

**RESTORE BUCKET 2  
IDENTIFIED PROJECTS FOR  
PUBLIC COMMENT**

# **Beneficial Use of Dredged Material for Habitat Restoration**

**Location:** Orange, Jefferson, Chambers, Brazoria, Calhoun, Refugio and Aransas Counties

**Total Project amount:** \$25,000,000

**RESTORE Requested:** \$10,000,000

## **Project Summary**

The Beneficial Use of Dredge Material (BU) for Habitat Restoration project proposes to fund incremental costs needed to implement marsh restoration through the beneficial use of dredge material at eight priority project sites that have been identified by NRDA trustees and the Ducks Unlimited BU team. In 2018, the Phase 1 effort received funds from the Texas Trustee Implementation Group as part of the Deepwater Horizon settlement. Site investigations, geotechnical sampling and bathymetric surveys will be performed at each site to provide the information necessary to develop 60% engineering designs and US Army Corps of Engineers (USACE) permit application packages will be completed for each of these eight BU sites.

Implementation of the project has the potential to restore degraded wetlands, reduce erosion, improve water quality, create habitat, provide land reclamation, and increase coastal resiliency in an effective and efficient manner. The geographic scope of this project includes a large portion of Texas coast and would consider sediments from the GIWW and other federal ship channels, private ship channels and berths, as well as and the mining of Dredge Material Placement Areas currently used by the USACE and the Texas Department of Transportation (TxDOT). The eight priority sites consist of four sites in the Texas Chenier Plain and four sites in the Texas Mid-Coast, occurring within seven coastal counties. The four sites in the Chenier Plain (i.e., Upper Texas Coast) complement the Salt Bayou Marsh Restoration Plan, a multi-agency effort to restore the 55,000-acre Salt Bayou Marsh Complex in Jefferson County, that identifies beneficial dredge use as a major component of the long-term marsh restoration strategy.

## **Chenier Plain (4 Projects)**

### ***Chenier Plain Conservation Corridor***

**Location:** Orange, Galveston, Jefferson and Chambers Counties

**Total Project amount:** \$15,000,000

**RESTORE Requested:** \$10,000,000

## **Project Summary**

The Chenier Plain Conservation Corridor project proposes to protect and conserve up to 7,000 acres of coastal lands in southeast Texas, expanding an extensive conservation landscape of extremely high-value habitats and enhancing the viability and mission of the Texas Chenier Plain Refuge Complex. Conservation could be accomplished through a combination of fee acquisitions and conservation easements. The project will target parcels that possess unique conservation values such as: coastal prairies, pothole wetlands, oak and pine mottes, bayous, riparian corridors, cypress swamps, Chenier plains, salt meadows and tidal marshes. This landscape includes the McFaddin, Anahuac, Moody and Texas Point NWRs, the J.D. Murphree, Lower Sabine, Candy Abshier and Tony Houseman Wildlife Management Areas, and Sea Rim State Park, totaling approximately 140,000 acres. There are several tracts that are currently targeted for acquisition totaling 3,323 acres and an assortment of smaller tracts that straddle High Island, a salt dome

overlooking the Gulf of Mexico that attracts millions of migratory neo-tropical songbirds, shore and wading birds and waterfowl, with its freshwater ponds and live oak mottes and unique topography.

Industry and population growth along the Upper Texas Coast continue to place pressure on the remaining open spaces and directly impacts the Chenier Plain Ecosystem through channelization, subsidence, saltwater intrusion and erosion of critical shorelines. These impacts increase the risk of storm surge vulnerability of economically important industries and a nationally significant port. Conservation of these tracts proposes not only directly ensure long-term ecological benefits from the tracts, it aims to indirectly protect the industries and the port. In addition, the project proposes to enhance coastal resiliency by protecting economically important fisheries and valuable recreation areas.

### ***Salt Bayou Watershed Restoration and Protection***

**Location:** Orange, Jefferson and Chambers Counties

**Total Project amount:** \$17,000,000

**RESTORE Requested:** \$12,000,000

#### **Project Summary**

The Salt Bayou Watershed Restoration and Protection project proposes to implement several components to restore hydrology and marsh elevations to enhance wetlands and stabilize shorelines within the Salt Bayou Watershed Ecosystem along the Upper Texas Coast. The lower reach of the Salt Bayou Watershed is the largest contiguous estuarine marsh complex in Texas and is a highly productive fishery and critical storm surge protection barrier for inland marshes and communities, including Port Arthur and Beaumont. Salt Bayou and the adjacent Chenier Plain watersheds support a mosaic of some 130,000 acres of coastal wetlands. Natural diversity and productivity are dependent on sediment deposition and freshwater sheet flows to support these essential functions. Vegetation coverage has been reduced in places from near 100% to 50% or less. This project will work with local partners to increase the transport of freshwater from north of the GIWW into marshes south of the GIWW through construction of additional siphons underneath the Gulf Intracoastal Waterway, construction of shore protection structures to slow or stop erosion of existing marshes and replacing water control structures to reduce saltwater intrusion.

