

ENVIRONMENTAL ASSESSMENT

Federal Financial Assistance Grant Number: 44109
Marsh Restoration and Replenishment, Little Egg Harbor, New Jersey

Prepared as Part of the
Hurricane Sandy Coastal Resiliency Competitive Grant Program

Prepared by:



U.S. Department of the Interior

In Partnership With:

National Fish and Wildlife Foundation

Little Egg Harbor Township

Tuckerton Borough

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This Environmental Assessment becomes a Federal document when evaluated and signed by the responsible Federal Official.

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Appendix B Agency Correspondence and Permits

- Coastal Zone Management Act Coastal Consistency Determination – Iowa Court
- Coastal Zone Management Act Coastal Consistency Determination - South Green Street
- US Army Corps of Engineers Nationwide Permit Number 13; United States Army Corps of Engineers Memorandum of Record for the Iowa Court site, dated May 14, 2018
- US Army Corps of Engineers Nationwide Permit Number 13; United States Army Corps of Engineers Memorandum of Record for the South Green Street site, dated June 28, 2018
- NJDEP Coastal Wetlands Permit 24 for the Iowa Court Project, June 4, 2018
- NJDEP Coastal Wetlands Permit 24 for the South Green Street Project, August 2, 2018
- Tidelands License – Iowa Court; License Document
- Tidelands License – South Green Street; Notice of Approval
- Consultation with New Jersey Historic Preservation Office – Iowa Court (NJDEP Email)
- Consultation with New Jersey Historic Preservation Office – South Green Street (NJDEP Email)
- Ocean County Soil Conservation District - Soil Erosion and Sediment Control Certification for Iowa Court, dated September 6, 2018
- Ocean County Soil Conservation District - Soil Erosion and Sediment Control Certification Application for South Green Street, dated August 10, 2018

Appendix C Information for Planning and Consultation (IPaC) Query for the Project area (accessed on August 28, 2018)

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1.0 INTRODUCTION

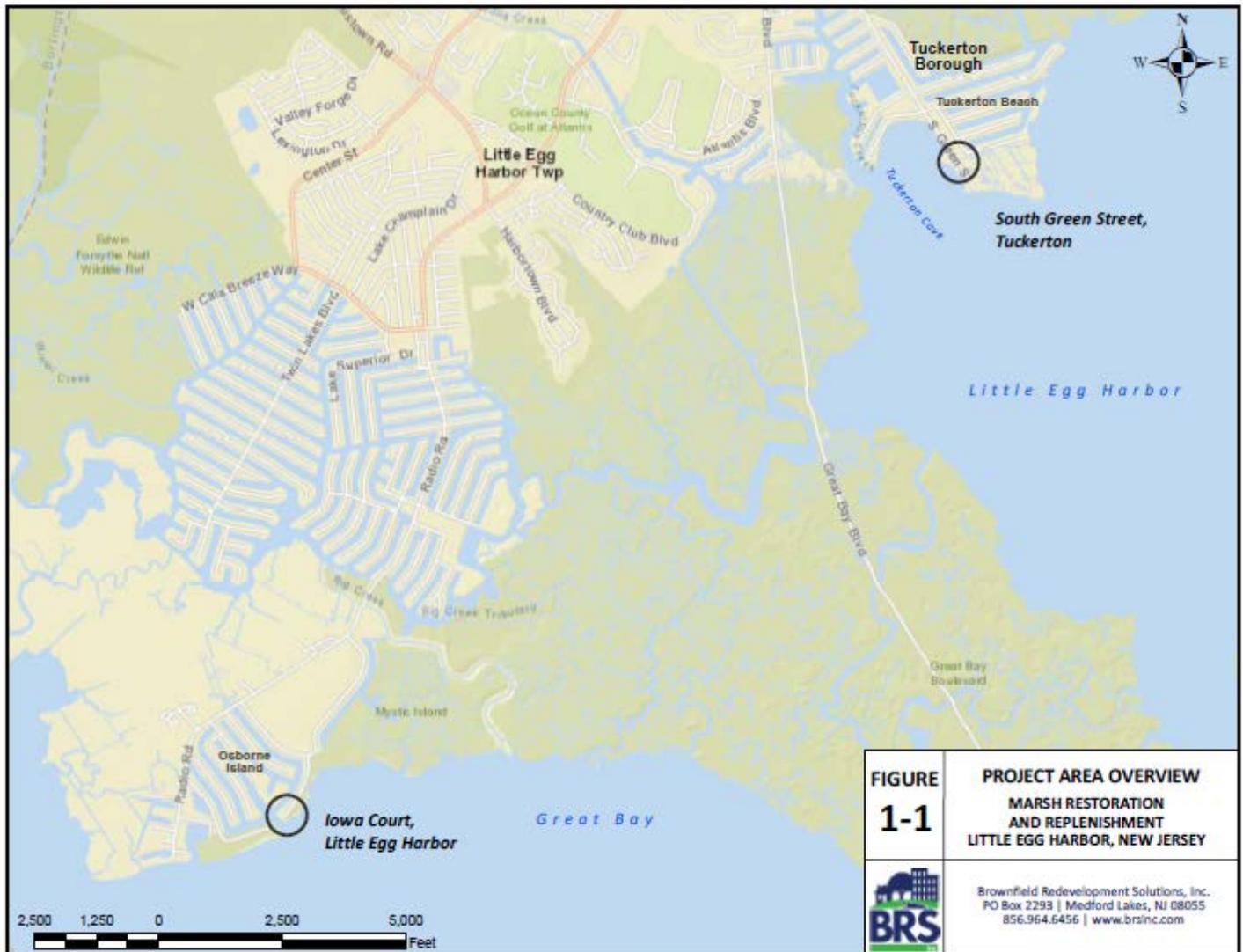
The Hurricane Sandy Coastal Resiliency Competitive Grant Program (Program) supports projects that reduce communities' vulnerability to the growing risks from coastal storms, sea level rise, flooding, erosion, and associated threats through strengthening natural ecosystems that also benefit fish and wildlife. Program funding is administered by the National Fish and Wildlife Foundation (NFWF) through the U.S. Department of the Interior (Department or DOI) Hurricane Sandy disaster relief appropriation (Disaster Relief Appropriations Act of 2013).

On June 16, 2014, the Department announced the award of 54 grants totaling \$102.75 million. In addition, the grantees committed over \$55 million in additional funding and in-kind contributions, for a total conservation investment of over \$158 million. Grants were awarded to projects that assess, restore, enhance, or create wetlands, beaches and other natural systems to help better protect communities and to mitigate the impacts of future storms and naturally occurring events on fish and wildlife species and habitats. Projects are located in the region affected by Hurricane Sandy: Connecticut, Delaware, the District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia. Each of these states officially declared a natural disaster as a result of the 2012 Hurricane Sandy storm event.

The DOI, as lead federal agency, and its Project partners Little Egg Harbor Township and Tuckerton Borough, New Jersey, are proposing the Marsh Restoration and Replenishment Project (Project). The Project would consist of stabilizing the shoreline and marsh area of Great Bay at Iowa Court in the Township of Little Egg Harbor and stabilizing the beach at Tuckerton Cove at South Green Street, in Tuckerton, by installing a living shoreline at both sites (Figure 1). Both sites are located in Ocean County, New Jersey, where the devastation caused by Hurricane Sandy included flood damage and wind shear to buildings surrounding the Project area, severe erosion of beach and marsh habitats, and damage to basic infrastructure including roads, electric and phone lines, and water and sewage treatment systems. The Project area encompasses communities surrounding the Great Bay Boulevard Wildlife Management Area in Little Egg Harbor and Tuckerton Borough, New Jersey, and proposed work would be carried out at the two sites as shown on the Plans provided as Figures 2-1 and 2-2. As the Project administrator, NJ Future is managing the Project activities.

The Project proposal (Appendix A) originally consisted of dredging to remove silt build up from blocked stormwater outfalls and waterways in three lagoon communities in Osborne Island, Tuckerton Beach, and Paradise Cove, resulting in approximately 7 miles of stream area restored and opened for the passage of wildlife and boats. The dredged materials were to be used within the three communities to restore and replenish approximately 6 acres of marsh and wetlands and 0.7 acres of beach. In addition, erosion and sediment controls were to be placed at three locations within the lagoon communities. Due to marsh suitability and permitting restrictions, the Project scope was reduced to eliminate the lagoon dredging and include only the existing scope of work proposed within the Project area at the Iowa Court and South Green Street sites.

Figure 1 Project Area Overview



Little Egg Harbor Township and Tuckerton Borough are located on Little Egg Harbor between Great Bay and Barnegat Bay, a rich marine ecosystem that provides the economic basis for the two communities. Recreational boating, oyster and clam beds, commercial crabbing, and birding are some of the activities that support the area. The land area of both Project sites sits just above sea level and is susceptible to flooding from lunar tides, heavy rain, nor'easters and hurricanes. The area's only protection from coastal events is the marshland surrounding the Great Bay Boulevard Wildlife Management Area that also provides the basis for a portion of the recreational economy.

