

**Estuary Restoration Act of 2000**  
**Title I of Estuaries and Clean Waters Act of 2000**  
**Public Law 106-457 dated November 7, 2000**

**Report to Congress**

This is the third report prepared to meet the requirements of Section 108 of the Estuary Restoration Act, Title I of P.L. 106-457 (Act). This report covers the fiscal years 2007 and 2008 and reflects the views of the Estuary Habitat Restoration Council (Council) members and the Assistant Secretary of the Army (Civil Works).

**Background:**

The purposes of the Act are to promote the restoration of estuary habitat; develop a national estuary habitat restoration strategy for creating and maintaining effective partnerships within the federal government and with the private sector; provide federal assistance for and promote efficient financing of estuary habitat restoration projects; and develop and enhance monitoring, data sharing, and research capabilities. The Act establishes a Council consisting of representatives of five agencies: National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), and Departments of Agriculture and Army. The Council is charged with development and implementation of a national estuary restoration strategy, designed in part to meet the goal of restoring one million acres of estuarine habitat by 2010. The Act authorizes the Secretary of the Army to carry out a cost-shared program for design and construction of habitat restoration projects in accordance with the national Strategy developed by the Council (Federal Register, Vol. 67, No. 232).

**Water Resources Development Act 2007 (WRDA) Modifications:**

The Estuary Restoration Act was amended in section 5017 of the Water Resources Development Act of 2007 (PL 110-114). The amendments provide several significant changes to the Act, including the amounts authorized to be appropriated and extending the funding authorization until 2012. Among the significant changes, monitoring is now a cost-shared item to be included in the total project cost of projects funded under this authority.

Small projects have been defined as projects with an estimated Federal cost of less than \$1,000,000 and the Secretary of the Army, on recommendation of the Council, may delegate implementation of a small project to one of the other agencies/departments represented on the Council. Under this provision, projects delegated to another agency/department would be funded by that agency/department. The amendments include authorization of appropriations to the other departments/agencies for this purpose.

The amendments allow the U.S. Army Corps of Engineers (USACE) to consider the use of cooperative agreements to implement projects under this Act. Use of cooperative agreements might facilitate the implementation of smaller, less complex projects.

In addition to authorizing funds to implement projects for all the Council departments/agencies, \$1,500,000 is authorized to be appropriated to the Under Secretary of Oceans and Atmosphere of the Department of Commerce in each fiscal year through 2012, for the acquisition, maintenance, and management of restoration project information.

**Appropriations:**

The USACE received project funding of \$4,000,000 in fiscal year 2007 under the Continuing Resolution. Approximately half of this amount was used to restore funds that had been reprogrammed out of the account during years of slow project execution. No ERA funds were appropriated to the USACE in fiscal year 2008. NOAA received \$2,342,447 including rescissions/supplementals, in fiscal years 2007 and 2008 for development and maintenance of a national restoration project inventory and establishment of monitoring protocols for restoration projects.

**Accomplishments:**

As of September 2008, funding has been provided to 14 projects. Of these, two have been completed and a third is in construction. Seven are in various stages of planning and design. Four have terminated due to a variety of reasons. Unexpended funds that had been designated for terminated projects are being used in part to fully fund the proposal selected for funding in fiscal year 2008 and will be available for future projects. Brief summaries of the completed and ongoing projects are included in Appendix A.

The Council met in February 2007 and January 2008. Lists of projects recommended for the Army to consider funding were approved at those meetings. By statute, all of the Council meetings must be open to the general public and announced in advance in the *Federal Register*. Additional information about the Council and links to minutes of the meeting may be accessed through <http://www.usace.army.mil/estuary.html>. In addition, individuals may subscribe to an electronic list server that is used to send notices and information to the interested public about Council activities. The staff representatives of the five agencies comprise a workgroup that meets regularly to accomplish implementation of this Act. This dedicated group continues to exemplify the partnerships envisioned by the authors of the Act.