Numerous factors such as channelization, subsidence, and erosion of critical shorelines in the Chenier Plain Ecosystem have degraded habitats. This degradation increases the risk of storm surge impacts to economically important industries and nationally significant ports along the Upper Texas Coast. Restoration and protection of this marsh system proposes to not only directly ensure long-term ecological benefits from the habitats, it aims to reduce vulnerability of critical infrastructure to hurricanes and storm surges. In addition, the project proposes to enhance coastal resiliency by restoring and protecting economically important fisheries and valuable recreation areas.

### ***McFaddin NWR and J.D. Murphree WMA Wetland Restoration Enhancement***

**Location:** Jefferson County

**Total Project amount:** \$41,400,000

**RESTORE Requested:** \$41,400,000

#### **Project Summary**

McFaddin National Wildlife Refuge and J.D. Murphree Wildlife Management Area (JDMWMA) encompass over 83,000 acres in southern Jefferson County. These large, publicly held tracts provide coastal resiliency and buffer storm surge for neighboring communities and nationally significant petrochemical facilities. This project proposes to contribute to long-term habitat management, provide fish and wildlife habitat, and provide for coastal resiliency.

- a. JDMWMA - Interior ditch cleanout (53 linear miles) to improve water level management in all compartments, totaling approximately 10,000 acres. \$4 million
- b. JDMWMA - Regrade levees in compartments 2, 3, 4, 10, and 11 with in-situ and imported fill \$5 million
- c. JDMWMA - Repair/replace water control structure in compartment 1. Install new low-lift pumping structures in compartments 7/8, and 10/11 - \$5 million
- d. McFaddin NWR - Willow Lake Marsh Beneficial dredge placement incremental costs (complete 100% Engineering and Design (E&D), containment development, beneficial use (BU) placement) - \$5 million
- e. JDMWMA - BU sites in Salt Bayou Marsh incremental costs (100% E&D, containment development, BU placement \$7.5 million
- f. McFaddin NWR - Replace Star Lake water control structure - \$2,150,000
- g. JDMWMA - 3.3 miles of shoreline breakwater \$3.5 million
- h. McFaddin NWR - Repairs to Whites levee, Perkins levee, O-ditch levee, Wild Cow Bayou structure at \$3 million
- i. McFaddin NWR - Jefferson County Drainage request Cost for Oil Field Cut WCS 1 - \$500,000
- j. McFaddin NWR - Repairs existing beach berm along McFaddin Beach damaged during Hurricane Harvey - \$3 million.
- k. Flow Meters on McFaddin NWR and JDMWMA siphons - \$250,000
- l. Project monitoring 5 years post construction -- \$2.5 million

### ***Texas Point NWR Acquisition and Wetland Restoration Enhancement***

**Location:** Jefferson County

**Total Project amount:** \$19,700,000

**RESTORE Requested:** \$19,700,000

#### **Project Summary**

Texas Point NWR encompasses approximately 9,000 acres in southeastern Jefferson County, directly adjacent to the Gulf of Mexico and the Sabine Neches Waterway. The refuge is important to migratory and wintering waterfowl of the Central Flyway and provides critical year-round habitat for resident Mottled Ducks. The refuge provides coastal resiliency and buffers storm surge for neighboring communities and the nationally significant petrochemical facilities in Port Arthur. This project proposes to contribute to long-term habitat management, provide fish and wildlife habitat, provide for coastal resiliency, promote/expand public use, and provide for first-responder access.

- a. Acquisition of approximately 455 acres to add to current refuge -- \$1,800,000.
- b. Construction of 1.5 miles of breakwater along eroding shoreline along the Sabine Neches Waterway -- \$2,500,000
- c. Construction of water control structure at Texas Bayou and to regulate saltwater intrusion, safeguard marshlands against petrochemical spills, etc. \$6,000,000.
- d. Public Access improvements - Rehabilitate/construct two boat launches and the only road that provides public access, law enforcement access, and pollution response access- 5,000,000

- e. Initiate Texas Point Sand Source Search and preliminary engineering of beach template - 1,800,000
- f. Placement of rock material behind item B above, and distribution of existing rock material at existing rock weir to create oyster habitat - \$100,000
- g. Hydrological modeling and 5 years of post- construction ecological monitoring - 2,500,000