This Environmental Assessment (EA) evaluates two alternatives to address the shoreline erosion issues at both Project sites; a no-action alternative and a proposed action alternative at two Project sites. The EA further analyzes the potential impacts these alternatives may have on the natural and human environment. This EA has been prepared in accordance with the requirements

of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508), and DOI regulations (43 CFR Part 46), policy, and guidance.

1.1 Purpose and Need

The purpose of the Program is to undertake a variety of actions to restore wetlands and other natural areas, better manage storm water using green infrastructure, and assist states, tribes and local communities in protecting themselves from major storms such as Hurricane Sandy. Overall, the Program goals relate to coastal resiliency and ecosystem enhancement. The Program provides funding for projects in five categories: Project Planning and Design, Coastal Resiliency Assessments, Restoration and Resiliency Projects, Green Infrastructure, and Community Coastal Resiliency Planning.

The Program provides technical and financial assistance to identify, protect, conserve, manage, enhance, or restore habitat and infrastructure on both public and private lands that have been negatively impacted by Hurricane Sandy.

The Project meets the purpose and need of the Restoration and Resiliency and Green Infrastructure categories by enhancing the resiliency of the adjacent communities from future storms, and to enhance, protect and restore habitat. This Project would stabilize otherwise continuously eroding marsh and shorelines by installation of a beach breakwater, a marsh sill, and subsequent vegetative plantings, thereby protecting the communities from coastal erosion and storm surge flooding. Iowa Court is a residential area of single-family homes on a cul-de-sac of a larger development within the Osborne Island section of Little Egg Harbor. A large open water fetch exposes the shoreline at the foot of South Green Street to direct wave attack. South Green Street dead ends just after the narrow beach in the Project site and is surrounded by beachfront single-family homes and waterfront businesses in the Tuckerton Beaches section of Tuckerton Borough. South Green Street is also the main access route to the park at the end of the road which is widely used for recreation by members of the community and visitors throughout the year.

By strengthening the natural buffer from storm surges, critical natural resources and infrastructure in the nearby communities would be protected. Hurricane landfall information for Hurricane Sandy identified that Barnegat Bay, from Mantoloking to Little Egg Harbor, was one of the most severely impacted sections of natural resource habitat along the New Jersey Coast (Appendix D). Thousands of homes and businesses in the neighborhoods surrounding the South Green Street Project site in Tuckerton and Iowa Court Project site in Little Egg Harbor were inundated with up to five-foot storm surges and severely damaged during Hurricane Sandy.

2.0 ALTERNATIVES

An alternatives analysis was performed to determine the most feasible and prudent means of achieving the defined Project purpose and need. The ability to stabilize eroded shorelines, while protecting the communities from flooding was evaluated under each alternative.

2.1 No Action Alternative

Under this alternative, no living shoreline installation would take place at either Project site. The No Action Alternative would result in continued erosion within Tuckerton Cove and Great Bay, threatening Project area homes, businesses, the recreational economy, critical infrastructure and potentially one of the least-disturbed marine wetlands habitats in the northeastern United States (USFWS, Significant Habitats and Habitat Complexes of the New York Bight Watershed, 1996). This alternative does not meet the Project purpose and need as it would not address marsh and beach erosion or provide a buffer from storm surges.

2.2 Proposed Action Alternative

Under the Proposed Action Alternative, just over an acre of salt marsh at Iowa Court owned by the New Jersey Natural Lands Trust (NJNLT) would be restored and enhanced. In addition, a breakwater and beach enhancement project on 0.2 acres would be completed on privately owned land on South Green Street in the Borough of Tuckerton. The approximately 1.3-acre Project area, consisting of two sites, is located on either side of the Great Bay Boulevard Wildlife Management Area in Little Egg Harbor and Tuckerton Borough, New Jersey (Figure 1).

Figure 2-1 Proposed Action Alternative – Iowa Court, Little Egg Harbor Project Site

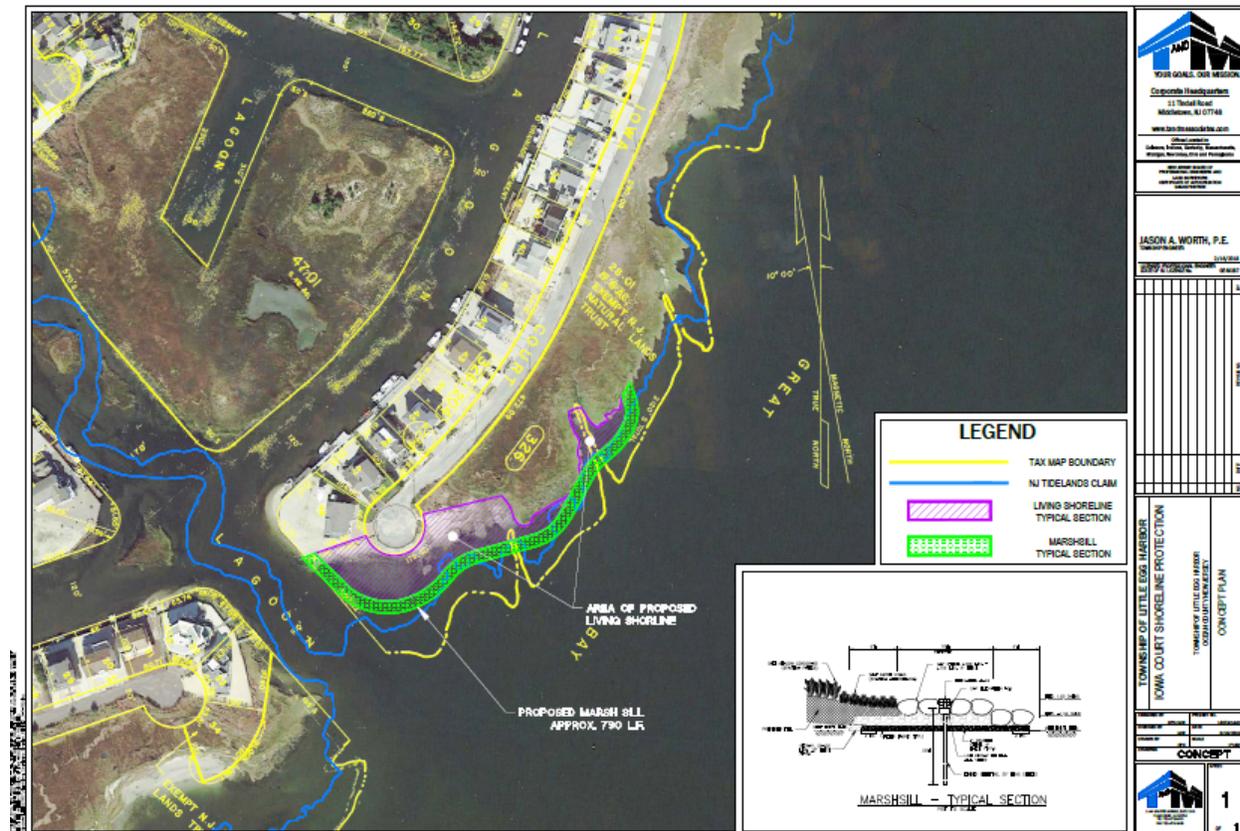
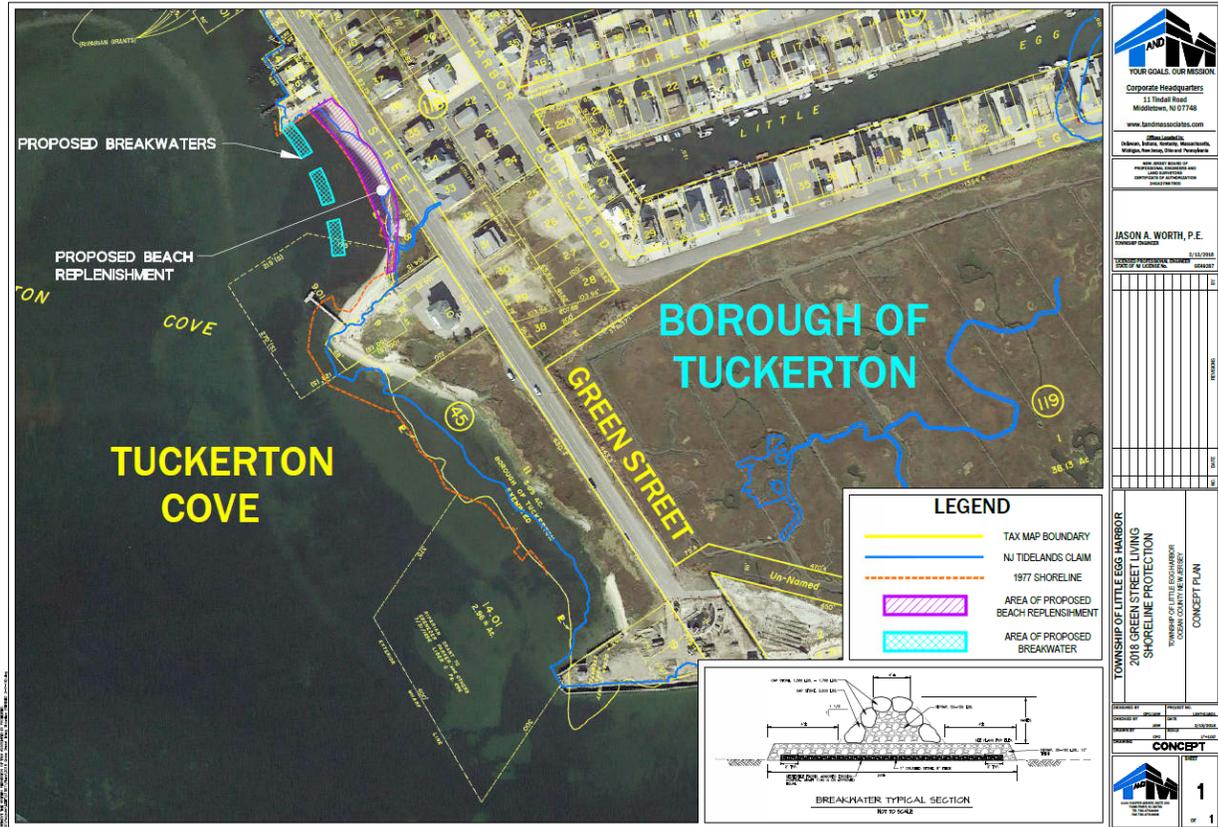


