

Natural Resource Uses

Subcommittee FY 2025 Proposals

Links to each proposal in highlighted numbers

#	Project Name	Grantee	Total Request	Duration (months)	Status
1	Developing Regional Capacity for Long-term Management and Restoration of Conserved Lands	ABC	\$300,705	30	New
2	Salt Lake Native Marsh Shoreline Protection Project	FBBNWR	\$100,000	12	New
3	Cordgrass Planting for Coastal Resiliency	FBBNWR	\$200,000	30	New
4	Conservation Assistance Program	GBF	\$230,000	24	Existing-New
5	Bay Harbor Island Stabilization (Adaptative Management & Enhancement)	GBF	\$132,700	30	New
6	Galveston Bay Foundation Wetland Planting Assistance	GBF	\$93,840	18	New
7	Greens Bayou Riparian Restoration Project	HPARD	\$150,000	24	New
8	Monitoring and Managing the Threatened Eastern Black Rails in the Galveston Bay Area	TAMU	\$174,235	30	New
9	The 9th and 10th Additions to the Coastal Heritage Preserve at Anchor Bay and Galveston Preserve at West Beach, Galveston Island, Texas.	TPWD	\$800,000	24	Existing-New
Submitted to M&R - NRU Consideration					
10	<i>Best Practices for Future Restoration of Ground Nester Habitat in Galveston Bay: Partner Interviews and Past Project Database of Completed Nesting Sites</i>	TAMUG	\$87,315	30	New
11	<i>Monitoring to assess long-term restoration success in Galveston Bay wetlands</i>	TAMUG	\$151,161	31	New
NRU Totals			\$2,419,956		

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

Natural Resources Use

Project Name:

Developing Regional Capacity for Long-term Management and Restoration of Conserved Lands

Project Previously Funded by GBEP?

Yes ☐

No ☒

Lead Implementer:

American Bird Conservancy

☐ Federal, State, or Local Government

☐ Council of Government

☐ Public ISDs or Universities

☒ Nonprofit

☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Emily Jo Williams (Interim contact)
Project Representative Phone	1 (706) 818-1799
Project Representative Email	ejwilliams@abcbirds.org

Amount Requested:

\$300,704.74

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$141,730.90
FY 2026 (09/01/2025-08/31/2026)	\$120,437.55
FY 2027 (09/01/2026-05/31/2027)	\$66,527.72
Total	\$328,696.16

Total Project Cost:

\$430,704.74

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

2.5 years

Project Urgency:

[Please indicate the need for receiving funding during this cycle; such as loss of other funding secured, loss of opportunity to implement project, potential of breach, etc.]

The Gulf Coastal Prairie continues to be developed at a rapid pace. Less than one percent of tall grass prairie habitat remains and only one-tenth of one percent is relatively undisturbed. For the continued existence of flora and fauna dependent on this critical wintering, nesting, and stopover habitat, conserved land restoration and management will necessarily need to improve significantly and quickly. Land trusts, volunteers, staff, agency partners, and the philanthropic community have invested in acquisition of land and conservation easements to conserve imperiled habitats. The costs for maintaining this habitat continue to rise and the most cost effective and natural treatment for this habitat is prescribed fire, a technique used primarily by state and federal agencies with dedicated staff and equipment for fire management.

Partners are organized, motivated, and ready. The need is great and growing, with well more than half of Texas's 112 bird Species of Greatest Conservation Need occurring in the Galveston Bay watershed, a part of the Gulf Coast Prairie and Marshes. It is easy to understand the investments that have been made to conserve and restore remnants of this once vast coastal ecosystem that continues to support the highest biodiversity in the state. The urgency is to support the few land trusts and private land owners that are committed to preserving this threatened habitat in perpetuity. By making the management and restoration of this habitat more accessible, the conservation community will then have more capacity to acquire, restore, and manage more coastal prairie and wetlands before they are lost to development.

In addition to the need for habitat management and restoration, there is also a great need to develop wildlands fire management capacity for the state and region. Wildfire is a growing threat in Texas and this project will help develop additional personnel in the techniques of wildlands fire response.

Leveraging (in-kind and/or cash):

[Please indicate source, amount, and status (secured, potential, etc.)]

American Bird Conservancy has pledged \$25,000 in-kind match consisting of staff time in support of training and administration of the project.

Houston Audubon Society has pledged \$25,000 in-kind match consisting of staff time, burn prep, truck vehicle use, and travel.

Galveston Bay Foundation has pledged \$25,000 in-kind match consisting of staff time, burn prep, truck vehicle use, and travel.

Coastal Prairie Conservancy has pledged \$25,000 in-kind match consisting of staff time, burn prep, truck vehicle use, and travel.

Texas Parks and Wildlife Department has pledged 15,000 in-kind state biologist staff time for training and habitat management actions.

United States Fish and Wildlife Service has pledged 15,000 in-kind state biologist staff time for training and habitat management actions.

Partners and Their Roles:

[Please identify project partners and detail what roles they will play in project implementation.]

American Bird Conservancy (ABC) will develop a job description, advertise the position, and hire the Conservation Delivery Specialist with prescribed fire experience and then train this person with existing ABC staff in Texas currently using fire for habitat management. ABC will manage and work with this individual to execute the project with partners.

Houston Audubon Society (HAS) will work with the Conservation Delivery Specialist and partners to organize a working group of prescribed fire practitioners in the project area. HAS will prep project sites for habitat restoration and enhancement through the use of prescribed fire and potentially other management techniques as determined by working group and partners.

Galveston Bay Foundation (GBF) will work with the Conservation Delivery Specialist and partners to organize a working group of prescribed fire practitioners in the project area. GBF will prep project sites for habitat restoration and enhancement through the use of prescribed fire and potentially other management techniques as determined by working group and partners.

Coastal Prairie Conservancy (CPC) will work with the Conservation Delivery Specialist and partners to organize a working group of prescribed fire practitioners in the project area. CPC will prep project sites for habitat restoration and enhancement through the use of prescribed fire and potentially other management techniques as determined by working group and partners.

Texas Parks and Wildlife Department (TPWD) will provide expert guidance and instruction through their Prescribed fire program staff, Chris Schenck and others as available. TPWD will provide training, guidance, and on the ground assistance from development of the working group to preparation of burn plans and execution.