In February 2004, NOAA released the National Estuaries Restoration Inventory (NERI), a database developed in consultation with the other agencies in compliance with section 107 of the Act. NERI houses data on restoration techniques, monitoring parameters, and acres restored by habitat type. This information will assist restoration practitioners in prioritizing projects through evaluating the effectiveness of specific techniques, and providing guidance for better design and improved success of future restoration projects. NERI is Internet-accessible for project searches and uploading of information on restoration projects and is accessible at <https://neri.noaa.gov>. The inventory contains nearly 2,500 projects, which have been primarily collected through Council agency data collaborations. The estimated restored acreage of these projects totals over 162,000 acres; over 28,000 acres are either enhanced or protected.

Various data-sharing activities have been pursued since NERI's initial release. NOAA regularly contributes project information to the inventory from the Restoration Center Database. In 2007, FWS and NOAA completed a significant effort to import restoration project data from

the FWS Habitat Information Tracking System into NERI. Subsequent imports will continually add new projects to NERI as well as update existing projects. In 2008, NOAA and the USACE initiated a similar effort to import data. The current effort by the USACE to develop a national restoration project tracking system provides an excellent opportunity to align the new system with NERI, thereby facilitating future data imports.

In 2006, NOAA developed the Restoration Monitoring Planner. This tool, which can be accessed at <http://habitat.noaa.gov/restoration/rmp>, is designed to assist NOAA grantees in understanding and completing monitoring plans that meet monitoring requirements of their grant agreements. The Estuary Restoration Act (ERA) of 2000 directed NOAA to develop restoration monitoring guidance for all ERA-funded projects.

In May 2008, NOAA chaired a panel session put together by the Estuary Habitat Restoration Work Group on Coastal Habitat Restoration and Climate Change – Priorities for the Future. The panel session took place at the Society of Wetland Scientists Annual Meeting in Washington, D.C. Four panelists representing federal, state, and non-governmental organizations presented at the session on habitat restoration, research, policy, and planning in regards to climate change. Their insights will help to inform prioritization of coastal habitat restoration.

In fiscal year 2007, NOAA's Restoration Center and the National Ocean Service Estuarine Reserves Division contributed resources towards estimating the long-term success of restoration techniques, a goal of the Estuary Restoration Act. Grants have been awarded to five National Estuarine Research Reserves (Wells, ME; Narragansett Bay, RI; Chesapeake Bay, VA; North Carolina; South Slough, OR) for this work. Each Reserve began monitoring basic salt marsh characteristics (such as the percent of ground covered by each plant species and groundwater salinity) at a reference site in their reserve, and at several recent habitat restoration sites nearby. The Reserves will report the efforts of their first field season in late 2008. Outcomes will include reference site data that can be used by other restoration practitioners and an analysis of the success of past salt marsh restoration projects.

During fiscal years 2007 and 2008, NOAA has funded, in part with funds received under the ERA, a number of activities aimed at investigating the socioeconomic impacts of estuary habitat restoration. Restore America's Estuaries, a non-profit organization, and NOAA commissioned a pilot study with volunteers from three Restore America's Estuaries member organizations, Tampa Bay Watch (FL), Save San Francisco Bay Association (CA), and Galveston Bay Foundation (TX). The goal of the study was to begin to explore if or how volunteering in an environmental context relates to conservation behaviors when not engaged in volunteering. The report, *Human Dimensions: A Pilot Research Project Exploring Volunteerism and Conservation Behavior*, can be accessed at:

<http://www.estuaries.org/assets/documents/RAEHumanDimensionsReport.pdf>. In fiscal year 2008, NOAA is participating in a pilot project to demonstrate how indicators of human use can be collected and analyzed to demonstrate the impact of estuary and coastal restoration on human and economic outcomes. Preliminary results were shared with the larger restoration community through a workshop held at the 4th National Conference on Coastal and Estuarine Habitat Restoration in Providence Rhode Island, October 11-15, 2008. Finally, in May 2008, NOAA

joined Restore America's Estuaries to introduce the findings of a new report, *The Economic and Market Value of Coasts and Estuaries: What's At Stake?* The report can be accessed at: <http://www.estuaries.org/assets/documents/RAEHumanDimensionsReport.pdf>