Figure 2-2 Proposed Action Alternative South Green Street, Tuckerton Borough Project Site



Iowa Court

The Iowa Court Project activities include creation of an approximately 0.349-acre marsh sill comprised of 760-linear feet of timber sheeting, 2,260-cubic yards of stone fill, and 50-cubic yards of rip-rap stone revetment; and vegetative stabilization consisting of a discharge of approximately 2,625-cubic yards sand fill acquired from an upland source into 0.721-acres of degraded tidal marsh, with subsequent plantings of native species, including salt marsh grass (*Spartina alterniflora*) and salt meadow cordgrass (*Spartina patens*). The Iowa Court Project activities would also incorporate oyster spat into the stone that would attract colonization and establishment of oyster habitat. The Project Engineer, T&M Associates, is working with ReClam the Bay and Mordecai Land Trust in order to incorporate the oyster friendly material.

Equipment to be used during implementation of Project activities include heavy equipment such as excavators and dump trucks, power hand tools and manually operated hand tools, with work being staged at the shoreline and also from a barge. Upon completion of the Project at the Iowa Court site, the cul-de-sac would feature a sign to educate the public about living shorelines and a bench for visual access to the water and tidal marsh habitat.

South Green Street

The South Green Street Project site includes the creation of a 225-foot long by 28-foot wide breakwater structure comprised of 885-cubic yards of stone rip-rap constructed approximately 120-linear feet offshore from the existing plane of Mean High Water of Tuckerton Cove at South Green Street. Additionally, 454-cubic yards of sand fill acquired from an upland source would be discharged below the plane of Mean High Water along 0.07-acres of eroded shoreline at Tuckerton Cove at South Green Street. Equipment to be used during implementation of Project activities include heavy equipment such as excavators and dump trucks, power hand tools and manually operated hand tools, with work being staged at the shoreline and also from a barge.

Implementation of activities at both sites would begin in late fall 2018 and proceed through December 2018 for in-water work. Plantings, introduction of the oyster spat, and work that is not subject to in-water restrictions that would be funded outside of the Program would be completed in June 2019. Monitoring for native plant establishment and erosion controls would occur after Project completion for up to 5 years, and would be funded outside of the Program (Appendix A).

The Proposed Action Alternative to stabilize eroded shorelines via installation of a living shoreline to include a marsh sill and breakwater would strengthen the natural buffer, enhance the habitat, improve accessibility for the public and enhance water quality.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction – Scope of Resources Evaluated

The environmental resources identified and analyzed in this document are listed below along with descriptions of existing resource conditions at the two sites within the Project area. The evaluation of environmental effects resulting from implementation of the Proposed Action to these resources for each alternative is described in Section 4.

3.2 Topography, Soils, and Sediment

The Project area consists of low lying coastal habitat comprised predominantly of sands, gravel, silt and clay without known sources of contamination. Soil samples were taken up to a depth of 20 feet at three locations along the proposed stone sill around the Iowa Court cul-de-sac. An underlying layer approximately 7 feet thick of dark brown silty clay with root and organic matter was encountered. Conversely, soils at the South Green Street Project site were predominantly hard pack gravel and sand. In general, soils of a coarser nature and loose structure, such as sands and silt, erode more easily than soils consisting of clay, organic material and tightly packed gravel layers.

3.3 Water Resources and Wetlands

Water resources at the Project sites include Great Bay at Iowa Court in the Township of Little Egg Harbor and Tuckerton Cove at South Green Street, in Tuckerton Borough. The Mullica River is one of the principal drainages of the Pinelands into the Atlantic Ocean and its estuary on Great Bay is considered one of the least-disturbed marine wetlands habitats in the northeastern United States. The Tuckerton Creek Tributaries drain into Tuckerton Cove.

The Project sites are surrounded by thousands of acres of protected tidal wetlands. Nearby conserved coastal lands include the Edwin B. Forsythe National Wildlife Refuge, which protects more than 47,000 acres of southern New Jersey coastal habitats; 169 acres of vegetated shorelines and marsh habitat in the state protected Mystic Island Preserve; and the Great Bay Boulevard Wildlife Management Area, a state owned and managed salt marsh area of 4,670 acres. These areas incorporate the natural conditions of beach, dune features, overwash fans, abandoned inlets, and extensive back marsh virtually unknown throughout most of the East Coast.

Coastal erosion and flooding in the Project area is affecting water resources and wetlands as coastal storms and related storm surges are occurring more frequently and with greater intensity. The natural buffer of wetlands and marsh complexes in the vicinity of the Project area are critical to protecting natural resources and infrastructure in the nearby communities.

3.3.1 Flood Zones

The Federal Emergency Management Agency (FEMA) defines floodplains as any land area susceptible to being inundated by floodwaters from any source. Flood zones, a commonly used term in floodplain management, are geographic areas defined by FEMA reflecting the severity or type of flooding in the area. Special Flood Hazard Areas (SFHAs) refer to flood zones with a 1 percent or greater chance of flooding in any given year and are further differentiated by zones (FEMA 2016).

Executive Order (EO) 11988, *Floodplain Management* (1977), states that when considering the potential impacts of federal actions on flooding, the geographic extent of a floodplain should be established based on the type of action and whether or not the action is critical (i.e., an activity for which even a slight chance of flooding would be too great).

The Project area is designated as a SFHA subject to inundation by the 1% annual chance flood with base flood elevations of 8 feet (FEMA map number 34029C0567F, dated 9/29/2006) at Iowa Court and base flood elevations of 7 feet (FEMA map number 34029C0579F, dated 9/29/2006) at South Green Street. Thousands of homes and businesses in the neighborhoods surrounding the South Green Street Project site in Tuckerton and Iowa Court Project site in Little Egg Harbor were inundated with up to five-foot storm surges and severely damaged during Hurricane Sandy.

3.3.2 Surface Water and Hydrology

The Mullica River is one of the principal drainages of the Pinelands into the Atlantic Ocean. Approximately 3 miles upstream from Great Bay, the river receives the estuary of the Wading River. Approximately 2 miles upstream from Great Bay, it receives the Bass River. The Mullica River watershed measures about 568 square miles, and is composed primarily of pine forests and scrub habitat. The Mullica River discharges into Great Bay southwest of the Iowa Court Project site (Figure 2-1).

The Tuckerton Creek Tributaries drainage includes a small portion of western Little Egg Harbor and West and central Tuckerton, approximately 1.5 square miles of level, low lying bayshore.

The Tuckerton Creek Tributaries drain into Tuckerton Cove, which is surrounded by man-made canals and drainage ditches. Willis Creek is located one mile to the west and Thompson Creek is located 0.7 miles to the east of Tuckerton Creek. The Tuckerton Creek Tributaries discharge into Tuckerton Cove, located approximately 1,500 feet west of the South Green Street Project site (Figure 2-2).

The Proposed Action is subject to review by the U.S. Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act (33 U.S. Code [USC] 403) and Section 404 of the Clean Water Act (CWA; 33 USC 1344), which govern work or structures in navigable waters of the United States and/or the discharge of dredged or fill material into waters of the United States, including their adjacent wetlands. The grantees, Little Egg Harbor Township and Tuckerton Borough, applied for USACE permits on May 11, 2018, and June 28, 2018, respectively and received approval for both site locations (Appendix B).