United States Fish and Wildlife Service (FWS) will provide support to the project through meeting space at the Anahuac and McFaddin National Wildlife Refuge (NWR) facilities. FWS may also provide on the ground support for some of the prescribed burns as available.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

[Please state how the project implements actions of the Living Resources Action Plans selected. Please cite other specific action items, if applicable.]

This project is ideally suited to implement the Galveston Bay Plan in four main areas.

HC-2 Habitat Restoration

The project will protect and sustain coastal prairie and wetland habitats and the living resources dependent on these habitats by restoring existing tracts of conserved lands back to highly functioning habitat. Land trusts and other private conservation lands are struggling with the increasing costs associated with mechanical removal of exotic invasive species such as Chinese Tallow, salt cedar, and *Ligustrum sp.* Without fire, intense grazing, or shredding, these habitats lose much of their habitat value for the species that need them most by converting to brushy successional habitats. After a prescribed fire, the removal of remaining woody exotic invasive plant species becomes much easier and cost-effective.

HC-3 Habitat Enhancement

With limited opportunity to acquire rare and declining habitat, existing conserved lands can be enhanced with a patchwork of habitat types that will support Species of Greatest Conservation Need, e.g. wintering, migrating, and breeding prairie species. Additionally, optimal Black Rail habitat in brackish salt marsh is prime for breeding in years 1-4 post-burn.

SC-1 Species Conservation

This project will support the direct conservation of at least 38 bird Species of Greatest Conservation Need. These are wetland and prairie-dependent species that will move to marginal habitat if no prime habitat exists. By restoring and maintaining these habitats, dispersal and successful establishment of prairie and wetland dependent species will contribute to the stabilization and recovery of declining species.

SC-2 Invasive Species Control

This is what has driven this proposal. The high and increasing cost of hiring vegetation management contractors or staff to remove and treat exotic invasive plant species in wetland and prairie habitats has private conservation land managers choosing whether to acquire more critical habitat or spend limited funds on restoring and maintaining priority habitats already under protection. Adding prescribed fire capacity to the regional community of conservation will reduce the cost per acre.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒

SC-1 ☒ SC-2 ☒

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

[Please state the action and output addressed and how the project contributes to implementing the output.]

HC-2 Habitat Restoration

HC-2 is about restoring degraded habitats and that is what this project addresses directly. Prescribed fire and other habitat management actions by the partners will restore habitat form and function where it has been lost due to lack of resources and capacity.

HC-3 Habitat Enhancement

HC-3 is directly addressed by the project. The project outputs, i.e. prescribed fire in coastal prairie and wetlands, will enhance existing habitats and increase function and productivity. The endangered Eastern Black Rail is a prime example of this. Recent work in Brazoria County by Wilson et al. showed that habitat with maximum occupancy and productivity was fire-mediated marsh.

SC-1 Species Conservation

This is SC-1's Priority issue, addressing declining species. The action output addressed with this proposal is to develop habitat conservation projects based on species needs, namely appropriate habitat.

SC-2 Invasive Species Control

The activity supported for SC-2 is developing invasive species management on public and private lands. This project will go a long way toward the 10-plus year goal of enhancing 5,000+ acres.

We recognize that successful implementation of SC-1 and SC-2 requires coordination with the M&R subcommittee. The partners have various monitoring activities that will inform science-based decisions and we would welcome M&R collaboration and integration with flora and fauna from these wetland and prairie habitats.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

[Please explain in detail how project addresses other Galveston Bay Plan Priority Area Actions (be specific; NPS-1, SPO-3, etc.) or subcommittee priorities.]

SPO-1 Stewardship Programs and Volunteer Opportunities

The project will hire a Conservation Delivery Specialist whose responsibilities will include engaging volunteers for stewardship activities. This is the model we are proposing; a community-led solution developed by trained professionals.

SPO-2 Workshops and Events

The project will have multiple workshops and events to train for awareness, skills, and safety. These workshops will come in two main types, practitioners and the public. For a successful prescribed fire program, the partners will need community support.

SPO-4 Local Government Outreach

Getting local communities comfortable with this management practice will require working with local governments. The partners and project staff will develop relationships with land managers and leaders to communicate with the public and also share practice knowledge.

Other Plans Implemented:

[Texas Coastal Management Plan, Texas Coastal Resiliency Master Plan, Texas Wetland Conservation Plan, GCJV Conservation Plans, etc.]

Texas Coastal Management Plan is implemented through supporting the stated categories: Critical Area Enhancement, Ecotourism Development.

Texas Coastal Resiliency Master Plan is supported by maintaining and creating more capacity for coastal green spaces that are the natural buffers for the coast. By supporting the capacity development of these conserved lands, the collective coastal resiliency will in turn be increased.

Texas Wildlife Action Plan is implemented by supporting the restoration, enhancement, and maintenance of prairie and wetland habitat for more than 38 bird Species of Greatest Conservation Need. There are undoubtedly more SGCNs from other taxonomic groups that will benefit from this work.

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

[Please explain in detail how project addresses priorities selected. Attachments may be submitted via email in conjunction with this application.]

Enhancement of Existing or Ongoing Restoration/Conservation Efforts

The project enhances ongoing restoration and conservation efforts such as acquisitions facilitated by NRU projects and prairie and wetland restoration efforts by the partners.

Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife

This project will be transformational in our region for restoring and maintaining prairie and wetland habitat. The number of SGCNs and federal and state listed species that will benefit from this work is strong support for this project. These lists have many species from coastal brackish and freshwater wetlands and prairies. It is because there is not much habitat left, and what is left is difficult to manage for financial and time constraints. This project will help address the conservation of these species.

Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee

This project addresses the stated priorities of the NRU subcommittee. It addresses the increasing need for habitat management that land trusts and private landowners with conservation goals are struggling to meet. The project partners are bringing their resources and time to the NRU to address a critical need to address multiple goals stated by the NRU.

Does the Project work with new, smaller communities/partnerships?