## Coastal Prairie Acquisition and Management

**Location:** Refugio, Goliad, Calhoun, Aransas, Matagorda and Brazoria Counties

**Total Project amount:** \$22,000,000

**RESTORE Requested:** \$20,000,000

### Project Summary

The Coastal Prairie Acquisition and Management project proposes to acquire important prairie/grass land habitats within the Coastal Bend area of Texas and fund management practices to enhance native diversity, productivity and ecological services of those tracts. Prairie habitats along the Texas Coast continue to be lost to development and agriculture processes which have led to a significant decline in areal coverage. By some estimates, less than 1% of the coastal tallgrass prairie remains intact throughout much of its historic range in Texas. This loss is reflected in the entire community of grassland-dependent species. Grassland-nesting birds, for example, are in more rapid decline than any other group of songbirds. The proposed project consists of fee acquisitions or conservation easements on a number of tracts to be determined by availability from willing sellers at the time of award and funding, with larger tracts, or tracts contiguous with existing conservation lands, given the highest priority. The listed counties represent the greatest remaining opportunity for landscape-scale conservation of coastal prairie. Landscape-scale conservation can contribute to the recovery of listed species and species in decline such as the Attwater's prairie chicken, bobwhite quail, loggerhead shrike and the monarch butterfly. A coalition of state, federal and NGO partners has identified more than a dozen tracts within the target area meeting these criteria, ranging in size from ~ 1,500 acres to ~ 20,000 acres. These areas support diverse and unique communities of plants which provide valuable ecological services such as flood control, soil conservation, and water filtering. In addition, the project proposes to fund land management practices to restore native diversity and productivity through strategic and adaptive application of proven management practices such as controlled burns and invasive species suppression on acquired and existing land holdings.

Conservation and management of these tracts proposes to not only ensure long-term ecological benefits from the tracts, but to also protect watersheds that feed into estuarine areas from the impacts of land fragmentation and development, prevent development in flood prone areas, and enhance coastal resiliency, including storm surge and flood water mitigation. The acquisition of these tracts aims to benefit multiple resources as the project would ensure long-term native diversity, productivity and will protect areas of high-quality coastal prairie habitats.

# Coastwide Waterbird and Shorebird Habitat Restoration, Management and Stewardship

**Location:** Coastwide

**Total Project amount:** \$40,000,000

**RESTORE Requested:** \$30,000,000

## Project Summary

In Texas, many waterbirds and shorebirds are in decline. Data collected over the past 40 years by the Texas Colonial Waterbird Society on breeding waterbirds suggest that the majority of species that nest along the Texas coast have declined over the period. Species include the State listed reddish egret, black skimmer, little blue heron, and gull-billed tern. Shorebirds and secretive marsh birds including snowy plover, Wilson's plover, federally listed piping plover, proposed for listing black rail and king rail are listed as species of greatest conservation need. The declines in waterbirds and shorebirds has been linked to loss of habitat, human disturbance, and the presence of invasive species. This project proposes to rebuild and manage nesting islands, reduce human disturbance, and enhance waterbird habitat on public and private land. This project would include monitoring of activities to determine and document outcomes.

One project element works with local site managers that have important breeding and wintering shorebird and secretive marsh bird habitat to develop and implement site stewardship plans. Site stewardship actions will include; protection of nesting birds through real or symbolic fencing, reducing human disturbance and monitoring of activities and outcomes. (\$2.5M)

A second project element addresses island management over five years. It would include: 1) removal of exotic/invasive plant species and establishment of native plant community; 2) monitor and manage rookery islands for nest predators; 3) install protective signage to minimize human disturbance; and 4) promote waterbird conservation through proactive and opportunistic public education and outreach. (\$2.5 M)

A third element protects and/or restores island habitat identified in the Texas Coastal Resiliency Master Plan. This element would implement the following actions: Sabine Lake Waterbird Island Creation (\$5.0 M), Galveston Bay Intertidal Reef Restoration (\$1.2 M), Matagorda Bay Island Creation (\$10 M), San Antonio Bay Rookery Island Creation (\$5.5 M), Nueces Bay Causeway Island Protection (\$2.7 M), Upper Laguna Madre, Triangle Tree and Tern Island Erosion Protection (\$3.6 M), Lower Laguna Madre Laguna Vista Spoil and Bahia Grande Islands Erosion Protection (\$7 M).

A fourth element supports actions taken by private landowners to enhance habitat for secretive marsh birds by using fences, prescribed fire and mechanical treatments. (\$1 M).

## Coastwide Oyster Restoration

**Location:** Galveston, Brazoria, Matagorda, Aransas, Calhoun, Nueces, Kleberg, Willacy and Cameron Counties

**Total Project amount:** \$55,000,000

**RESTORE Requested:** \$25,000,000

### Project Summary

The Coastwide Oyster Restoration Project proposes to restore up to 300 acres of intertidal and submerged oyster reefs within the major bay systems in Texas. Several major hurricanes and coastal flood events have dramatically impacted oyster reef habitats in Texas and these critical resources have not recovered to a level that would sustain a healthy fishery or provide the full ecological services benefits. The proposed project would utilize a landscape approach to design, permit, and construct a combination of source and harvestable reefs to increase oyster population sustainability and habitat resiliency. The project will build upon initial efforts conducted by the DWH Texas Trustee Implementation Group's oyster restoration study for Galveston Bay and will develop additional site-specific design criteria for each Texas bay system.