3.3.3 Wetlands

The Iowa Court Project site includes shoreline that is severely eroded, with debris and stone scattered from failed erosion protection measures. There is no vegetation growth at the cul-de-sac and scattered debris/stones are washing away. As such, this habitat is currently not functioning as a coastal marsh, though it is adjacent to and immediately surrounded by the 169 acres of vegetated shorelines and marsh habitat in the Mystic Island Preserve.

The South Green Street Project site consists of beach habitat and does not include any wetlands.

3.4 Biological Resources and Vegetation

3.4.1 Common Flora and Fauna

Great Bay and Little Egg Harbor provide important nursery areas for bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*), menhaden (*Brevoortia tyrannus*), and spot (*Leiostomus xanthurus*), as well as spawning habitat for winter spawners such as sandlance (*Ammodytes americanus*) and winter flounder (*Pseudopleuronectes americanus*) and summer spawners like bay anchovy (*Anchoa mitchilli*), silversides (*Menidia spp.*), gobies (*Gobiosoma spp.*), wrasses (*Labridae spp.*), and northern pipefish (*Syngnathus fuscus*).

Marine mammals are not known to occur in the Project area. Other wildlife species expected in the Project area include diamondback terrapin (*Malaclemys terrapin terrapin*).

New Jersey salt marshes, such as those found in the Project area, include breeding and winter habitat for the American black duck (*Anas rubripes*), brant (*Branta bernicla*), greater and lesser scaup (*Aythya marila* and *A. affinis*), mallard (*Anas platyrhynchos*), and bufflehead (*Bucephala albeola*), with lesser numbers of tundra swan (*Cygnus colombianus*), Canada goose (*Branta canadensis*), red-breasted merganser (*Mergus serrator*), common merganser (*M. merganser*), hooded merganser (*Lophodytes cucullatus*), common goldeneye (*Bucephala clangula*), oldsquaw (*Clangula hyemalis*), American wigeon (*Anas americana*), northern pintail (*Anas acuta*), canvasback (*Aythya valisneria*), and green-winged teal (*Anas crecca*) (USFWS, Significant Habitats and Habitat Complexes of the New York Bight Watershed, 1996).

According to NJDEP GIS Data, Little Egg Harbor and Great Bay contain approved and/or conditionally approved shellfish harvesting beds near the Project area. There are several areas mapped as aquaculture lease areas for oyster bed in Great Bay and hard clam around the South Green Street Project site.

According to the NJ Division of Fish and Wildlife the commercially harvested northern quahog (*Mercenaria mercenaria*) is the most valuable of the food species harvested in the bays. Other species supporting commercial fisheries activities include blue crab (*Callinectes sapidus*), white perch (*Morone americana*), winter flounder (*Pseudopleuronectes americanus*), and American eel (*Anguilla rostrata*). The bay is an important spawning and nursery area for blue crab. Adult crabs can be found from late May, when crabs come out of their wintering habitat in the bottom sediments, until October when they return.

Based on the NJDEP Submersed Aquatic Vegetation (SAV) Distribution Map, dated 1979 (Figure 3), portions of the South Green Street Project site were mapped as having SAV, such as eelgrass (*Zostera marina*). Based on field investigations conducted at the South Green Street Project site, this location is shallow and exhibits significant erosion based on the nature of the coarse sand and strong wave action. Given the velocity of the wave action, shallowness of the area as well as adjacent uses, this area does not represent suitable habitat for sea grass beds, which thrive in clear, shallow, nutrient-rich, low-energy waters. Additionally, the presence of coarse sands and lack of fine sediments appears to prevent seed beds from establishing in this area.

Stone, sand and debris are currently scattered along the shoreline of the Iowa Court Project site and do not provide adequate habitat for SAV. Currently, there are no vascular plants (i.e. eelgrass, typically called SAV) in all of Great Bay. These findings are based on 30 years of sampling throughout the system.

3.4.2 Special Status Species

Special-status species include those federally listed as threatened or endangered, or those considered candidate species, by the USFWS or the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA). Special-status species also include species protected under the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, and those species listed as threatened or endangered by the NJDEP.

3.4.2.1 Federally Listed Species

Endangered Species Act

USACE conducted a review of both Project sites through the Nationwide Permit (NWP) approval process and found the potential for sea turtles and Atlantic Sturgeon (Endangered; *Acipenser oxyrinchus oxyrinchus*), both federally-listed species managed by NOAA NMFS, to occur or transit across the Iowa Court site and the South Green Street site. It was determined the work would have no effect to the species due to the shallow water depths at both sites.

Figure 3 Submerged Aquatic Vegetation (SAV) Distribution Map Tuckerton, New Jersey



USACE evaluated the South Green Street and Iowa Court Project sites for potential presence of USFWS federally-listed species and determined no other listed-species would likely occur in either of the Project sites (Appendix B).

The USFWS’s online IPaC system (Appendix C) produced a report indicating that three federally listed threatened species may occur within the Project area: Red knot (*Calidris canutus rufa*), Knieskern's beaked-rush (*Rhynchospora knieskernii*), and swamp pink (*Helonias bullata*). The review found no critical habitats at either of the Project sites.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act requires all federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH). NMFS designates EFH to protect and conserve the habitats of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. EFH is broadly defined to include “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Habitat Areas of Particular Concern (HAPC) are a subset of EFH and represent habitat types or geographic areas identified as priorities for habitat conservation, management, and research. These areas play important roles in the life history of managed species and/or are especially vulnerable to degradation from

human activities. The HAPC designation does not confer specific habitat protections, but can focus habitat conservation efforts (Mid-Atlantic Fishery Management Council 2016).

An EFH assessment for the South Green Street and Iowa Court Project sites was completed by USACE during the NWP permit approval process (Appendix B), discussed in Section 4 of the EA. The following EFH species or complexes were found to potentially occur within the Project sites.

- Atlantic cod (adults)
- Red Hake (eggs, larvae, juveniles, adults)
- Winter Flounder (eggs, larvae, juveniles, adults)
- Windowpane Flounder (eggs, larvae, juveniles, adults)
- Atlantic Sea Herring (juveniles, adults)
- Monkfish (eggs, larvae, adults)
- Bluefish (juveniles, adults)
- Atlantic Butterfish (juveniles)
- Summer Flounder (larvae, juveniles, adults)
- Scup (juveniles)
- Black Sea Bass (juveniles, adults)
- King Mackerel (eggs, larvae, juveniles, adults)
- Spanish Mackerel (eggs, larvae, juveniles, adults)
- Cobia (eggs, larvae, juveniles, adults)
- Dusky Shark (larvae)
- Sandbar Shark (larvae, juveniles, adults)
- Tiger Shark (larvae)

Migratory Bird Treaty Act

Migratory birds are protected under the MBTA (40 Stat 755 as amended; 16 USC 703-712). The MBTA is a federal law making it unlawful to pursue, hunt, take, capture, kill, or sell birds listed therein. Nonnative species are not protected under the MBTA (USFWS 2017).

Migratory shorebirds such as the black skimmer (*Rynchops niger*) and the least tern (*Sterna antillarum*) may use the Project area for breeding or overwintering, during migration, or may be present year-round. Marshes provide important foraging habitat for migrant shorebirds, especially in spring.

3.4.2.2 State-Listed Species

State-listed endangered species are defined as those species whose prospects for survival in New Jersey are in immediate danger due to loss or change of habitat, overexploitation, predation, competition, disease, disturbance, or contamination. State-listed threatened species are defined as those that may become endangered if adverse conditions begin or continue to deteriorate.

The NJDEP GeoWeb mapping indicates no state-listed threatened or endangered species inhabiting the areas around the Project sites.

3.5 Human Health and Safety

Little Egg Harbor Township and Tuckerton Borough topographically sit just above sea level and are susceptible to flooding from lunar tides, heavy rain, nor'easters and hurricanes. Areas of both communities have been impacted by ongoing erosion of the shorelines. This in turn threatens the viability of roadways such as South Green Street, Parker Road, Iowa Court, Ohio Drive and Radio Road and eliminates protective barriers to homes. The neighborhoods of Osborne Island and Tuckerton Beach are at particular risk. Thousands of homes and businesses in the neighborhoods surrounding the South Green Street Project site in Tuckerton and Iowa Court Project site in Little Egg Harbor were inundated with up to five-foot storm surges and severely damaged during Hurricane Sandy.

After initial damages to property, a 2015 study funded by the New Jersey Department of Health found that residents of New Jersey affected by Hurricane Sandy continued to be affected by the storm in the form of unfinished repairs, disputed claims, and recurrent mold, which are associated with mental health distress, post-traumatic stress disorder (PTSD), and depression (New Jersey Environmental Justice Alliance 2015). Mold was associated with both asthma and with mental health distress. For New Jersey residents whose homes were damaged by Hurricane Sandy, 27 percent experienced moderate or severe mental health distress and 14 percent reported the signs and symptoms of PTSD even 2.5 years after the storm. Additionally, children in hurricane-damaged homes are at higher risk for mental health problems than children whose homes suffered no damage (New Jersey Environmental Justice Alliance 2015).