☒ Yes

☐ No

The project partners have already met with the Port Bolivar, Crystal Beach, and High Island volunteer fire departments. These groups expressed interest in participating in the prescribed fire group and would participate in training opportunities and prescribed burns in their respective service areas. The opportunity to interact with smaller communities to enhance habitat while reducing fuel load -a community risk- is a shared interest of partners and potential prescribed fire working group participants.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

This project will address the growing backlog of maintenance and restoration needs of conserved lands by creating a habitat management cooperative on the Upper Texas Coast with expertise to return thousands of acres to prime habitat. The project will optimize land trust maintenance and carrying capacity of conserved lands.

Full Project Description (1,000 words or less):

This project will directly and indirectly address the accelerating challenge of coastal development and the loss of ecological services and storm buffering provided by coastal prairie and marshes. Coastal land trusts with the mission of conserving and maintaining wildlands face an unprecedented set of challenges, e.g. increasing management costs, invasive plant and animal species, expanding human-dimension interactions. Specifically, this project will build capacity for habitat restoration for landowners, thereby allowing them to maintain or expand current holdings while reducing the increasing risk of wildfire.

The project will build and sustain capacity for an increasing demand for large-scale management and habitat restoration for several accredited land trusts and public and private lands in the Texas Gulf Coast region. With the collaboration of the partners, Galveston Bay Foundation and Houston Audubon, we can develop a habitat management cooperative that pools resources, plans regionally, and works collaboratively. We believe an efficient approach to achieve increased capacity is to recruit a habitat and restoration specialist to develop a prescribed fire working group that will focus on prescribed fire and coordinate conservation actions. Given that 93% of Texas is privately owned, a resilient western Gulf of Mexico coast will necessarily include private landowners. Among the groups anticipated to join this working group are three local volunteer fire departments, Texas Master Naturalist chapters, and volunteers and staff from land trusts working in the project area.

This nature-based solution supports a return to historic fire regimes for native habitats. Without this technique -long used by local state and federal agencies with dedicated teams for prescribed fire - land trusts and private landowners rely on mechanical shredding and chemical treatments for brush and exotic invasive species control. This is time consuming and expensive. Because of this, land acquisition, maintenance, and restoration efforts are well below where they need to be to build resiliency into our dynamic climate. The prescribed fire cooperative is not a new solution; there are several cooperative prescribed fire groups in Texas. Representatives of these organizations and Texas Parks and Wildlife's state director for private lands prescribed fire program recently met with a local volunteer fire department and environmental land stewards to help stand up such a cooperative unit in the project area. The volunteers and partner organizations are ready to go. What is still needed is an individual guided by knowledgeable and experienced habitat managers to develop the habitat management cooperative and the equipment to train and allow the group to work effectively and safely. The scale of the project will be the Galveston Bay area and will prioritize prairie properties along the coast.

The project would also add capacity for monitoring plants and birds through a seasonal technician that would train with and use existing point-count protocols used by the adjacent Oaks and Prairies Joint Venture. The planned outcomes for this project are to collaboratively develop increased and sustained capacity to manage private lands for the benefit of SGCNs in the Texas Gulf Coast region.

Latitude/Longitude (Optional):

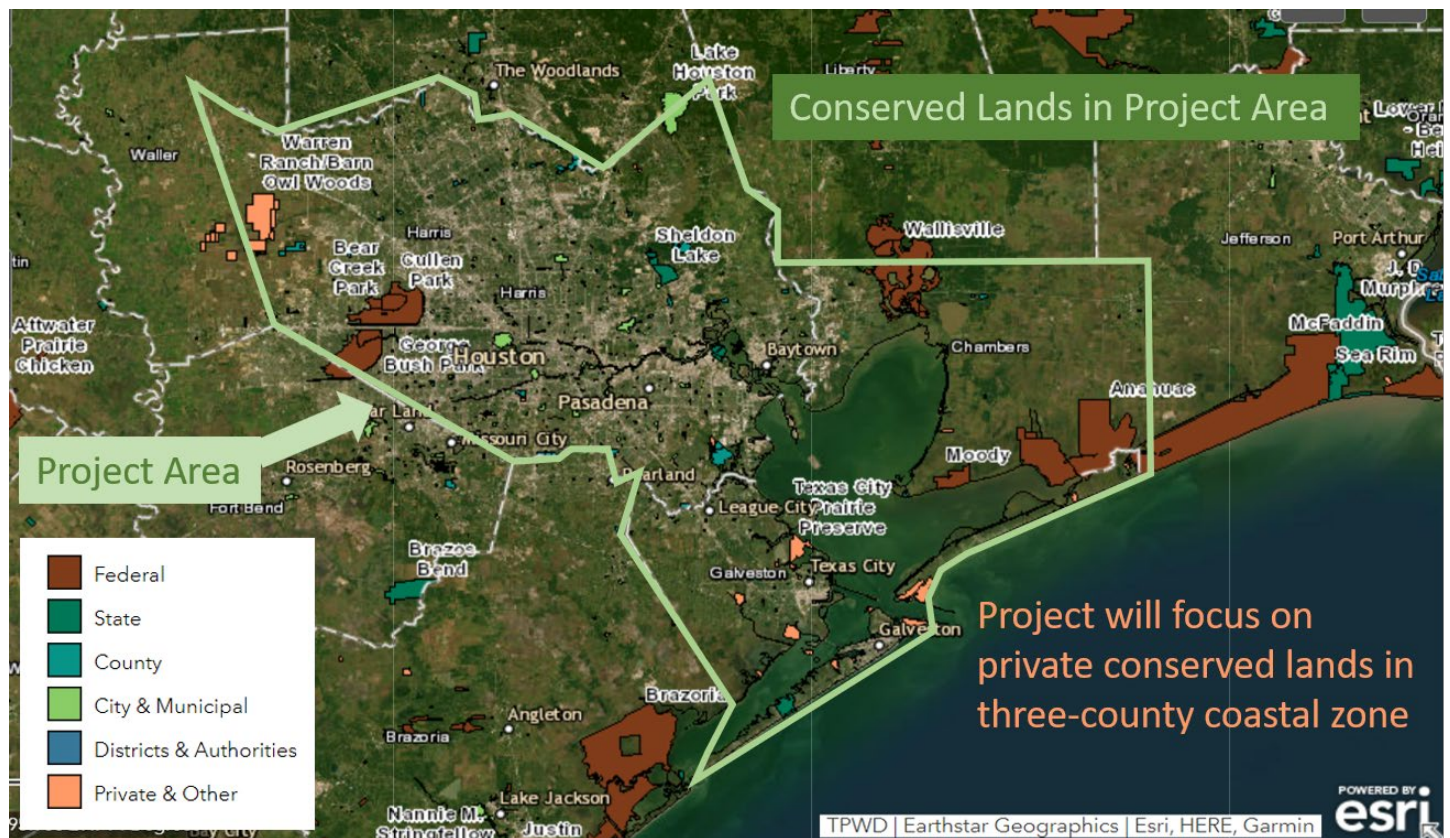
Approximate centroid: 29°36'30.09"N, 95° 7'37.31"W