**Future:** NOAA will continue to populate NERI with project information from throughout the nation, actively compiling data and working with the Council agencies and other public and private restoration organizations to encourage use of the national inventory for tracking progress toward the Strategy's million-acre goal. The Council agencies will also continue working together, and in conjunction with non-Federal partners, to promote estuary restoration, facilitate the development of regional restoration plans, and work to define common restoration goals and measures of success. As funds allow, additional projects will be recommended for funding. The Council agencies will also be revising the Strategy to more accurately reflect what they hope to accomplish over the next several years.

**Summary:** The Act has been a catalyst for increased cooperation among the Agencies represented on the Council. The Council agencies continue to work together well and contacts developed here have facilitated cooperation on other interagency endeavors. It is anticipated that interest in the program will continue to grow as current projects complete implementation and the program becomes better known.

**Appendix A**  
**ERA Project Summaries**

**NAME:** City of Long Beach's Colorado Lagoon

**LOCATION:** Long Beach, California

**ACRES/RIVER MILES:** 28.3 acres

**NON-FEDERAL SPONSOR(S):**

City of Long Beach

Friends of Colorado Lagoon

**PROJECT DESCRIPTION:**

The Colorado Lagoon is a 28.3 acre tidal lagoon that serves three main functions: hosting sensitive estuarine, wetlands and wildlife habitats, providing areas for public recreation and conveying storm floods. The Lagoon is used by hundreds of visitors from communities within and surrounding the City of Long Beach, California. There are over 700,000 local residents living in these communities. Project activities will consist of excavating contaminated sediment in the western arm of the Lagoon, re-contouring the slopes around the Lagoon, which will provide for increased and enhanced intertidal, mid and upland habitats, and re-vegetating these habitats by removing invasive non-native and ornamental plant species and replacing them with native plant species. The Lagoon is listed on the State of California's 303(d) list as an impaired water body.

**EXPECTED BENEFITS:**

This project will improve the estuarine habitat and prevent further native habitat loss by removing invasive ornamental landscaping and re-vegetating the Lagoon with native plant species. It will also create a better estuary habitat than currently exists by regrading the slopes surrounding the Lagoon to increase the amount of intertidal and upland habitat and will provide additional and improved estuary habitat such that animal and plant species are increased and/or introduced to the Lagoon. By removing contaminated sediments, biodiversity of the benthic community can be expected to thrive. This ensures that public access, use, and enjoyment of the Lagoon are enhanced.

**STATUS:** Planning and Design

**NAME:** Seal Island Restoration Project

**LOCATION:** Fenwick Island, Sussex County, Delaware

**ACRES/RIVER MILES:** 5 acres

**NON-FEDERAL SPONSOR(S):**

Delaware Center for the Inland Bays National Estuary Program

**PROJECT PARTNERS:**

Citizen Volunteers

City of Fenwick Island

Inland Bays Technical Assistance Team

**PROJECT DESCRIPTION:**

The project proposes to utilize bio-stabilization techniques to reduce shoreline erosion and to replant smooth cordgrass (*Spartina alterniflora*) that has been destroyed, primarily by large numbers of migratory Snow Geese. Coir fiber logs will be installed along the western shoreline of the island to stabilize the eroding area. The tidal marsh area will be planted with native cordgrass and will be protected by a goose exclusion system placed over the plants and around the perimeter. The goose exclusion system will be designed in consultation with experts from FWS' Prime Hook National Wildlife Refuge.

**EXPECTED BENEFITS:**

By restoring the smooth cordgrass marshes, this project will re-establish foraging and resting habitat for fish, crustacean, and insect species, which will in turn benefit wading and shore birds. The combination of shoreline stabilization and marsh restoration will also benefit the socio-economic value of Seal Island, which serves the local tourist industry (kayaking, sightseeing, fishing, crabbing, and bird watching) as well as protecting nearby residential and commercial property from storm damage.