Restoration of oyster reefs aims to not only ensure long-term ecological benefits from the habitat, but to indirectly improve water quality through filtration. The project proposes to also provide ecosystem benefits by enhancing fisheries habitat and would be an ongoing source of larvae for populating surrounding reefs. In addition, interstitial spaces within reefs aim to provide habitat for aquatic organisms such as fish, crabs, and benthic invertebrates and the placement of reefs in appropriate intertidal areas would benefit avian species that utilize the reefs for feeding and loafing habitat.

## East and West Galveston Bay Watershed, Wetland and Habitat Conservation

**Location:** Galveston, Brazoria, and Chambers Counties

**Total Project amount:** \$20,000,000

**RESTORE Requested:** \$15,000,000

### Project Summary

The East and West Galveston Bay Watershed, Wetland, and Habitat Conservation project proposes to work with various partners to protect and conserve approximately 5,000 acres of coastal lands which are critical to water quality and habitat protection. Conservation could be accomplished through a combination of fee acquisitions and conservation easements. The proposed project is scalable in terms of time and funding and would be ideally implemented over a 5 to 7-year timeframe at a cost of approximately \$3 million per year. The proposed project will target parcels that possess unique conservation values such as: wetlands, bottomland hardwood forests, floodplains, riparian areas, coastal prairies, barrier islands and peninsulas. Although the target tracts protect a diversity of habitats, from barrier island to coastal prairie, recent hurricanes, including Ike and Harvey, have made obvious the critical role strategic land conservation needs to play in the resiliency of both the natural and built environments around Galveston Bay.

Population growth in the Houston/Galveston area continues to place pressure on the remaining open spaces and threatens productivity of the associated habitats. In addition, development in sensitive areas impacts critical habitats, wildlife, and water quality in the adjacent bay system. Conservation of these tracts aim to not only directly ensure long-term ecological benefits from the tracts, but to also indirectly protect adjacent estuarine areas from the impacts of land fragmentation and development, improve water quality, and enhance coastal resiliency by protecting economically important fisheries and valuable recreation areas.

## **Lower Laguna Madre Conservation Corridor**

**Location:** Willacy and Cameron Counties

**Total Project amount:** \$30,000,000

**RESTORE Requested:** \$25,000,000

### **Project Summary**

The Lower Laguna Madre Conservation Corridor project proposes to acquire important coastal habitats near the Lower Laguna Madre Bay System in Willacy and Cameron Counties, Texas. The area is composed of several habitats that include tidal wetlands, uplands, resacas, saline coastal prairies, thorn scrub, and barrier islands. The proposed project consists of acquisition of fee surface or conservation easements on a number of tracts to be determined by availability from willing sellers at the time of award and funding availability. Three tracts are currently targeted as meeting habitat and scale criteria, totaling 14,86 acres of fee acquisitions. The intent of the proposed project will be permanent conservation of at least one tract of this scale, and possibly two tracts (or a combination of one tract of this scale and smaller tracts that add significant value to the Lower Laguna Madre conservation landscape) The areas support a diverse and abundant assemblage of plants and animals, including numerous species of resident and migratory songbirds, waterfowl, shore and wading birds, including listed species and species of greatest conservation need.

Conservation of these tracts aim to not only directly ensure long-term ecological benefits from the tracts, but to also indirectly protect adjacent estuarine areas from the impacts of land fragmentation and development, improve water quality, and enhance coastal resiliency. The acquisition of these tracts aims to benefit multiple resources as the project would ensure long-term native diversity, productivity and protect high-quality coastal habitats.

## **Matagorda Conservation Corridor**

**Location:** Matagorda, Calhoun and Aransas Counties

**Total Project amount:** \$26,000,000

**RESTORE Requested:** \$20,000,000

### **Project Summary**

The Matagorda Conservation Corridor project proposes to acquire important coastal habitats near the Matagorda Bay System in Matagorda, Calhoun and/or Aransas Counties, Texas. The area is composed of several habitats that include uplands, bayous, saline coastal prairies, intertidal emergent wetlands, and barrier islands and peninsulas. The proposed project consists of acquisition of fee surface or conservation easements on a number of tracts to be determined by



availability from willing sellers at the time of award and funding availability. Three tracts are currently targeted as meeting habitat and scale criteria totaling 29,300 acres of fee acquisition and conservation easements. The proposed project will be permanent conservation of at least one tract of this scale, and possibly two tracts (or a combination of one tract of this scale and smaller tracts that add significant value to the Matagorda Bay conservation landscape) The areas support a diverse and abundant assemblage of plants and animals, including numerous species of resident and migratory songbirds, waterfowl, shore and wading birds, including listed species and species of greatest conservation need.