Location:

[Description of area(s) of Galveston Bay watershed addressed by proposal]

Conserved coastal lands of Harris, Galveston, and Chambers counties, Texas

Projects Map



Supplemental Photos/Graphics (Optional):



Land trust and agency staff gather for prescribed fire briefing At Houston Audubon's Bolivar Flats Shorebird Sanctuary.



Trained wildlands fire practitioner monitors progress of burn plan and communicates with team.

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$178,627.00
b.	Fringe Benefits (26.35%)	\$47,068.21
c.	Travel - Mileage	\$8,000.00
d.	Supplies	\$14,400.00
e.	Equipment	\$8,000.00
f.	Contractual	\$18,000.00
g.	Construction	\$0.00
h.	Other*	\$0.00
i.	Total Direct Costs (Sum a - h)	\$274,095.21
	Modified Total Direct Costs	\$266,095.21
j.	Indirect Costs (22% MTDC)	\$26,609.52
k.	Total (Sum of i & j)	\$300,704.74

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 10% of (check one):

- ☐ salary and fringe benefits
- ☒ modified total direct costs
- ☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
- ☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
- ☒ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

**Please Submit Project Proposals (Microsoft Word Only - No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

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SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU Coordinator – Lindsey Lippert

Project Name:

Salt Lake Native Marsh Shoreline Protection Project

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer:

Friends Group of Brazoria National Wildlife Refuge

- ☐ Federal, State, or Local Government ☐ Council of Government ☐ Public ISDs or Universities
☒ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Martin Cornell - Grant Administrator
Project Representative Phone	979-235-9886
Project Representative Email	Marty-carole@comcast.net

Amount Requested:

\$100,000

Is the project scalable? ☐

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$100,000
FY 2026 (09/01/2025-08/31/2026)	\$0.00
FY 2027 (09/01/2026-05/31/2027)	\$0.00
Total	\$100,000

Total Project Cost:

\$100,000

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

Once funds are received, survey and design can begin right away. Project should be done in 1 year or less.

Project Urgency:

Salt Lake has experienced some of the worst erosion on the Brazoria National Wildlife Refuge (Brazoria NWR). Since 1995, between 70-180 feet of shoreline has eroded away inward which is estimated to be around 30 acres on the north shoreline of this marsh. If not protected, each year 3-7 feet of marsh shoreline will be lost to open water.

Leveraging (in-kind and/or cash):

The Brazoria NWR has an Oil and Gas Account for damages from infrastructure projects. Funds of up to \$100,000 from this account may be used to help finance projects if another match or grant can be found. In total, with the GPEP and refuge match, this would total funds to \$200,000 to really get this project moving.

Partners and Their Roles:

FOBWR will administer the funds and final documents required for the grant process.

FOBWR is a 501(c)(3), all volunteer organization whose mission supports the Texas Mid-coast National Wildlife Refuge Complex in its charge to manage the conservation and restoration of wildlife and plant resources and their habitats within the Brazoria, San Bernard, and Big Boggy refuges. The FOBWR advocates and supports the refuges' public-use mandate for hunting, fishing, wildlife observation, photography, interpretation, and environmental education.

Within this charge, since 2007 FOBWR has received and administered seven grants totaling \$1,665,000 to support the purchase of coastal prairies, estuaries, and hardwood riparian forests, and eight grants totaling \$363,000 for reclamation and restoration of refuge properties.

Refuge Staff- will coordinate with the contractor for policy/permitting procedures as well as assist with the design of a structure to protect the shoreline.

Contractor- will survey area and design/engineer a barrier to protect the north shoreline of Salt Lake.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

This project directly protects the adjacent marsh habitats and wetlands by reducing erosive wave energy. Once the shoreline can become stable, it will accrete sediment allowing the marsh to revegetate. The refuge includes 45,000 acres of coastal marsh and prairie habitat that supports numerous wildlife species. With nearly 17 miles of intercoastal waterway that goes through the refuge and another 14 miles of north shorelines from adjacent bays, erosion has taken roughly 790 acres of marsh habitat and without intervention these marshes will continue to erode at an alarming rate. The project aims to begin work on protecting the habitat that is left with building a barrier to sustain a living shoreline for decades to come.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒

SC-1 ☐ SC-2 ☐

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

This project will address HC 2 and 3. *Protect and sustain living resources* is a plan priority because Brazoria NWR has a very high erosion rate with no stabilizing shoreline. This project is needed to change that trend. Breakwaters will be installed to help reduce wave action therefore letting sediment build behind the breakwater to allow the marsh to begin to stabilize. Once breakwaters are installed, the project team will plant smooth cordgrass (*Spartina alterniflora*) behind them. These plants will take root and spread, creating a stabilized living shoreline that addresses shoreline loss and provides resources for aquatic and terrestrial wildlife.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

This project will address regional and local government goals to support coastal habitat protection and sustainability (SPO 3 and 4). Building breakwaters is beneficial to local communities in times of major storm events because the protected refuge lands act like a sponge to absorb large amounts of water and protect against storm surges. A strong living shoreline inclusive of a breakwater and smooth cordgrass better retains soil and reduces erosion potential during these events.

Other Plans Implemented:

The Texas Coastal Management Plan, Texas Coastal Resiliency Master Plan, Texas Wetland Conservation Plan, and GCJV Conservation Plans all support the protection of natural habitats on the coast. Living shorelines protect the marsh and are vital to the economy and coastal community areas. This project to build a breakwater barrier fits very well into all the plans to enhance birdwatching, fishing, and the many recreational uses for the local and regional community.