3.6 Cultural Resources

Projects receiving federal funding and permitting are required to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR 800). Section 106 of the NHPA outlines the process by which federal agencies are required to determine the effects of their undertakings on historic properties. The term "historic property" refers to cultural resources that have been determined eligible for listing, or are listed, in the National Register of Historic Places (NRHP). Historic properties may include archaeological sites, historic resources, or properties of traditional cultural or religious importance to tribes. Impacts to historic properties could occur from a project if there were an alteration to the characteristics of a property that qualify it for inclusion in the NRHP.

The NJDEP GeoWeb mapping indicates no cultural or historical properties in either Project site, though the downtown area of Tuckerton Borough to the north of the Project site does include some locally important cultural resources or eligible properties. The USACE Cultural Resources Lead reviewed both Project sites for potential effects to tribal and historic resources as part of USACE NWP approval process. The NJDEP Historic Preservation Office has been contacted and concurred via correspondence that no historic properties were present or would be adversely affected and that no impacts to cultural resources are anticipated from the Project. Consultation is summarized in Section 4.5.

3.7 Socioeconomics, Environmental Justice, and Protection of Children

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to examine proposed actions to determine whether they would have disproportionately high and adverse human health or environmental effects on minority or low-income populations.

According to the New Jersey Office of Environmental Justice, the Project areas are not located in any Environmental Justice communities. Also, according to the 2010 census, the area does not have a high proportion of minority populations. The median income in Tuckerton Borough is \$64,770 and the percentage of households with kids living under the poverty line is 5.8%. The total population of 3,347 consists of 18.9% children and 6.1% Hispanic populations. The median income in Little Egg Harbor is \$60,535 and the percentage of households with kids living under the poverty line is 13.3%. The total population of 20,065 consists of 20.4% children and 5.2% Hispanic populations.

Residential bayshore neighborhoods are located adjacent to both Project sites. No schools or hospitals are located near the Project area.

3.8 Land Use, Recreation, Public Safety, and Coastal Zone Management

3.8.1 Land Use and Recreation

Little Egg Harbor Township and Tuckerton Borough are located in Great Bay and Little Egg Harbor, a rich marine ecosystem that provides the economic basis for the two communities. The Project area is surrounded by thousands of acres of protected tidal wetlands. Nearby conserved lands include the Edwin B. Forsythe National Wildlife Refuge, which protects more than 47,000 acres of coastal habitat; 169 acres of salt marsh in the Mystic Island Preserve; and the Great Bay Boulevard Wildlife Management Area, a state owned and managed salt marsh area of 4,670 acres. These areas incorporate the natural conditions of beach, dune features, overwash fans, abandoned inlets, and extensive back marsh virtually unknown throughout most of the East Coast.

Since both Project sites are located adjacent to residential bayshore neighborhoods, many houses are equipped with their own docks. Recreational boating, oyster and clam shellfishing, commercial crabbing, and birding are some of the activities that support the area. South Green Street is also the main access route to a park at the end of the road which is widely used for recreation by members of the community and visitors throughout the year.

3.8.2 Coastal Zone Management

The Coastal Zone Management Act (CZMA) of 1972 provides assistance to states, in cooperation with federal agencies, or developing land and water use programs in coastal zones. Section 307 of the CZMA stipulates that where a federal project initiates reasonably foreseeable effects on any coastal use or resource, the action must be consistent to the maximum extent practicable with enforceable policies of the affected state's federally approved coastal management plan.

In response to the CZMA, New Jersey developed the New Jersey Coastal Management Program (NJCMP), which was approved by NOAA in 1980 and ensures coastal resources and ecosystems are conserved to enhance sustainable coastal communities. Subchapter 9 of the Coastal Zone Management rules outlines “special areas” (N.J.A.C. 7:7) found in the coastal zone that are regulated by NJDEP. These special areas are either naturally valuable, important to human use, hazardous, or sensitive to impacts. Any development within sites with special areas must demonstrate compliance with the special area rule.

The Project area is located within the New Jersey coastal zone and is subject to federal consistency review under the CZMA and NJCMP. The Coastal Zone Management Act Coastal Consistency Determination has been filed for both project sites and a NJDEP Coastal Wetlands Permit 24 has been approved for each area (Appendix B).

3.9 Air Quality and Noise

3.9.1 Air Quality

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern to the health and welfare of the general public and the environment and widespread across the United States. The primary pollutants of concern, called “criteria pollutants,” include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone, suspended particulate matter less than or equal to 10 microns in diameter (PM-10), fine particulate matter less than or equal to 2.5 microns in diameter (PM-2.5), and lead. These pollutants are subject to both primary and secondary National Ambient Air Quality Standards (NAAQS). Primary standards provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. State air quality standards cannot be less stringent than the NAAQS.

The USEPA determines air quality attainment status based on whether the air quality in an area meets (attains) the NAAQS. Areas that violate NAAQS are designated as nonattainment areas for the relevant pollutants. Areas with insufficient data are designated as attainment/unclassified areas and are treated as attainment areas under the Clean Air Act. Areas that were previously designated nonattainment and have demonstrated compliance with a NAAQS are designated “maintenance” for 20 years after the effective date of attainment, assuming they remain in compliance with the standard.

The Project area is within Ocean County, New Jersey, which is located in the Philadelphia-Wilmington-Atlantic City nonattainment area for the 2008 8-hour ozone standard. The area is also located in a maintenance area for the CO standard (USEPA 2018). On October 1, 2015, the USEPA lowered the 8-hour ozone standard from 0.075 parts per million (ppm) to 0.070 ppm (USEPA 2016b). The NJDEP urged the USEPA to adopt a single nonattainment area encompassing New Jersey, Connecticut, southeastern New York, eastern Pennsylvania, Delaware, Maryland, District of Columbia, and northeastern Virginia for the 2015 8-hour ozone standard (NJDEP 2016) (Appendix D).

Furthermore, the entire state of New Jersey is in the Ozone Transport Region (OTR). States located in the OTR are required to implement additional requirements to control pollutants that form ozone, which include oxides of nitrogen (NO_x) and volatile organic compounds (VOCs).

3.9.2 Noise

Sound is mechanical energy transmitted by pressure waves in media such as air or water. When the sound level becomes excessive, annoying, or unwanted, it is referred to as “noise.” Noise may be continuous (constant noise at a steady level), steady (constant noise with a fluctuating level), impulsive (having a high peak of short duration), stationary (occurring from a fixed source), intermittent (at intervals of high and low levels), or transient (occurring at different levels).

Noise levels are quantified using decibels (dB), which are units of sound pressure. The A-weighted sound level, expressed as dBA, is an expression of the relative loudness of sounds in air as perceived by the human ear and is usually used to quantify audible sound and its effect on people. The State of New Jersey Noise Control Act of 1971 authorized the NJDEP to develop regulations related to noise control and abatement (N.J.A.C 7:29). Local noise ordinances cannot be less stringent than the state regulations, but local municipalities can make changes to the state ordinance and submit them for approval by NJDEP. NJDEP established outdoor sound level standards of 50 dBA during nighttime (10:00 p.m. to 7:00 a.m.) and 65 dBA during daytime (7:00 a.m. to 10:00 p.m.) for receiving residential properties. For commercial, public service, non-residential, and community service facilities, the receiving outdoor sound level standard is 65 dBA 24 hours a day (NJDEP 2014, 2016).

The Township of Little Egg Harbor passed a Noise Ordinance for sound originating from sources within the Township of Little Egg Harbor (Appendix D). The local ordinance is generally in line with the state regulations (N.J.A.C 7:29) and relies on the regulation for many sections including the Maximum Permissible Sound Levels and how to measure for these. According to the Ordinance, “noncommercial or nonindustrial power tools and landscaping and yard maintenance equipment shall not be operated between the hours of 8:00 p.m. and 8:00 a.m. Commercial or industrial power tools and landscaping and yard maintenance equipment, excluding emergency work, shall not be operated on a residential property or within 250 feet of a residential property line when operated on commercial or industrial property, between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, or between the hours of 6:00 p.m. and 9:00 a.m. on weekends or federal holidays.” It further states that construction and demolition activity must follow the guidelines for commercial or industrial power tools above.

Existing ambient noise levels (background noise levels) are the sounds from natural and artificial sources present at the time a sound measurement is taken. The magnitude and frequency of background noise at any given location may vary considerably over the course of a day or night and throughout the year. The variations are caused in part by weather conditions, seasonal vegetative cover, and human activity.

3.10 Sea Level Rise

The Project area is located between Barnegat Bay and Great Bay in New Jersey and is vulnerable to future severe weather events, sea level rise, and other environmental risk factors resulting from increased weather intensity

The historical rate of sea level rise along the New Jersey coast over the past half-century was 0.14 inch per year, while predicted future rates are expected to increase to 0.5 inch per year. By 2050, the sea level is expected to rise by approximately 1 foot along the New Jersey shore. The sea level is rising more rapidly along the New Jersey shore than in other coastal areas because the land is sinking (USEPA 2016).