Conservation of these tracts aim to not only directly ensure long-term ecological benefits from the tracts, but to also indirectly protect adjacent estuarine areas from the impacts of land fragmentation and development, prevent development in high-risk areas, and enhance coastal resiliency, including storm surge and flood water mitigation. The acquisition of these tracts aims to benefit multiple resources as the project proposes to ensure long-term native diversity, productivity and to protect areas of high-quality coastal habitats. These areas include emergent marshes, tidal flats, coastal prairies, lagoons, and other coastal wetlands.

## **Shoreline Protection/Living Shorelines**

**Location:** Orange, Jefferson, Chambers, Brazoria, Calhoun, Aransas and Nueces Counties

**Total Project amount:** \$20,000,000

**RESTORE Requested:** \$15,000,000

### **Project Summary**

The Shore Protection/Living Shorelines Project proposes to construct rock breakwaters or oyster reefs to protect estuarine shorelines and marshes from loss due to erosion or wave action. A number of factors have contributed to increasing rates of bay and channel shoreline loss, including increasing boat traffic, altered sediment regimes, and relative sea level rise. As a result, increasing numbers of private and public waterfront landowners are looking to harden or armor shorelines to stop or reduce rates of shoreline loss. Living shorelines offer an alternative to traditional sheet piling and bulkheading that results in dramatically increased species diversity, carrying capacity and productivity compared to other traditional methods of armoring. The proposed project will target approximately 25 miles of highly eroding shorelines along the GICWW, vulnerable bay shorelines, and locations that have been identified as suitable areas for beneficial placement of dredge materials. Living shorelines can reduce damage to shorelines by dampening wave action and trapping sediments elevating sub-aqueous shore profiles to a level that will support marsh vegetation. In addition, the proposed project will provide ecosystem services by providing hard structure habitats for fish and oysters, nutrient and sediment removal, seagrass protection, and water quality improvement.

Implementation of the project has the potential to protect wetlands, reduce erosion, improve water quality, create habitat, provide land reclamation, and increase coastal resiliency in an effective and efficient manner. The geographic scope of this project includes a large portion of Texas coast and would consider numerous sites along the GICWW and bay systems. The project aims to control shoreline erosion and to protect and preserve valuable marsh habitats along the Texas coast. In addition, strategic placement of shore protection projects, the projects aims to facilitate the use of dredge material for marsh restoration. The project proposes to also enhance coastal resiliency by protecting important natural resources that support activities which are critically important to the region's economy such as fishing, hunting, and nature-based tourism.

## **Baffin Bay (4 Projects)**

### ***Baffin Bay Water Quality***

**Location:** Kleberg County

**Total Project amount:** \$37,500,000

**RESTORE Requested:** \$37,500,000

#### **Project Summary**

The Water Quality Baffin Bay project proposes to implement measures and best management practices (BMPs) to reduce non-point source pollution into Baffin Bay to improve water quality within the bay system. The goal is to reduce nutrient loading into Baffin Bay thereby reducing the instances of eutrophication, hypoxia or harmful algae blooms that impact economically valuable fisheries and sensitive habitat that occur within the bay system and the adjacent Laguna Madre. The proposed project will build on existing watershed studies and initiatives being undertaken by several water quality workgroups. The predominate source of nutrients contributing to water quality issues within Baffin Bay are agriculture practices occurring in the bay system's watersheds. This proposed project would incentivize farmers to utilize cropland management strategies and BMPs to reduce nutrient loading into waterways and ditches that drain into the watershed. These methods could include but are not limited to: conservation, constructed wetlands, cover crops, reduced till, nutrient management, filter strips, and vegetated/grassed waterways.

The proposed project aims to protect and restore water quality within Baffin Bay and its headwater tributaries, and to enhance ecosystem services and improve the overall productivity of the system. Reduction of excessive nutrient loading into the Baffin Bay system aims to help maintain stable food webs, healthy and diverse seagrass, and wetland plants communities, and increase populations of recreationally and commercially important fish and macroinvertebrate species.

### ***Improvements Along Petronila Creek Tri-County Watershed***

**Location:** Kleberg County

**Total Project amount:** \$144,300,000

**RESTORE Requested:** \$144,300,000

#### **Project Summary**

The Improvements Along Petronila Creek Tri-County Watershed project proposes to create five water quality ponds along the watershed to improve the settlement of damaging nutrients and polish storm water through wetland plantings. The five ponds will significantly improve the water quality draining into Baffin Bay while creating approximately 500 acres of new wildlife and bird habitat.