Brazoria National Wildlife Refuge identifies the objective of “Managing Landscapes” in their Comprehensive Conservation Plan (CCP), under 4.1 Ecoregional Goal, Objective 1. The project would protect the coastal marsh habitat and increase its resiliency by addressing erosion issues. The refuge CCP also identifies colonial waterbirds (CCP 4.3 Wildlife Goal, Objective 4) and shorebirds (CCP 4.3 Wildlife Goal, Objective 5) as management priorities. Both colonial waterbirds and shorebirds will benefit from this project because it provides foraging areas that are more elevated and resilient against extreme weather and further habitat loss

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition

- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☐ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

Protecting coastal habitats is a top priority for the refuge and is shared among numerous other coastal agencies. The amount of visitors to the area and economic benefits is very substantial. Salt Lake is a part of the visitor area for the refuge. There is an auto tour loop, visitor information building, hiking trails, and public fishing at Salt Lake. This project when completed would protect the marsh that visitors drive through to see and educate themselves about what the refuge does. The refuge is continually enhancing and restoring habitat lost and that has degraded on the refuge. Building a breakwater barrier would allow the refuge to educate more visitors about the importance of the marsh as we see sea level rise and more major storm events. Breakwaters protect the habitat and this project would start that process to survey, design, and eventually construct a breakwater.

The benefits are enormous for native fish and wildlife. When the shoreline is stabilized and can accrete sediment, it will be allowed to revegetate. This will increase the resiliency of the marsh. Increased resiliency of this marsh will benefit quantity and quality of habitat for multiple avian species of concern that occupy it, including the federal listed Eastern Black Rail, Yellow Rail, Seaside Sparrow, Nelson's Sparrow, Eastern Willet, and Mottled Duck. The living shoreline in conjunction with smooth cordgrass will also support aquatic invertebrates that in turn support coastal fish and terrestrial invertebrates. Thus, more habitat for birds and fish to thrive. The refuge supports a large number of plant and animal species and protecting habitat is key to their survival.

Does the Project work with new, smaller communities/partnerships?

☐ Yes

☒ No

Planting of cordgrass will engage volunteers from FOBWR and the Texas Master Naturalists, Cradle of Texas Chapter. This partnership is not new, having started in 2001 with the creation of this TMN chapter

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

This project will fund a contract to survey, design, and permit plans to protect Salt Lake Marsh Shoreline.

Full Project Description (1,000 words or less):

This project's main goal is to protect the marsh behind the breakwater from future erosion issues for years to come. If awarded funds, the FOBWR will work with the Refuge to seek a contract to begin Bathymetric Surveys of the project area. Once surveying is complete, refuge staff will determine which method of breakwater will be used based on the surveyors' report. Project design will begin immediately after and should be completed within a few months to support permit applications. The completed breakwater will protect the marsh by reducing wave action that has caused erosion issues. The cordgrass planting will take place after all construction is complete and will create marsh habitat and a living shoreline to armor the nearly 2 miles of shoreline in Salt Lake.

The GBEP grant would enable a one-for-one match funding from the Brazoria NWR Oil and Gas Account for damages from infrastructure projects.

Latitude/Longitude (Optional):

95°15'38"W, 29°2'40"N

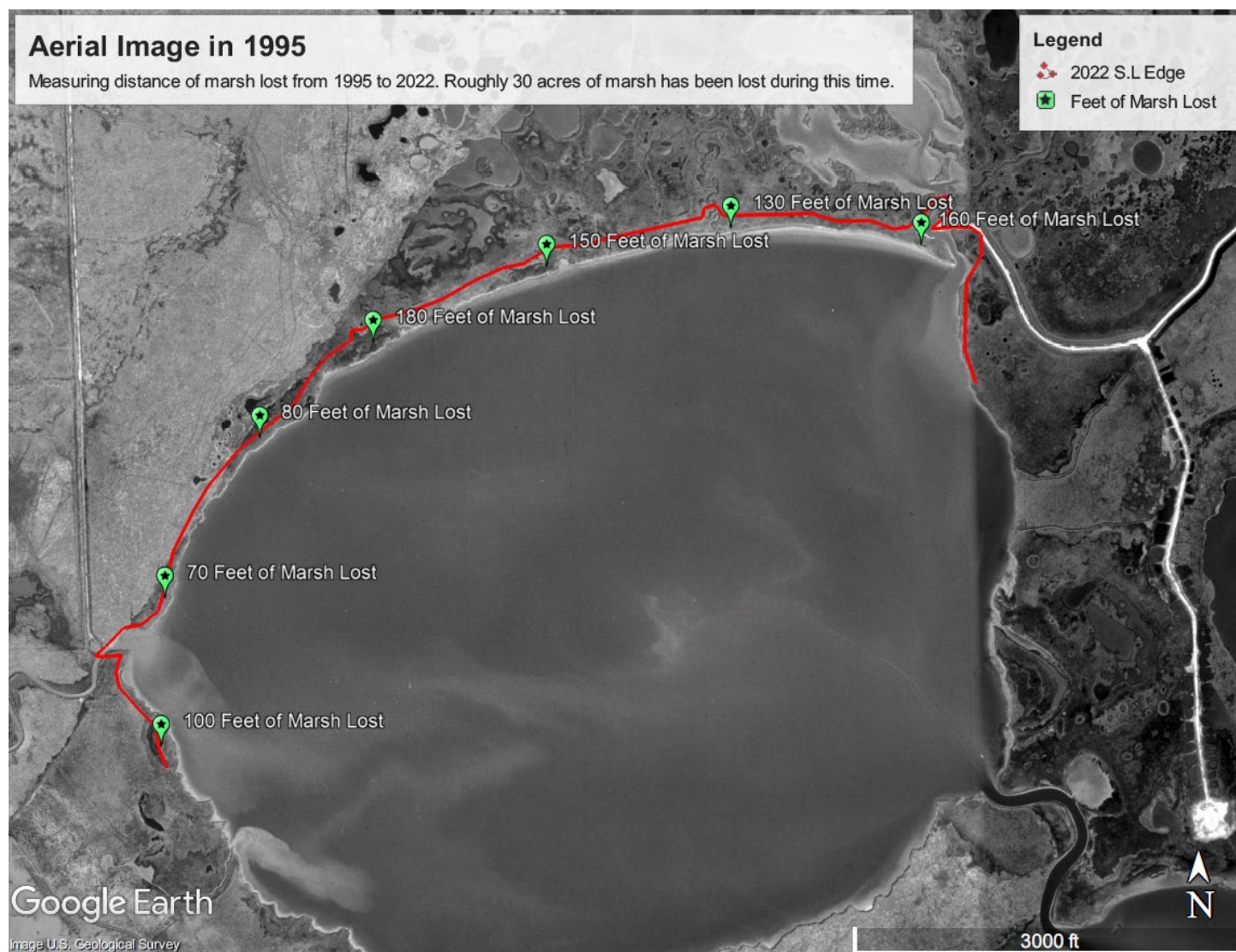
Location:

Austin/Bastrop Bayou Watershed

Projects Map



Supplemental Photos/Graphics (Optional):



SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	
b.	Fringe Benefits	
c.	Travel	
d.	Supplies	
e.	Equipment	
f.	Contractual	\$96,000
g.	Construction	
h.	Other*	\$4,000
i.	Total Direct Costs (Sum a - h)	\$100,000
j.	Indirect Costs	
k.	Total (Sum of i & j)	\$100,000

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 4% of (check one):

- ☐ salary and fringe benefits
 - ☐ modified total direct costs
 - ☐ other direct costs base
- If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
- ☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
- ☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU coordinator - Lindsey Lippert

Project Name:

Cordgrass planting for coastal resiliency

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer:

Friends of Brazoria Wildlife Refuges (FOBWR)

- ☐ Federal, State, or Local Government ☐ Council of Government ☐ Public ISDs or Universities
☒ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Martin Cornell , Grant Administrator
Project Representative Phone	979-235-9886
Project Representative Email	marty-carole@comcast.net

Amount Requested:

\$200,000

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$100,000
FY 2026 (09/01/2025-08/31/2026)	\$50,000
FY 2027 (09/01/2026-05/31/2027)	\$50,000
Total	\$200,000

Total Project Cost:

\$200,000

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

Project will be 2.5 years long.

Project Urgency:

Brazoria National Wildlife Refuge has been experiencing 3-4 feet of erosion per year of marsh habitat loss along the banks of the intercoastal water way sections that transect the refuge. Breakwater projects are being permitted for these sections, and roughly 11.5 miles should be completed by spring of 2024. Planting cordgrass behind this breakwater will allow the marsh to build a stronger living shoreline to help protect against erosion.

Leveraging (in-kind and/or cash):

FOBWR will have volunteers to help plant some of the plants, but there is no in-kind money allocated to this project.

Partners and Their Roles:

FOBWR will be the applicant for grant funds and finalizing all documentation for the grant. They will also assist with volunteers to do some planting.

Brazoria NWR- Will provide maps where to plant and transportation routes. Staff will also assist in planting as needed and coordination with the contractor to complete the entire planting as per the agreement.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

This project directly protects coastal marsh habitats and helps to build a strong living shoreline by planting native species. The Brazoria National Wildlife Refuge is 45,000 acres of coastal marsh and prairie habitat that supports numerous wildlife species. With nearly 17 miles of intercoastal waterway that goes through the refuge and another 14 miles of north shorelines from adjacent bays, erosion has taken roughly 790 acres of marsh habitat since the 1960's and left untouched will continue to erode at an alarming rate.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒

SC-1 ☒ SC-2 ☐

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

This project will address HC 2 and 3, as well as SC-1. Protect and sustain living resources is a plan priority with habitat conservation at the top of the list, and due to Brazoria NWR having a very high erosion rate with no stabilizing shoreline, this project aims to reverse that trend. Breakwaters will be installed to help reduce wave action therefore letting sediment build behind the breakwater to allow the marsh to begin to stabilize. While this is happening, planting native smooth cordgrass (*Spartina alterniflora*) will take root and spread. In time creating a stabilized living shoreline for wildlife to thrive in.

Action plan to support species conservation will be done by planting native Texas smooth cordgrass. This will be grown near the Texas coast, harvested, and transported to sites on the refuge. These plants will be adapted to the Texas soils and waters to be able to thrive and build back the hundreds of acres of marsh lost to erosion on the refuge.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

Due to the scope of this project, most resources will be contracted. The refuge and FOBWR will ask for volunteers to come experience what planting cordgrass is like. They can get an up close view of the marsh and see the effects of erosion. This will address action plan items SPO 3 and 4. Planting living shorelines is a regional initiative and very much a local goal being the high number of recreational uses, fishing, and bird watching that happens. Outreach of local businesses to participate will be asked and the refuge is always looking for “boots on the ground” to teach people the importance of projects like planting cordgrass.

Other Plans Implemented:

The Texas Coastal Management Plan, Texas Coastal Resiliency Master Plan, Texas Wetland Conservation Plan, and GCJV Conservation Plans all support the protection of natural habitats on the coast. Living shorelines protect the marsh and are vital to the economy and urban areas. This project to plant cordgrass fits very well into all the plans. The refuge will have miles of breakwater to eliminate wave energy so sediment can build up behind and then plant cordgrass to allow the marsh to regrow more rapidly. This allows more habitat for bird watchers, enhances water quality, and a long term sustainable plan to protect the marsh from eroding away at the rates it has been.

The Brazoria National Wildlife Refuge is part of the Texas Mid-coast National Wildlife Refuge Complex, whose plan also states goals and objectives to protect marsh habitat and bird species on the refuge. Chapter 3, page 3-69 discusses the objectives to maintain hundreds of acres for shorebird and water bird usage throughout the year. Planting cordgrass will expand the footprint of this important habitat from being lost and causing birds to move elsewhere. This is detailed in Chapter 4, page 4-13, where maintaining shoreline for birds to nest and forage is vital to their survival with the Texas coast one of the most important regions for local and migrating birds.

FOBWR is a 501(c)(3), all volunteer organization whose mission supports the Texas Mid-coast National Wildlife Refuge Complex in its charge to manage the conservation and restoration of wildlife and plant resources and their habitats within the Brazoria, San Bernard, and Big Boggy refuges. The FOBWR advocates and supports the refuges' public-use mandate for hunting, fishing, wildlife observation, photography, interpretation, and environmental education.