**STATUS:** Planning and Design

**NAME:** Alligator Creek Addition Restoration Project

**LOCATION:** Charlotte County, Florida

**ACRES/RIVER MILES:** 350 acres

**NON-FEDERAL SPONSOR(S):**

Charlotte Harbor National Estuary Program

**PROJECT PARTNERS:**

Southwest Florida Water Management District

Florida Department of Environmental Protection

National Oceanic and Atmospheric Administration (NOAA)

U.S. Fish and Wildlife Service (FWS)

**PROJECT DESCRIPTION:**

The primary goal of this project is to restore the historic saltern that once comprised the majority of the west central portions of the Alligator Creek Addition parcel. The area has been severely impacted by the construction of mosquito ditches, which functioned to divert water flow and subsequently altered the hydroperiod of the saltern. Restoration will involve backfilling approximately 35,000 linear feet of mosquito ditches. Backfilling will allow a more diffuse sheet flow of fresh water from upland areas and will allow extreme high tide events to flood the salterns and slowly flow out through the mangrove forest fringe to the west. This project is anticipated to restore the natural hydroperiod, raise the interstitial salinities, and restore the natural sill in the saltern resulting in approximately 350 acres of saltern restoration and enhancement.

**EXPECTED BENEFITS:**

This project will restore and increase the diversity of coastal habitats by returning the historic hydroperiod and historic function to the area. The project will also compliment and enhance the environmental value of adjacent restoration activities.

**STATUS:** Completed



**NAME:** Indian River Lagoon

**LOCATION:** Brevard and Indian River counties, Florida

**ACRES/RIVER MILES:** 47.5 acres

**NON-FEDERAL SPONSOR(S):**

Marine Resources Council

Florida Department of Transportation (DOT)

Indian River Lagoon Program

**PROJECT DESCRIPTION:**

The goal of this project is to restore 47.5 acres of estuarine habitat in the Indian River Lagoon by removing invasive species, such as Brazilian pepper, and planting red and white mangroves. Invasive species will be removed using the basal bark and cut stump method. Once the invasive species are removed, 4,500 smaller red mangroves and 300 large red and white mangroves will be planted. The larger mangroves will be established within 30 to 90 days and will immediately provide habitat for aquatic species and birds.

**EXPECTED BENEFITS:**

The Indian River Lagoon has long been purported to be one of the most diverse estuaries in North America and is an Estuary of National Significance. It is the home of more protected species than any estuary in the U.S. The restored area will support over 50 rare, threatened or endangered species including the West Indian manatee, the Florida scrub jay, Johnson seagrass, and seven species of fish. This project supports the Comprehensive Conservation Management Plans for the Indian River Lagoon and the Indian River Lagoon Scenic Highway Corridor Management Plan. The mangroves will reduce erosion, filter runoff, and improve water quality. They will also help reduce wave and wind energy.

**STATUS:** Planning and Design

**NAME:** Banana River Estuary Restoration Project

**LOCATION:** Cape Canaveral, Brevard County, Florida

**ACRES:** 4.8 acres

**NON-FEDERAL SPONSOR:**

City of Cape Canaveral, Florida

**PROJECT PARTNERS:**

Keep Brevard Beautiful  
St. Johns River Water Management District  
Marine Resources Council  
Brevard County Natural Resources  
Florida Native Plant Society

**PROJECT DESCRIPTION:**

The City owned property to be rehabilitated consists of 4.8 acres of forested wetland/riparian zone that represents one of the last natural habitat properties within the City. Channels were previously dredged throughout the property and now provide brackish water marsh habitat for fish and wildlife. Project activities will consist of the eradication of non-native plant species such as Brazilian Pepper, which have displaced native species and cover about half of the area. Following removal of non-native plant species planting of native species such as red, white, and black mangroves will be performed. Monitoring is proposed for a period of five years with comprehensive annual reporting.