The proposed project is a significant regional and state environmental and economic resource that supports some of the highest commercial and recreational fish landings in Texas, provides critical migratory bird habitat, wildlife habitat, and numerous recreational opportunities in Kleberg County and surrounding areas of the Lower Texas Gulf Coast. It currently exhibits symptoms of water quality degradation that threaten the health of the bay and its valuable fishery. Petronila Creek, San Fernando Creek and Los Olmos Creek watersheds drain into Baffin

Bay. The proposed tri-county project originates in Jim Wells Co., drains through Nueces Co. and ends in Kleberg County (Baffin Bay). Five regional detentions ponds have been identified to filter storm water using wetland/flood control ponds. Based on the U.S. Corp of Engineers, Hydrologic Modeling System (HEC -HMS), the ponds selected will provide a 10% to 20% reduction in flood levels for the 100-year event Environmental Benefits

### ***Improvements Baffin Bay Shoreline Septic to Sewer***

**Location:** Kleberg County

**Total Project amount:** \$31,000,000

**RESTORE Requested:** \$31,000,000

#### **Project Summary**

The Improvements Baffin Bay Shoreline Septic to Sewer project proposes to convert approximately 275 homes located along the developed shoreline of Baffin Bay from septic tanks to a municipal sewer system. The homes are concentrated along the coastline and represent a high priority for reducing sewage leakage to the bay. An existing wastewater treatment plant (WWTP) is upgradeable and can handle the additional load and its discharge will include a water quality wetland pond component, Baffin Bay is a significant regional and state environmental and economic resource that supports some of the highest commercial and recreational fish landings in Texas, provides critical migratory bird habitat and wildlife habitat. Baffin Bay currently exhibits symptoms of water quality degradation that threaten the health of the bay and its valuable fishery. The bay has undergone a long-term increase in chlorophyll and total Kjeldahl nitrogen and currently has dissolved organic nitrogen concentrations that are 2-3 times higher than other Texas estuaries. A recent study showed that both water column nitrogen and algal biomass in Baffin Bay have a strong signature of septic-derived sewage pointing to the need to eliminate failing septic tanks to reduce excessive nutrient inputs.

### ***Detention & Flood Control Project***

**Location:** Nueces County

**Total Project amount:** \$100,000,000

**RESTORE Requested:** \$100,000,000

#### **Project Summary**

The Baffin Bay Detention & Flood Control Project proposes a multi-county approach to address Baffin Bay water quality issues and related flooding in those jurisdictions in which stormwater flows through and eventually drains into Baffin Bay. The proposed project will directly impact three (3) South Texas counties, but Nueces County is fervently working toward creating a consortium among Nueces, Aransas, Refugio, San Patricio, and Kleberg counties to identify locations for possible detention ponds that will act as water quality filtration ponds by controlling downstream flooding. During the temporary storage of the stormwater, it is expected that suspended solids will settle to the bottom of the filtration ponds, thus improving water quality. If the total solid retention is good, then the retention of other pollutants that bind to particles is generally also good. Native vegetation surrounding the ponds will serve as a natural filter, removing impurities and helping to improve downstream water quality against nonpoint source pollution.

This proposed project proposes to allow the jurisdictions to build resiliency against flood events and reduce peak stormwater discharges. The filtration pond method was chosen since

continuous ponding of water can lead to many serious problems like algal growth, mosquito breeding, drowning, difficult access for cleaning, bad odors, etc. All efforts for this proposed project will be coordinated with best management practices in the watershed.

## Whooping Crane Habitat

**Location:** Aransas, Refugio and Calhoun Counties

**Total Project amount:** \$20,000,000

**RESTORE Requested:** \$15,000,000

### Project Summary

The Whooping Crane Habitat Protection project proposes to conserve important coastal habitats that are critical for Whooping Crane recovery and expansion in Refugio, Calhoun and/or Aransas Counties, Texas. Recovery targets for the whooping crane include doubling the current Aransas-Wood Buffalo population from its current level of around 500 birds. Whooping cranes are very territorial, and the 115,000-acre Aransas National Wildlife Refuge is clearly reaching its carrying capacity, as birds are more and more consistently branching out onto other public and private lands. Many of these lands are in danger of fragmentation and conversion, jeopardizing the continued recovery of the species. The targeted areas are composed of several habitats that include uplands, bayous, pothole wetlands, saline coastal prairies, tidal/mud flats, intertidal emergent wetlands, and barrier islands and peninsulas. The proposed project consists of fee acquisitions or conservation easements on a number of tracts to be determined by availability from willing sellers at the time of award and funding availability. Three tracts are currently targeted as meeting habitat and scale criteria totaling 8,249 acres. The intent of the proposed project will be permanent conservation of tracts that protect critical habitat areas for Whooping Cranes with a priority given to scale and connectivity and current or potential use by cranes. In addition to being habitat for the cranes, the targeted areas also support a diverse and abundant assemblage of plants and animals, including numerous species of resident and migratory songbirds, waterfowl, shore and wading birds, amphibians and reptiles including listed species and species of greatest conservation need.