Generally, coastal erosion rates will increase with increases in sea level rise rates. While actions such as construction of seawalls or beach nourishment may mitigate coastal erosion in an attempt to fix the location of the present day open coast shoreline, certain communities will become increasingly vulnerable to sea level rise in low-lying bayside locations. Barnegat Light Borough, Beach Haven Borough, and Surf City Borough serve as examples of this bayside inundation exposure.

Erosion can also impact the estuarine wetland shorelines along the bay in Ocean County. Wetland shoreline erosion is also an increasingly important element of erosion. In 2012, NJDEP modeled shoreline retreat along the western side of Barnegat Bay. This GIS exercise showed an average shoreline loss of 75 feet of retreat with an overall range of 21 to 107 feet from 1995 to 2007 (NJCMO, 2012). After Hurricane Sandy, there has been a great deal of attention placed on preventing shoreline loss and using living shorelines to reduce wetland losses and protect wetlands (Ocean County 2018).

The average temperature in New Jersey has warmed by about 3 degrees Fahrenheit in the last century, and heavy rainstorms are more frequent. Average annual precipitation in New Jersey has increased 5 to 10 percent in the last century, and precipitation from extremely heavy storms has increased 70 percent in the northeastern United States since 1958 (USEPA 2016). In the 1980s there were two major disaster declarations in New Jersey from events such as hurricanes and nor'easters, as compared to seven in the 1990s, eight between 2000 and 2009, and eleven to-date between 2010 and 2018 (FEMA 2018, Newark Water Group 2014). Climatologists predict that strong storms such as Hurricane Sandy are likely to become more prevalent (New York State Office of Parks, Recreation and Historic Preservation 2015).

Higher water levels associated with sea level rise are eroding beaches, submerging low lands, exacerbating coastal flooding, and increasing the salinity of estuaries and aquifers. In the coming decades, changes in the climate are likely to increase coastal and inland flooding, harm coastal and inland ecosystems, disrupt fishing and farming, and increase risks to human health (USEPA 2018).

4.0 ENVIRONMENTAL CONSEQUENCES

Section 4 summarizes the environmental effects to each resource described in Section 3 under each alternative.

4.1 Topography, Soils, and Sediment

No Action Alternative

Under the No Action Alternative, soils would continue to erode within the Project area. Based on field investigations conducted at the South Green Street Project site, this location is shallow and exhibits significant erosion based on the nature of the coarse sand and lack of fine sediments. The shoreline near Iowa Court is so severely eroded that scattered debris and stones are washing away.

If the shoreline continues to erode, the residential properties and roadways are in severe jeopardy of completely failing, particularly during large storm events resulting in long-term moderate to major impacts.

Proposed Action

The Proposed Action would prevent further erosion by constructing marsh sills and a breakwater to provide a buffer from storm surges and replenishing beaches through the discharge of sand fill. The placement of timber sheeting, stone fill, rip-rap stone revetment, and sand fill would restore 0.721-acres of degraded tidal marsh at Iowa Court and placement of sand fill discharged below the Mean High Water mark along 0.07-acres of eroded shoreline at South Green Street would result in positive, long-term impacts to soil resources by restoring the Project area to its previous function and reducing future erosion at the Project sites. Potential short-term impacts of sand placement, tidal marsh backfilling, and regrading include soil compaction and erosion from physical disturbances. These impacts would be minimized with implementation of best management practices (BMPs) included within site permitting plans, such as placing heavy equipment used within wetlands and/or mudflats on mats to reduce soil compaction. Other measures would include sediment control fencing, stone tracking pads, and floating turbidity barrier. Soil Erosion and Sediment Control Plan Certifications from Ocean County Soil Conservation District have been submitted for both Project sites. The Project area would be stabilized in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (New Jersey Department of Agriculture, 2016). The Iowa Court certification approval was received September 6, 2018. The South Green Street application was submitted August 10, 2018, Ocean County Soil Conservation District is currently reviewing and approval is expected September 2018. (Appendix B).

No dredging or removal of sediment material would occur as part of the Proposed Action. Over the long term, the Proposed Action would result in beneficial impacts to soils and sediments in the Project area by restoring the natural resource functions and preventing future erosion.

4.2 Water Resources and Wetlands

No Action Alternative

Under the No Action Alternative, creation of a marsh sill or breakwater structure would not occur. Under this alternative, the shoreline would continue to erode from storm events and future

sea level rise, resulting in continued erosion, increased risk to infrastructure and communities, water quality degradation and overall natural resource deterioration.

Proposed Action

Flood Zones

The Proposed Action has been permitted by the NJDEP (Appendix B) with required conditions to ensure compliance with the Coastal Zone Management Rules (N.J.A.C. 7:7-1.1 et seq.).

The Project area is located in a SFHA subject to inundation by the 1% annual chance flood. The impact of the Proposed Action on flooding would be measurable in the long-term by the reduction in frequency, intensity, and duration of the flood events experienced in the lagoon communities. Furthermore, the marsh strengthening and restoration components would provide a long term reinforcement of the marsh system, which could act as a natural buffer to large flood events. All activities associated with the Proposed Action Alternative would occur within the FEMA designated flood zone. All proposed Project activities would improve the Project area's resilience to storm events and lessen the degradation of the estuarine habitat from flooding.

Surface Water and Hydrology

Under the Proposed Action, 0.349-acres of marsh sill and 0.14-acres of breakwater structure would be created and 0.721-acres of degraded tidal marsh and 0.07-acres of beach would be restored. The marsh sill and breakwater were selected in order to address the anticipated and historically observed relatively high wave energy reaching this section of the shore line. Accordingly, based on analysis of potential wave action, a stone toe structure was designed to resist erosion and dissipate wave energy along the edge of the proposed marsh. The increased stability and size of the tidal marsh would have a positive, long-term impact on surface water quality because the restored marsh system would act as a filter for pollutants from stormwater runoff and create a buffer between the shoreline and the Project area. The marsh and beach enhancement and restoration activities associated with the Proposed Action are expected to have permanent, positive impacts to surface water quality.

Wetlands

The USACE issued a Nationwide General Permit on May 14, 2018 for Iowa Court and July 2, 2018, for South Green Street, based on the Project description provided in permit number CENAP-OP-R-2017-00775-95 and CENAP-OP-R-2018-00397-95 (Appendix B). The permits allow for placement of 760-linear feet of timber sheeting, 2,260-cubic yards of stone fill, and 50-cubic yards of rip-rap stone revetment; and vegetative stabilization consisting of a discharge of approximately 2,625-cubic yards sand fill at Iowa Court and 885-cubic yards of stone rip-rap, 454-cubic yards of sand fill at Tuckerton Cove at South Green Street. Sand would be retrieved from an upland source to be used as backfill along the eroded shoreline bottom in order to raise the elevation and increase the marsh and beach areas. The Proposed Action requires a Soil Erosion and Sediment Control Plan Certification from Ocean County Soil Conservation District

which have been submitted for both Project sites. The Project area would be stabilized in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (New Jersey Department of Agriculture, 2016). The Iowa Court certification approval was received September 6, 2018. The South Green Street application was submitted August 10, 2018, Ocean County Soil Conservation District is currently reviewing and approval is expected September 2018. (Appendix B).

Wetland restoration activities including raising the elevation of the salt marsh and beach, restoring 0.721-acres of degraded tidal marsh, and replanting with native species would result in long-term beneficial impacts to wetlands by increasing wetland size, quality, and function. Filling and regrading of almost an acre of degraded marsh and eroded beach to restore an eroded shoreline would enhance the function of the wetland complex. The work needed to complete these activities would involve the use of heavy machinery and movement of soils, which have the potential to impact wetland soil and vegetation through compaction. These impacts would be reduced with the use of mats beneath heavy machinery and replanting of native vegetation as conditioned in the USACE permits for the Proposed Action.

Overall, the restoration and enhancement activities associated with the Proposed Action Alternative would have a positive, long-term impact to wetlands.

4.3 Biological Resources and Vegetation

No Action Alternative

Under the No Action Alternative, impacts to biological resources and vegetation associated with restoration activities would not occur. However, erosion of the shoreline and tidal marsh sediments would continue. Continued degradation of wetland habitat would result in long-term moderate negative impacts to common and special status wildlife species.

Proposed Action

The Proposed Action would result in habitat creation. The creation of a living shoreline would improve the eroded and degraded shoreline by stabilizing it with stone and planting the area with salt marsh grass (*Spartina alterniflora*) and saltmeadow cordgrass (*Spartina patens*).