**EXPECTED BENEFITS:**

In general, the primary goal is to return one of the last undeveloped areas within the City limits to its historic natural state thereby improving wildlife habitat and water quality. The improvements will benefit wildlife surveyed within the area such as brown pelicans, herons, ibis, alligator, gopher tortoises, and many turtle and snake species. The project will also compliment a natural adjacent area of about 3 acres providing additional wildlife habitat benefits.

**STATUS:** Planning and Design

**NAME:** Fort Sheridan Coastal Habitat Restoration Project

**LOCATION:** Lake Forest, Illinois

**ACRES:** 30 acres

**NON-FEDERAL SPONSOR:** Lake County Forest Preserve District

**PROJECT DESCRIPTION:**

This project will stabilize 1000 feet of an eroded but ecologically significant forested ravine, within the Janes Ravine, along the Lake Michigan coastline. The project is based on the successful stabilization and sediment reduction project in a nearby ravine. The steeply sloped Janes Ravine houses an exceedingly rare community of relict northern-range plant assemblages. Continued destabilization and erosion of the ravine, due to focused releases of urban runoff, is identified with heavy sediment loads entering Lake Michigan. This project will utilize best management practices, such as channel grade controls, rip-rap, or regrading and filling, to stabilize the ravine's side slopes and channel bottom, and to reduce the volume and velocity of urban runoff by redirecting it through a series of upland vegetated swales and ponds, then into Lake Michigan. This project will also involve the removal of non-native species and the establishment of native herbaceous groundcover.

**EXPECTED BENEFITS:**

The project will improve the ravine habitat by stabilizing areas of erosion, remove point source stormwater flow from ravines, and re-introduce native vegetation, which will result in improved water quality entering Lake Michigan. The restored ravine habitat will also benefit several listed plant species. Access to the Lake Michigan shoreline in northeastern Illinois is limited, but this project will increase public access to this important coastal resource. The Janes Ravine restoration will also help protect the McCormick Ravine Nature Preserve, which is directly connected to Janes Ravine and is recognized for its high quality forest and ravine community.

**STATUS:** Construction

**NAME:** Stewart's Creek

**LOCATION:** Barnstable, Massachusetts

**ACRES/RIVER MILES:** 14 acres

**NON-FEDERAL SPONSOR(S):**

Town of Barnstable, Massachusetts

**PROJECT PARTNERS:**

Massachusetts Wetlands Restoration Program

Harbor Village Association

**PROJECT DESCRIPTION:**

The project will restore a degraded salt marsh and an estuarine embayment (open water and intertidal flat) at Stewart's Creek in Hyannis, Massachusetts. The restoration plan involves restoring tidal flushing to a salt pond/marsh system by replacing an existing undersized culvert. Approximately 3,200 cubic yards of material will be dredged to restore the salt pond. The salt marsh habitat in Stewart's Creek will be restored using this dredged material and then planted with smooth cordgrass to stabilize and colonize the area.

**EXPECTED BENEFITS:**

The project will restore pond and intertidal flat habitat to a condition suitable for high quality benthic invertebrate, fish, and wildlife habitat. Low quality *Phragmites australis* (an invasive plant) dominated areas will be restored with high quality smooth cordgrass habitat, which provides multiple benefits, including: increased biological productivity; nursery grounds for marine and estuarine species; increased recreational fishing potential; and increased filtering capabilities for the creek. The project is also expected to improve water quality and reduce the number of beach closures at Keyes Memorial Beach.

**STATUS:** Planning and Design

**NAME:** Old Place Creek Berm Removal Project

**LOCATION:** Staten Island, Richmond County, New York

**ACRES:** ~25 acres

**NON-FEDERAL SPONSOR:**

New York State Department of Environmental Conservation (NYSDEC)

**PROJECT DESCRIPTION:**

The New York State Department of Environmental Conservation will restore approximately 25 acres of tidal wetland habitat along Old Place Creek, a tidal estuary system located in Staten Island, New York. Restoration will be accomplished through removal of an earthen berm, restoring the tidal connection to the site. Following fill removal, the approximately 2 acre footprint of the berm will be planted with native salt marsh grasses. The back area, currently a monoculture of *Phragmites*, will be treated with herbicide and mechanically cleared to allow for natural recruitment of salt marsh vegetation.