Within this charge, since 2007 FOBWR has received and administered seven grants totaling \$1,665,000 to support the purchase of coastal prairies, estuaries, and hardwood riparian forests, and eight grants totaling \$363,000 for reclamation and restoration of refuge properties.

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☐ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

Brazoria NWR over the last 10 years has started to permit miles of breakwater to protect the eroding shoreline. The refuge has roughly 7-8 miles of completed breakwater, 15 miles of permitted breakwater about to begin construction, and still another 8-10 miles left to finish the Gulf Intercoastal Water Way (GIWW). Cordgrass plantings have also taken place, but not to the extent of this application for funds. The refuge aims at continuing to enhance the marsh it has lost by building breakwaters to nearly eliminate wave action so sediment can accrete behind. Planting cordgrass accelerates marsh expansion and creating a living shoreline that is protected for many decades. Planting cordgrass is and will be an ongoing restoration of marsh project for the next 2-5 years behind breakwaters. As sea levels rise, the refuge is also looking at planting in existing cordgrass areas as water becomes deeper and shorelines are not stable.

In living shorelines, the marsh behind the rock can remain stable and able to be used by a wide variety of birds including species of concern such as the clapper rail, Nelson's sparrow, and seaside sparrow. The refuge is a sanctuary for all species to thrive and quality habitat is becoming less each year. Urban development and chemical industrial plant growth in southern Brazoria County is all around the refuge and these habitats need to be protected to ensure all species can survive. Planting cordgrass behind breakwater projects is a great way to restore and enhance the marsh, but it also protects the upland prairie in higher elevations. Living shorelines keep the shoreline together and helps protect the refuge for generations to come.

Does the Project work with new, smaller communities/partnerships?

☐ Yes

☒ No

FOBWR and the Complex are closely aligned with the Texas Master Naturalists, Cradle of Texas Chapter operating in Brazoria County. Many of the TMN members are likely to be volunteers in the planting of cordgrass.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

Plant smooth cordgrass on Brazoria National Wildlife Refuge to promote marsh regrowth and build a strong living shoreline.

Full Project Description (1,000 words or less):

Project Goals and Objectives:

This project will use smooth cordgrass (*Spartina alterniflora*) plantings to protect coastal estuarine marsh from ongoing erosion at Brazoria National Wildlife Refuge, and enhance protection of nearby communities from storm events. The refuge is a significant protective buffer from tropical storm damage. However, major storm events, heavy rains, and continuous wave action consumes roughly four feet of refuge marsh shoreline annually along the Gulf Intercoastal Waterway (GIWW). The refuge has added 3 miles of breakwater to minimize erosion and is adding 11.5 miles of subsequent projects in the next year. Sediment will accrete behind these breakwaters and support marsh establishment. Planting smooth cordgrass behind breakwaters initiates new marsh creation while also creating a strong living shoreline to protect against future storm events (Ducks Unlimited 2013).

This project will also address eroding interior estuarine marshes at the refuge. These areas have been impacted by storms, subsidence, or other causes. Conversion of estuarine marsh to open water lessens the value of the refuge as a barrier to community storm impacts, but these areas can be replanted with smooth cordgrass. Planted areas will experience sediment accretion, followed by the eventual establishment of typical estuarine marsh plant species that occur at higher elevations than smooth cordgrass.

Both GIWW and interior marsh plantings provide benefits to the refuge and to nearby communities for storm protection. The entire refuge complex has already partnered to permit 15 miles of new breakwater. FOBWR is seeking funds to support the Complex with their planting of smooth cordgrass to build on these efforts. If awarded \$200,000, the project team will plant roughly 150,000 plants to create new marsh habitat for the benefit of wildlife and fisheries while strengthening the living shoreline as part of "The Comprehensive Conservation and Management Plan for the Galveston Bay Ecosystem" action plan.

Methods/Approach:

This project will be working with a local company (RES) to harvest, transport, and re-plant cordgrass plants (plugs). Cordgrass plugs are either raised in nurseries along the Texas coast or are hand-picked from the marsh locally. This project will use nursery plugs and will plant them on 1 foot centers. This is a recommend spacing for shorelines and has been successful on past projects. Once harvested, RES will transport them to the site for planting. Once the plugs are on site, members, volunteers, Fish and Wildlife Service (FWS) staff, and RES employees will plant them. Plugs can be planted using a small spade shovel in water 6 inches or less. When planting is completed, monitoring will be done monthly by FWS staff to ensure the plants are growing and spreading along the coastal area.

Literature Cited

Ducks Unlimited. 2013. Decision support tool for shoreline protection along the Texas Gulf intracoastal waterway. 70 pp.

Latitude/Longitude (Optional):

95° 12'35" W and 29° 5'17" N

Location:

The refuge is located within 3 watersheds. The Austin/Bastrop Bayou, Chocolate, and West Bay watersheds.

Projects Map



Supplemental Photos/Graphics (Optional):

[\[Insert Here or Attach as an Appendix\]](#)

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	0
b.	Fringe Benefits	0
c.	Travel	0
d.	Supplies	0
e.	Equipment	0
f.	Contractual	\$194,000
g.	Construction	0
h.	Other*	6,000
i.	Total Direct Costs (Sum a - h)	\$200,000
j.	Indirect Costs	
k.	Total (Sum of i & j)	\$200,000

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 4.0 % of (check one):

- ☐ salary and fringe benefits
- ☐ modified total direct costs
- ☐ other direct costs base

If other direct cost base, identify: **total contractual and indirect cost.**

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
- ☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
- ☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

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Christian.Rines@tceq.texas.gov

NRU Subcommittee
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Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU

Project Name:

Conservation Assistance Program

Project Previously Funded by GBEP?

Yes ☒

No ☐

Lead Implementer:

Galveston Bay Foundation

☐ Federal, State, or Local Government

☐ Council of Government

☐ Public ISDs or Universities

☒ Nonprofit

☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Matt Singer	Director of Land Conservation
281-332-3381	
msinger@galvbay.org	

Amount Requested:

\$230,000.00

Is the project scalable? ☐

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$115,000
FY 2026 (09/01/2025-08/31/2026)	\$115,000
FY 2027 (09/01/2026-05/31/2027)	\$0.00
Total	\$230,000

Total Project Cost:

\$230,000.00

Is this an estimate? ☐

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

24 months

Project Urgency:

Growth and development in the lower Galveston Bay watershed are accelerating land use changes from traditional open space, agricultural, and recreational uses toward residential and commercial uses. This trend threatens the health of our ecosystems surrounding Galveston Bay and associated waterways by reducing parcel sizes and permanently altering the landscape of region. Additionally, land prices are continuing to rise as the availability of land is reduced and demand increases. Purchasing ecologically significant parcels of land at today's prices will help us maximize the availability of federal and state conservation funding sources.