Conservation of these tracts aim to not only ensure long-term protection of critical crane habitat areas, but to also protect adjacent estuarine areas from the impacts of land fragmentation and development, prevent development in high-risk areas, and enhance coastal resiliency, including storm surge and flood water mitigation. The acquisition of these tracts aims to benefit multiple resources as the project ensures long-term native diversity, productivity and proposes to protect areas of high-quality coastal habitats. These areas include coastal grasslands, emergent marshes, tidal flats, and other coastal wetlands.

## Columbia Bottomlands

**Location:** Brazoria and Matagorda Counties

**Total Project amount:** \$12,000,000

**RESTORE Requested:** \$10,000,000

### Project Summary

The Columbia Bottomlands project proposes to focus is on acquiring tracts that range from 50 to 500 acres that adjoin lands already protected by a conservation agency or nonprofit. The goal is to protect at least 1,000 acres per year at a cost of roughly \$4 million annually. The Columbia Bottomlands habitat supports a great diversity of wildlife. The bottomlands are home to large populations of both resident and migratory wildlife, including more than 400 different wildlife species. The bottomlands, as part of the Texas Coastal Plain, annually provide critical habitat for numerous Nearctic-Neotropical migrants which pass through the area during fall and spring migration. This is the only expanse of forested wetlands adjacent to the Gulf of Mexico in Texas. Millions of migrants make landfall in the bottomlands during spring migration and also use the area during fall migration. Migrating birds depend on bottomland forests for rest and feeding before and after crossing the Gulf.

Land ownership in the region is somewhat fragmented. A few large ranches with valuable bottomlands habitat remain, and there are many smaller properties held by families, farmers, local institutions and businesses. Many long-term owners have come to appreciate the environmental significance of their property and have welcomed the opportunity to sell land or easements to the Fish and Wildlife Service, Natural Resources Conservation Service, Texas Parks and Wildlife Department, county parks agencies or one of the numerous private conservation organizations at work in the region (The Nature Conservancy, Katy Prairie Conservancy, Cradle of Texas Conservancy, Ducks Unlimited, etc.).

## **Armand Bayou Floodplain Preservation**

**Location:** Harris County

**Total Project amount:** \$10,000,000

**RESTORE Requested:** \$5,000,000

### **Project Summary**

The Armand Bayou Floodplain Preservation project proposes an initial phase of acquisition of 132.5 acres of floodplain riparian forest on both banks of an undeveloped stretch of Armand Bayou within the Armand Bayou Coastal Preserve. Acquisition is proposed under the Harris County Flood Control District's (HCFCD) Floodplain Acquisition & Preservation Program, which buys undeveloped floodplain lands to prevent development in high risk areas and protects riparian habitat and ecosystem functions. Once acquired by HCFCD, it will enter into an agreement with the Harris County Precinct 2, which will allow the Precinct to add these lands to the long-term lease with the Armand Bayou Nature Center for restoration and ongoing management. Restoration and enhancement will include removal of non-native invasive species, enhancement of existing wetlands and appropriate creation of new wetlands.

## **Sargent Beach Breakwater and Beach Nourishment Pilot Project**

**Location:** Matagorda County

**Total Project amount:** \$34,828,906

**RESTORE Requested:** \$33,750,000

### **Project Summary**

The Sargent Beach Breakwater and Beach Nourishment Pilot Project proposes to construct five segmented offshore breakwaters plus an angled terminal groin at the Mitchell's Cut inlet and implement beach nourishment consisting of 500,000 cubic yards of beach-quality sand along the primary 7,200 linear foot project area and 300,000 cubic yards of sand placed along approximately 2,640 linear feet downdrift side of Mitchells Cut to off-set any potential secondary impacts.

The Matagorda Peninsula and Sargent Beach experience some of the highest erosion rates along the Texas Gulf Coast. Extensive shoreline retreat, a result of erosion from hydrodynamic impacts by waves and storms, is increasing due to sea-level rise shifting the effects of wave and current action further landward. With escalating storm intensity and frequency, the combination of these impacts exacerbates damages to critical habitat for threatened and endangered species and places the surrounding communities at risk. A robust coastline is the first line of defense from these damaging processes; therefore, it's imperative that this shoreline and its beaches are protected, nourished and maintained to ensure resilience and restore habitat that has been severely damaged.

Beach quality sand will be sourced from areas pre-identified in the sand source investigation conducted for the project and will include: beneficial use of dredged materials (BUDM) from the San Bernard River, USACE placement areas along with GIWW adjacent to the Colorado River, BUDM from the mouth of the Colorado River and/or private placement areas along the Colorado River. Breakwater and groin construction activities will be waterborne and will be conducted from offshore barges with cranes. Beach nourishment activities will be conducted from the waterside utilizing barge and pump systems.