The eroded shoreline at Iowa Court would be increased in size to match the shoreline from 1977. This increase in the size of the shoreline combined with sand, grading, stone sill and *Spartina alterniflora* and *Spartina patens* would help create a valuable marsh wetland habitat in this location. Once a low marsh is established through the Proposed Action, the habitat would attract common birds of the tidal marsh including osprey, herons, egrets, shorebirds and ducks. In addition, at completion of the project, oyster spat would be incorporated into the stone which would attract colonization in order to establish oyster habitat.

The South Green Street work would improve the habitat by providing a larger sandy beach area and stone that would attract a variety of shellfish and fish species. In addition, the breakwater would provide habitat for a variety of shellfish and other sessile organisms.

Common Wildlife Species

Under the Proposed Action Alternative, replanting with native vegetation, shrubs, and trees would improve the quality of wildlife habitat in the Project area, which would be a long-term benefit to common wildlife species.

The placement of sand to backfill the eroded shoreline and raise the salt marsh elevation would result in short-term displacement of wildlife due to physical disturbance of the existing wetland and presence of heavy machinery. Small wildlife species such as crabs and other invertebrates could be crushed by heavy machinery or buried by fill, although the use of mats for heavy equipment within the wetlands and/or mudflats may reduce some of these impacts. The creation of additional wetland habitat would ultimately benefit a wide range of wildlife species. The adjacent healthy wetland area would not be disturbed during any of the restoration activities, and the function of the wetland is expected to improve due to restoration activities nearby, ultimately resulting in improved habitat quality and greater acreage of usable habitat.

Special-Status Species

Federally listed aquatic species, including sea turtles and Atlantic sturgeon that are under the jurisdiction of NOAA NMFS, could be present at the Iowa Court Project site and South Green Street site. However, these aquatic species, along with most EFH species, are highly mobile and would be expected to avoid the area of disturbance while Project activities were being conducted. Thus, adverse impacts to federally listed species from implementation of Project activities are unlikely. As part of the NWP approval, USACE determined No Effect to listed species as a result of implementation of the proposed action. Per the Memorandum of Record for each of the sites, USACE found and concluded the following, “Given the one-time shoreline stabilization work proposed and the presence of alternate zones of passage which would effectively allow ESA-listed species to avoid the permit area and turbidity plume entirely, the Corps’ determination is “no effect” for aquatic-based ESA-listed species.”

The USACE found that the Proposed Action may adversely affect spawning, larvae, foraging areas, or shelter areas of managed EFH species, but any effects would not be substantial given the relatively small permit area, the temporary nature of the work, and the overall work scope being “minor-in-nature”. As part of the NWP approval, the following Special Condition was included for both Project sites to minimize potential adverse effects to EFH:

“To ensure compliance with Regional Condition – 6 (G-6) to protect Essential Fish Habitat (EFH) species, their prey species, and/or their habitats, in-water work shall NOT be performed between 01 January and 30 June of any given calendar year. Additionally, the permittee shall ensure that all structures installed within waters of the U.S. are constructed with non-polluting material, such as plastic, natural cedar or other untreated wood, polymer coated pressure-treated wood, concrete or other inert products. Examples of commonly used treated materials are creosote, pressure-treated lumber (i.e. preservative treatment such as CCA-C, ACZA, CC, ACQ, etc.) (wolmanized), which are susceptible to leaching and considered polluting materials, are NOT acceptable for the purpose of this permit.” See Appendix B.

4.4 Human Health and Safety

No Action Alternative

The No Action Alternative would give rise to continued erosion within Tuckerton Cove and Great Bay. Impacts from sea level rise are expected to increase as tidal and storm generated waves continue to erode the unconsolidated shoreline bottom in the Project area. Under this alternative, the wetland would continue to be adversely impacted by storm events, resulting in a diminished capacity to act as flood storage area that protects adjacent areas from storm damage. Nearby would experience an increased risk for storm damage, which may result in impacts similar to those from Hurricane Sandy during large storm events including flooding of homes and damage to property/buildings. Additionally, loss of the adjacent roadway at each Project site represents a public safety issue in the event of an emergency as first responders would not be able to gain access to the residences. As a result, the No Action Alternative would have long-term negative impacts to human health and safety due to flooding.

Proposed Action

Under the Proposed Action direct benefits would be realized for 1,038 homes in the immediate nearby neighborhoods by reducing erosion and flooding. The wetland restoration activities would increase the function of the wetland to act as a flood storage area to protect adjacent areas from storm damage. Reduced flooding would also alleviate health impacts such as mold and other indoor air impacts that occur due to flooded structures. Protection of the roadway would also maintain reliability of above and below grade utilities including water, sewer, gas and electric services to the residents.

4.5 Cultural Resources

No Action Alternative

No archaeological or historic resources are known to be present within the Project area (Appendix B); therefore, no impacts on cultural resources are expected under the No Action Alternative.

Proposed Action

The NJDEP Historic Preservation Office has been contacted to determine whether historic properties are present, and if so the protective measures that may be necessary. The NJDEP Historic Preservation Office concurred via correspondence that no historic properties were present or would be adversely affected and that no impacts to cultural resources are anticipated from the Project (Appendix B). The site has been previously disturbed so archaeological remains are unlikely to be encountered. If any previously unknown historic, cultural, or archeological remains or artifacts are discovered during the course of the Project, the grantee has committed to avoid, to the extent practicable, any activities that may affect the remains or artifacts until the required coordination with relevant authorities such as the NJDEP Historic Preservation Office has been completed (Appendix B).

4.6 Socioeconomics, Environmental Justice, and Protection of Children

No Action Alternative

Under the No Action Alternative, no marsh or beach restoration would occur. The marsh or beach would continue to be adversely impacted by storm events, resulting in a diminished capacity to act as flood storage area that protects adjacent areas from storm damage. Nearby residential and commercial areas would experience an increased risk for storm damage, which may result in impacts similar to those from Hurricane Sandy during large storm events including flooding of homes and damage to property/buildings. As a result, the No Action Alternative would result in long-term moderate negative socioeconomic impact on low-income populations and on children that live in proximity to the Project area.

Proposed Action

Under the Proposed Action, installation of a living shoreline would increase the function of the shorelines to act as a flood storage area that protects the surrounding residential and commercial areas from flooding, resulting in reduced costs for repair of damaged buildings and facilities. Installation of the living shoreline would result in long-term beneficial impacts to surrounding residential and commercial communities and infrastructure. The generation of 40 new temporary jobs could potentially have a short-term and long-term minor positive socioeconomic impact in the area. Planting of native species in the Project area as part of wetland restoration efforts would be conducted by members of The Conservation Corps and would result in employment, service, training, and education opportunities for youth workers.

Overall, implementation of the Proposed Action would not result in any adverse impacts on environmental justice communities or the protection of children. The Proposed Action would indirectly benefit the entire two towns (total population 23,412 US Census 2010), by strengthening the natural buffer from storm surges, protecting critical infrastructure, preserving the tax base and the bayshore economic activities of fishing, crabbing, and oyster farming.

4.7 Land Use, Recreation, Public Safety, and Coastal Zone Management

No Action Alternative

Under the No Action Alternative, no living shoreline installation would occur. Under this alternative, the Project area would continue to be adversely impacted by storm events, resulting in a diminished capacity to act as flood storage area that protects adjacent residential and commercial land uses from storm damage. As a result, the No Action Alternative could have long-term negative impacts to land uses.

Under the No Action Alternative, negative effects to recreational activities would also continue in and surrounding the Project area, and current conditions in the coastal zone, including erosion from storm surges, would persist and erosion would worsen, resulting in a diminished coastal area.

Proposed Action

Under the Proposed Action, installation of marsh sills and a breakwater would increase the function of the marsh and beach areas to act as flood storage areas and would protect nearby residences from flood damage.

Under the Proposed Action, positive effects to recreational activities would be gained through a better functioning shoreline in and surrounding the Project area. Specifically, South Green Street is the main access route to a park at the end of the road which is widely used for boating and fishing year-round by members of the community and visitors alike. In addition, Iowa Court would include an educational sign and a park bench for the public.

4.8 Air Quality and Noise

No Action Alternative

Under the No Action Alternative, no living shoreline installation would take place. As a result, there would be no air quality impacts and no noise impacts on human sensitive receptors under this alternative.

Proposed Action

Air Quality

Air quality impacts associated with Project activities would include emissions from fossil fuel-fired equipment and vehicles, and fugitive dust from ground disturbance and transportation. Fossil fuel-fired equipment is a source of combustion emissions, including NO_x, CO, VOCs, SO₂, PM-10, PM-2.5, greenhouse gases, and small amounts of hazardous air pollutants. Gasoline and diesel engines must comply with the USEPA mobile source regulations in 40 CFR Part 85 for on-road engines and 40 CFR Part 89 for non-road engines. These regulations are designed to minimize emissions and require a maximum sulfur content in diesel fuel of 15 ppm. Project emissions could be reduced by limiting the idling time for fossil fuel-fired equipment. Fugitive dust is a source of respirable airborne particulate matter, including PM-10 and PM-2.5, which could result from ground disturbance activities and mobile source traffic on paved and unpaved roads. The amount of dust generated is a function of activity, silt and moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Fugitive dust is an air contaminant and may be considered air pollution if it unreasonably interferes with the enjoyment of life and/or property according to the air pollution regulations in N.J.A.C 7:27-5.2.

