Long Island without federal (Service, Corps) or state (NYSDEC) coordination/authorization. These practices are currently occurring in the project area and the continuation of vegetation planting and snow fence placement, in association with beach nourishment will artificially accelerate growth of dense vegetation that precludes use of habitat by species which prefer open or sparsely vegetated beach habitats, including ground-nesting shorebirds and coastal plants. This effect will limit the amount of available suitable habitat for these species and will create suboptimal habitat conditions. Artificially-planted areas that rapidly grow into dense areas of perennial vegetation preclude use by these species. For example, Weakley and Bucher (1992) report that stabilization of seabeach amaranth habitat allows for succession to a densely-vegetated perennial community, rendering the beaches only marginally suitable for seabeach amaranth, which is rarely encountered in areas that have been snow-fenced. Although the potential for seabeach amaranth and other coastal plant presence is possible, the above-described management of the project site during the growing season severely limits habitat suitability for these species.

Another beach management practice not mentioned in the project description which could occur over the life of the project is beach raking. Town of Easthampton Beach raking/cleaning does occur on the ocean beach within the project area twice a week during summer months. Mechanized beach cleaning adversely affects seabeach amaranth and other coastal plants through the direct crushing of plants and removes the wrack line, an important forage microhabitat for shorebirds.

The Town of Easthampton authorizes off-road vehicle access on the ocean beach within the project area. ORVs severely limit ground-nesting shorebird and coastal plant habitat suitability through the disturbance of foraging and breeding behaviors, as well as crushing of unfledged chicks and plants. Kluft and Ginsberg (2009, p. vi) found that ORVs killed and displaced invertebrates and lowered the total amount of wrack, in turn lowering the overall abundance of wrack dwellers. In the intertidal zone, invertebrate abundance is greatest in the top 12 inches (in.) (30 centimeter [cm]) of sediment (Carley *et al.* 2010, p. 9). Intertidal fauna are burrowing organisms, typically 2 – 4 in. (5 – 10 cm) deep; burrowing may ameliorate direct crushing. However, shear stress of ORVs can penetrate up to 12 in. (30 cm) into the sand (Schlacher and Thompson 2008, p. 580).

Maintenance of the proposed action by the Town of Easthampton and/or the state of New York is expected after the one-time Corps project is complete. Maintenance activities could include: beach scraping (moving of sand existing on the beach to eroded areas); beach nourishment (upland or off-shore borrow areas); installation of sand fencing and/or beach grass plantings; or replacement of damaged GSCs. Each of these activities could have impacts to fish and wildlife resources addressed in Section VIII (A) above. Depending on how often these practices are required, most of these impacts would be prolonged or, in the case of burial of benthic resources, further compound project impacts by not allowing for the recovery of the benthic community.

IX. MITIGATION/FISH AND WILDLIFE ENHANCEMENT RECOMMENDATIONS

Service Mitigation Policy

The Service's Mitigation Policy (Policy) (U.S. Fish and Wildlife Service 1981) was developed to guide our preparation of recommendations on mitigating the adverse impacts of land and water

developments on fish, wildlife, their habitats, and uses thereof. It helps both the Service and the Federal action agency, in this case, the Corps, by assuring consistent and effective recommendations, by outlining policy for the levels of habitat mitigation needed and the various methods for accomplishing mitigation for habitat losses associated with such projects. It allows Federal action agencies to anticipate Service recommendations and to assist in the preparation of mitigation measures early, thus avoiding delays and assuring equal consideration of fish and wildlife resources with other project features and purposes (Fish and Wildlife Coordination Act (16 USC 661-667[e])).

The term “mitigation” is defined in the Service’s Mitigation Policy (U.S. Fish and Wildlife Service 1981) as: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating impacts over time; and, (e) compensating for impacts by replacing or providing substitute resources or habitats.

Corps Proposed Conservation Measures

The Corps has proposed the following measures that will avoid and/or minimize some of the project’s impacts to fish and wildlife resources in their project description (U.S. Army Corps of Engineers 2014):

- The GSCs will be buried with sand to provide suitable dune habitat.
- The grain size of the sand used to bury the GSCs is the same or slightly larger than the native sediment.
- The project is designed to maximize the stability of the GSCs and reduce the potential for undermining and exposure of the GSC which would diminish habitat suitability for above-described species.
- 45,000 cy of sand will be obtained from upland sediment sources and will avoid off-shore borrow area ocean bottom disturbances.