The proposed project provides a first line of defense for erosive events, but also restores the vastly eroded habitat for endangered species such as the piping plover, red knot and Kemp's Ridley nesters and encourages use by other plants and wildlife.

## **Regional Wastewater Treatment Facility**

**Location:** Orange County

**Total Project amount:** \$50,000,000

**RESTORE Requested:** \$45,000,000

### **Project Summary**

The Regional Wastewater Treatment Facility project proposes to further develop and construct a regional wastewater treatment facility (WWTF) in Orange County to remedy one of the most severe Total Maximum Daily Load (TMDL) problem areas in Texas. A regional entity will be formed with partners sharing a common purpose, while maximizing the benefits to all parties, to administer and oversee the development and ultimate operation of the proposed WWTF. Each existing WWTF would be retrofitted to serve as a pump station that would convey raw wastewater to the regional WWTF. The regional entity will be responsible for conveying the raw wastewater from the existing WWTF's through new force mains to the regional WWTF for treatment. Collection of raw wastewater from individual residents (retail service) would remain unchanged and would remain with each entity.

The proposed WWTF is in response to both EPA and TCEQ findings in a TMDL that bacteria, dissolved oxygen, and pH are at unacceptable levels in Adams and Cow Bayous and their tributaries. Once completed the WWTF aims to improve water quality and restore aquatic habitat and Adams and Cow Bayou watersheds, which ultimately flow into the northern Gulf of Mexico, by the reduction of excess nutrients and other pollutants to control dissolved oxygen levels.

## **Victoria County Regional Water Quality Restoration Project**

**Location:** Victoria

**Total Project amount:** \$1,200,000

**RESTORE Requested:** \$960,000

### **Project Summary**

The Victoria County Regional Water Quality Restoration Project proposes to provide restoration of hydrology and natural process and reduce excess nutrients and other pollutants to watersheds. Victoria County has identified activities within the county in which natural hydrologic processes have changed over time, as well as identified changes contributing to excess nutrients and pollutants present in local watersheds which contribute to the water quality in the regional bays and Gulf of Mexico. Numerous factors such as natural hydrologic flow, flooding and water quality in relation to excess nutrients and other pollutants must be addressed in order to provide positive impacts for improvement of the regional coastal environment.

Victoria County aims to further assess identified water quality activities based on prioritizing project goals and objectives with emphasis on the most positive impact to the surrounding region and coastal environment. All identified project activity goals and objectives propose to be assessed for critical environmental impacts and professionally engineered to ensure the maximum benefit/protection of the surrounding region and coastal environment. All environmental and engineering determinations will be followed for strict compliance during stages of the project in which solutions are implemented to restore hydrology and natural processes and/or reduce excess nutrients and other pollutants in watersheds. After project activities are complete, Victoria County proposes to continue to monitor outcomes to provide future sustainability and positive impacts for the coastal region.

Environmental benefits of the proposed project potentially include: protection and conservation of regional coastal habitats; restoration of hydrology and natural processes and/or connectivity; reduction of excess nutrients and other pollutants to watersheds; enhanced water quality in the surrounding region and coastal environment; and general positive impacts to protect, restore and enhance the regional coastal environment.

## **Greens Bayou Watershed Open Space Conservation Project**

**Location:** Harris County

**Total Project amount:** \$17,500,000

**RESTORE Requested:** \$17,500,000

### **Project Summary**

The Greens Bayou Watershed Open Space Conservation Project proposes to protect and restore a corridor of open space parcels in Greens Bayou watershed along Greens and Halls bayous in Northeast Houston. The proposed acquisition of these parcels is part of a larger plan to conserve some of the last remaining large parcels of undeveloped riparian land in the Houston region. This project proposes to acquire 5 large acreage parcels totaling approximately 199 acres. All parcels are in the floodway, 100-year floodplain, or 500-year floodplain. One 58-acre parcel is slated for development as a residential neighborhood.

The parcels in this application are also adjacent to 110 acres of riparian corridor already acquired by Houston Parks Board (HPB), and approximately 90 acres that are currently in Houston Parks Board's acquisition process. Together, all of these parcels aim to provide 399 acres of continuous preserved riparian corridor.

By preserving land along bayous that include floodplains and wetlands the project aims to reduce the impact of hazards by preserving or restoring the function of natural systems. Thus, natural resource protection can protect lives and property while conserving and enhancing fish and wildlife habitat. Green riparian corridors provide natural flood and erosion control, maintain surface water quality, support the recharge of local groundwater, and reduce heat island effects. Continuously vegetated riparian corridors are more effective at providing these benefits. Stream corridors are also among the most productive habitats in all regions of the country as the vegetation and wildlife is typically more diverse and denser.