**EXPECTED BENEFITS:**

The project will restore tidal wetland habitat area and function via regular inundation of the site with tidal waters from the creek. The berm material contains moderate levels of contaminants, particularly pesticides, and their removal from the system is an additional benefit of the project. In addition to the initial habitat benefits, another immediate benefit will be the increased storage capacity provided to reduce potential flooding of adjacent infrastructure and upstream communities. A greater degree of ecological benefits will accrue over time as the reconnected area has time to “season” and habitat function expands. These benefits will include expanded areas for foraging, refuge and spawning for marine and estuarine species, and benefits to resident and migratory shorebirds, wading birds, and waterfowl.

**STATUS:** Planning and Design

**NAME:** Half Moon Reef Restoration Project

**LOCATION:** Palacios/Matagorda County, Texas

**ACRES/RIVER MILES:** 290 acres

**NON-FEDERAL SPONSORS:** The Nature Conservancy

**PROJECT PARTNERS** Texas General Land Office  
Texas Parks and Wildlife

**PROJECT DESCRIPTION:**

Half Moon Reef is located on Palacios Point within Matagorda Bay, which lies north of Corpus Christi, Texas. Anecdotal information suggest this reef was once large and productive. Little cultch material exists there today. Sampling indicated the presence of live oysters and shell, although not in quantities great enough to re-establish the reef. The Colorado River was recently re-diverted reverting some of the original hydrology to the reef, and providing a salinity regime suitable for oyster propagation and growth. Three reefs established by the U.S. Army Corps of Engineers in the eastern arm of Wet Matagorda Bay are thriving and commercially viable, and provide evidence of the suitability of Half Moon as a restoration project.

**Expected Benefits:**

The project will result in the direct restoration of 20 acres of oyster reef on Half Moon Reef which will provide increased filtration, and therefore improved water quality in the bay. The reef structures will also create vertical relief that is almost non-existent in the bay; this will enhance fish and invertebrate habitat. Oyster reefs are also associated with feeding stations for large predatory fish. This restoration may enhance socio-economic benefits provided by fishing tourism in this area.

**STATUS:** Planning and Design

**NAME:** Restoration of Submerged Aquatic Vegetation (SAV) on the Seaside of Virginia's Eastern Shore

**LOCATION:** Northampton County, Virginia

**ACRES/RIVER MILES:** 60 acres

**NON-FEDERAL SPONSORS:**

Commonwealth of Virginia

Virginia Institute of Marine Science (VIMS)

**PROJECT DESCRIPTION:**

The goal of this project is to restore submerged aquatic vegetation (SAV) in seaside lagoons of Virginia's eastern shore. Eel grass (*Zostera marina*) seeds will be planted near Wreck and Gull Marsh Islands. Seed planting has been shown to be more cost-effective than planting vegetative parts. A SAV restoration program was initiated on the seaside eastern shore of Virginia in 1998 when VIMS first planted eelgrass test plots. Since that time, over 50 acres of eelgrass have been planted and over 90% of the plots have been successful. Despite a sharp die-off of SAV in the Chesapeake Bay in 2003, restored SAV beds on the seaside of the eastern shore continue to thrive. The proposed project would allow for rapid expansion of this restoration effort into additional areas of the seaside lagoons not yet planted. Seeding will take place within a 400 acre polygon. With current success estimates, seeding will result in projected restoration of 40 acres of SAV habitat

**EXPECTED BENEFITS:**

This project will improve habitat for interjurisdictional fish and migratory birds. It will provide habitat for the biotic community that depends on submerged aquatic vegetation for various life history requirements. It will also improve water quality by removing nutrients, stabilizing sediments, and buffering wave energy. SAV restoration could protect oyster reefs from excessive sedimentation and ameliorate siltation of navigation channels, thereby reducing the necessity of dredging existing channels.

**STATUS:** Completed