Service Recommended Conservation Measure

1) Measures to Avoid and/or Minimize Project Impacts

Additional measures that the Corps could incorporate into the project design to further avoid and/or minimize project impacts include:

- The Corps states that the grain size of the sand to be deposited on the beach is the same or slightly larger than the native sand. The Corps should insure that the sand to be placed on the beach and dune shall be consistent with the grain size (minimize/avoid sand larger than the native sand) and color on the naturally occurring beach to the greatest extent practicable.
- The authorized beach placement area shall be finished to the same slope as the surrounding beach. The area shall be graded at a gentle uniform slope with no piles, ridges, or holes left in the final graded beach placement materials.
- The Corps should coordinate with local sponsors to develop and implement a monitoring/management program to address potential GSC exposure and debris removal associated with structure degradation.

- The upland sediment should not be mined from suitable federally and state-listed species habitats or within buffer/adjacent areas of the NYSDEC's tidal or freshwater wetland jurisdictions without a state permit.

2) *Opportunities to enhance fish and wildlife resources in project area and vicinity*

- Personnel from the Town of Easthampton Trustees Natural Resource Division (D'Andrea pers.com. 2014) indicated that portions of the shoreline of Fort Pond, located adjacently north of the project area, are dominated by the invasive common reed (*Phragmites australis*). The Town of Easthampton Local Waterfront Revitalization Program also proposes the removal of common reed from wetlands, harbors and coastal ponds with the Town's boundaries (Town East Hampton 1999). The Corps could explore the potential of removing common reed to improve the habitat quality of Fort Pond as well as other wetlands within the Town. The Service is available to assist the Corps if these potential enhancement opportunities are explored further.

X. SERVICE POSITION

Section 2(b) of the FWCA requires that the final report of the Secretary of the Interior: 1) determine the magnitude of the impacts of the proposed projects on fish and wildlife resources and 2) make specific recommendations as to measures that should be taken to conserve those resources. The Service has reviewed the current literature on the biological and physical processes affecting the coastal ecosystems.

This project has the potential to have adverse ecological impacts to fish and wildlife resources. In the short-term, the Corps' recommended plan will have direct and indirect adverse impacts on fish and wildlife resources and their supporting ecosystems. Initial beach fill will directly impact 3,100 linear ft, or approximately 7.8 ac of subaerial coastal habitats. These impacts include burial of marine beach invertebrates and modification of habitats.

However, this project is: of relatively small scale (less than 1-mi.-long), abutted by extensive residential and commercial development which would preclude/limit natural coastal processes (cross-island sediment transport); located on a site that is managed as a recreational beach (bathing beach, beach raking/cleaning and recreational ORVs) where beach stabilization actions presently occur (beach grass planting and snow fence installation). Accordingly, the implementation of the conservation/mitigation measures proposed by the Corps and the Service, as described in this report, will assist the Corps in offsetting the potential adverse impacts presented in this report.

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Appendix A

U.S. Army Corps of Engineers Correspondence Commenting on the Draft FWCA



DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

July 31, 2014

Mr. David Stilwell
Field Supervisor
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Subject: The Downtown Montauk Stabilization Project

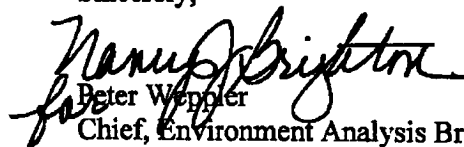
Dear Mr. Stilwell:

Pursuant to the above referenced subject, the Corp of Engineers, New York (District) received a Fish and Wildlife Coordination Act Report (FWCAR) dated July 2014. We appreciate your response to our request for a FWCAR. The District has reviewed your report and concurs with most of the assumptions for the proposed action.

The Draft FWCAR refers to direct impacts associated with the burial of benthic organisms within the intertidal zone. The project will place all material well above the mean high water line and implement best management practices to avoid any impacts to the intertidal zone. This letter serves to clarify the project placement location and its potential impacts. The District concurs with and accepts your measures to minimize project impacts contained in your July 2014 Draft FWCAR. We request a final FWCAR for our files to complete our coordination.

We appreciate your prompt response to our comments and look forward to working with you and your staff on this effort. If you should have any questions, please contact Mr. Robert J. Smith of my staff at 917-790-8729

Sincerely,


Peter Weppner
Chief, Environment Analysis Branch