The generation of fugitive dust would be minimized by covering trucks when hauling earth or other materials that can become airborne, immediately stabilizing exposed areas, and watering dirt roads. Implementation of these BMPs would ensure that potential air impacts are localized, minor, and temporary.

Ocean County has been designed as a nonattainment area for the 2008 8-hour ozone standard and is part of the OTR, and has been designed as a maintenance area for the CO and PM-2.5 standards. Because of these designations and since the Proposed Action is a Federal action by the Department, the General Conformity Regulations under 40 CFR 93 Subpart B would be

applicable. Potential Project emissions are expected to be below the general conformity de minimis thresholds due to the expected size of the vehicle and equipment fleet and short time required to implement Project activities. Therefore, the proposed Project would not be subject to a conformity determination, and it would not be expected to have a negative impact on the State Implementation Plan and the efforts to achieve or maintain the NAAQS.

Noise

Project-related noise effects would result from the use of vehicles and equipment, which typically produce roughly 75 to 85 dBA of noise at 50 feet from the source (Federal Transit Administration 2006). These noise levels would be temporary and rarely steady; they would fluctuate depending on the number and type of equipment in use at any given time. At times, no equipment would be operating, and noise would be at or near existing ambient levels, and at other times, numerous equipment and vehicles would be operating, resulting in noise above existing background levels.

The Township of Little Egg Harbor Noise Control Ordinances prohibits construction and associated operation of tools or equipment between the hours of 6:00 p.m. and 7:00 a.m. the following day on weekdays or 6:00 p.m. and 9:00 a.m. on weekends or federal holidays. As a result, noise impacts from installation of the Proposed Action would be minor, intermittent, and temporary for nearby residential properties.

4.9 Sea Level Rise

No Action Alternative

Under the No Action Alternative, no living shoreline installation would take place. Coastal wetlands are vulnerable to the effects of sea level rise, increasing water temperatures, and increasing nutrients. Under this alternative, the shoreline would continue to erode from storm events and future sea level rise, resulting in continued water quality degradation, wetland deterioration, and exacerbated flooding of nearby communities resulting from a diminished capacity of the wetland to act as flood storage area. In the future, if accretion of river-borne sediment and organic matter is unable to keep pace with the combined effects of sea level rise and land subsidence, coastal marshes would be reduced or disappear due to loss of sediment. The coastal marsh in the Project area that currently buffers the shore from waves and erosion, filters nutrients and pollutants, and provides wildlife habitat would also be reduced or eliminated. The No Action Alternative would not address vulnerabilities to sea level rise, coastal flooding, erosion, and future large storms, resulting in long-term negative impacts.

Proposed Action

The Proposed Action Alternative would increase the resilience and ecological function of coastal habitat in the Project area by increasing the total acreage of marsh and restoring vegetation with native species. Installing a marsh sill and breakwater would further protect the wetland complex from the effects of increased weather intensity including increased storms and sea level rise. The Proposed Action would help alleviate the effects of increased weather intensity and sea level rise by improving the quality of stormwater discharge; promoting larger, healthier marsh complexes; and providing high-quality habitat to sustain fish and wildlife populations in the area.

Additionally, the Proposed Action would create education and public outreach opportunities associated with tidal marsh restoration. This effort has the potential to educate visitors on value of the marsh to the ecosystem, which would create a long-term beneficial impact. The Proposed Action represents an opportunity to monitor changes to the salt marsh that could result from coastal storms, sea level rise, flooding, erosion, and associated threats.

5.0 CUMULATIVE EFFECTS

CEQ regulations stipulate that a cumulative effects analysis be conducted to consider the potential impacts to the environment potentially resulting from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). Several projects are in the planning and permitting stages near the Project areas that would contribute to the long-term beneficial impact to the coastal communities. Both Little Egg Harbor and the Borough of Tuckerton are pursuing permits for maintenance dredging of nearby lagoons, scheduled for 2019. Osborn Island lagoon dredging in Little Egg Harbor has been recently bid and work is taking place in 2018. The Borough of Tuckerton is currently pursuing funding for living shoreline projects at various locations, including additional shoreline along Tuckerton Cove on South Green Street. This project timeline may be one to two years out. The combination of these projects would have overall beneficial effects for the communities and enhance the resiliency of the marsh.

Overall, no adverse cumulative effects are anticipated as a result of the Proposed Action in combination with other past, present, or reasonably foreseeable future actions. Long-term beneficial cumulative effects are expected as a result of enhanced water quality, wetlands, and fish and wildlife habitat in Great Bay and Little Egg Harbor.

6.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

6.1 Agency Coordination

Representatives of the following Federal, State, and local agencies, Tribes, and Project team members were consulted during Project planning and the development of this EA:

- USFWS
- NOAA NMFS
- USACE
- NPS
- NJDEP
- Ocean County
- Stevens Institute of Technology
- Barnegat Bay Partnership
- Jacques Cousteau National Estuarine Research Reserve
- Rutgers University Marine Field Station

Letters of support for the Project have been submitted by the following entities (Appendix A):

- NJDEP
- Department of the Army

- FEMA
- Cory A. Booker, United States Senator
- United States Department of the Interior
- The Corps Network
- Jacques Cousteau National Estuarine Research Reserve
- Ocean County Planning Board
- Osborn Island Residents Association

6.2 Public Involvement

The Project has undergone local, state, and federal permitting processes, as described in Section 7 of this document. Each permit process requires extensive environmental and planning agency circulation, as well as ample public notice and involvement that provide opportunities for a wide variety of specialists, regulators, and residents to comment on and condition the Project's potential short-term and long-term impacts.

For example, the USACE issued a public notice regarding issuance of a USACE permit pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the CWA, to solicit comments and recommendations from the public, federal, state, and local agencies and officials, tribes, and other interested parties in order to consider and evaluate the impacts of the proposed Project. Comments received were considered by the USACE in determining whether to issue, modify, condition, or deny a permit for the proposed Project (USACE 2018).

In addition, the NJDEP Coastal General Permit 24 application that was submitted for the Project requires public notice to all property owners located within 200 feet of the Project and municipal and county agencies. The public notice letters were sent via certified mail informing the public about the Project and letting the public know that the full application can be reviewed at the Municipal Clerks office or the NJDEP Division of Land Use Office.

7.0 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS

The Project has been evaluated for consistency with applicable federal, state, and local laws, regulations, and programs. In addition to this EA, the following permits and/or consultations are also required by local, state, and federal agencies:

- Coastal General Permit 24, Habitat Creation, Restoration, Enhancement, and Living Shorelines (NJDEP)
- Water Quality Certificate (NJDEP)
- Coastal Zone Management Consistency Determination (NJDEP)
- State ESA Consultation (NJDEP)
- Department of Army Permit (USACE)
- NHPA Section 106 Consultation (NJDEP and Tribal HPOs)
- Federal ESA Consultation (USFWS and NOAA Office of Protected Resources)
- EFH Assessment/Consultation (NOAA NMFS)
- Tidelands License (Tidelands Resource Council)

Consultations with regulatory agencies, including USFWS, NOAA, USACE, and state wildlife officials have been held to confirm the soundness of the Project and the ability to receive permits. Approvals have been obtained from USACE and NJDEP to ensure all work is compatible with the requirements of permits. Refer to Appendix B for agency consultation and permit authorizations received for this Project.

The Tidelands License is a requirement of the NJDEP Permit, GP 24. The State of New Jersey claims ownership of all tidelands, holding them in a trust which is overseen by the Tidelands Resource Council. The Iowa Court application was heard and approved at the Tideland Resource Council on July 11, 2018 and the license was issued September 12, 2018. Notice of approval for South Green Street was issued by the Bureau of Tidelands Management on August 7, 2018, and the license is effective as of August 1, 2018.

8.0 LIST OF PREPARERS

The following contributed to the development of this EA:

U.S. Department of the Interior

| Name | Role |
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| Andrew Raddant | Regional Environmental Officer |
| Diane Lazinsky | Regional Environmental Protection Specialist |

Project Partners

| Name | Role |
|-----------------------|--------------------------------------|
| Mayor Raymond Gormley | Grantee - Little Egg Harbor Township |
| Mayor Susan Marshall | Grantee – Borough of Tuckerton |
| David Kutner | Project Administrator – NJ Future |
| Leah Yasenachak | Project Administrator – BRS, Inc. |
| Jason Worth, P.E. | Project Engineer – T&M Associates |

Cardno, Inc.

| Name | Role | Project Responsibility |
|------------------|--------------------------------|--------------------------|
| Jennifer Wallace | Project Manager | Environmental Assessment |
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