Conservation easements are currently very popular with landowners within our priority conservation initiative areas. Additionally, there are several large funding opportunities that support land acquisition as a priority action to increase coastal resiliency. This project will aim to secure other federal funding to meet the demand for conservation outcomes within the region.

Leveraging (in-kind and/or cash):

State, federal, and private funding for land acquisition projects and associated due diligence will be secured as part of the grant deliverables. Primary targets for land acquisition funding include Deepwater Horizon related funds, NAWCA, CWPPRA, Texas Farm and Ranchlands (TPWD), Coastal Management Program, GOMESA, NRCS Agricultural Land Easements, and various other state, federal, and private sources. These funds leverage hundreds of thousands, or even millions, of state and federal grants each year as part of various land protection projects throughout the region.

Partners and Their Roles:

Land Conservation organizations within the GBEP service area including: GBF, Artist Boat, Houston Audubon, Katy Prairie Conservancy, Bayou Land Conservancy, Armand Bayou Nature Center, The Nature Conservancy, TPWD, USFWS Refuge System, and others.

Project partners participate in a stakeholder workgroup to propose and review land acquisition projects that fall within the GBEP geographic range of operation. Priority areas have been identified in the East and West Galveston Bay Initiative Areas. Partners are eligible for funding to assist with transactional due diligence, as well as assistance with funding applications for acquisition and other project needs.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

Water quality is one of the primary ecosystem services provided by perpetually conserved lands. By reducing the potential for future development and land use changes within priority watersheds within our watershed, this project will contribute to the overall health of water resources of Galveston Bay and its tributaries. This helps to promote GBEP's priority action of ensuring safe human and aquatic uses.

Land conservation efforts throughout the watershed are targeting the most ecologically productive and sensitive habitats remaining throughout the bay and its immediate watershed. Funding utilized under this grant agreement directly protects and sustains the living resources most important to GBEP. Once protected, habitat restoration and management actions are often carried out by project partners that lead to enhanced ecological benefits to native fish, wildlife, and plant resources.

The CAP platform does allow for opportunities to reach out to local communities, landowners, agencies, and municipalities to share information about the benefits of conservation of land and open space throughout the region. These public outreach opportunities range from small groups of concerned citizens to presentations and state and national conferences. Over the course of this program, we have seen great success in presenting the idea of land conservation as a tool to help local communities and individual landowners achieve their goals and objectives.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☒ HC-2 ☒ HC-3 ☒

SC-1 ☒ SC-2 ☒

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

Funding this project will accelerate the pace of land acquisition (HC-1) throughout the Galveston Bay watershed. Primary actions and deliverables are specifically related to developing and implementing land conservation projects.

Additionally, land acquisition funding is often accompanied by funding for habitat restoration and enhancement activities that affect the desired conservation values of the preserved tract (HC-2 and HC-3). Acquired tracts of land are also owned, managed, or protected by a natural resource agency or an NGO with a conservation mission.

Land conservation targets are prioritized by a workgroup of local stakeholders based on criteria that include wildlife habitat type and other watershed priorities. Since there is limited funding available for purchasing conservation tracts, each tract targeted with CAP resources will promote and sustain native populations of plants and animals (SC-1) and promote the control of invasive plant species within the protected areas (SC-2). Acquiring land for conservation purposes provides new opportunities for habitat restoration and wildlife management.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☐ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

N/A

Other Plans Implemented:

- North American Waterfowl Management Plan (NAWMP)
- Partners in Flight – Gulf Coast Prairie Bird Conservation Region 37
- Partners in Flight - North American Landbird Conservation Plan
- US Shorebird Conservation Plan (USSCP)
- North American Waterbird Conservation Plan (NAWCP)
- Southeast United States Regional Waterbird Conservation Plan (SUSRWCP)
- Galveston Bay Plan (Galveston Bay Estuary Plan)
- Nature Conservancy Gulf Coast Prairies & Marshes Plan
- West Galveston Bay Conservation Initiative
- Galveston Bay Habitat Conservation Blueprint
- Texas Comprehensive Wildlife Conservation Strategy
- Texas Wetlands Conservation Plan and
- TPWD Land and Water Resources Conservation and Recreation Plan
- Gulf Coast Joint Venture Plans
- Texas Coastal Resilience Master Plan
- Texas Coastal Management Plan

SECTION THREE: SUBCOMMITTEE PRIORITIES**NRU Subcommittee Identified Priorities**

Proposals must address one or more of the following actions:

- ☒ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☒ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

- The CAP is primarily focused on acquisition of high-quality habitat and natural resources within the Galveston Bay system
- The CAP is a long-term conservation effort to perpetually protect land within the Galveston Bay system. The program is designed to help existing and ongoing land conservation efforts be successful.
- The CAP's priority conservation targets include habitat for native fish, wildlife, and plant communities. This includes listed species and SGCN.
- CAP projects attract large sums of state, federal, and private conservation dollars to the Galveston Bay Watershed.
- Land conversion rate in the greater Houston area remains high and does not appear to be slowing soon. As land becomes less available, prices become inflated. It is important to try and protect the remaining quality habitats around the bay at today's land prices.

Does the Project work with new, smaller communities/partnerships?

- ☒ Yes
- ☐ No

The CAP workgroup seeks to engage local governmental agencies and programs to develop new conservation projects surrounding Galveston Bay. Local governmental agencies may not have capacity to develop and implement land conservation projects that promote priority open space and recreation goals

for communities. The CAP will seek to promote land conservation objectives and work collaboratively with local partners to support new projects and foster new partnerships within the region.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The Conservation Assistance Program (CAP) was initiated in 2011 and has been reauthorized in several phases through 2021. This proposal includes funding to continue the program and build upon successful land conservation efforts in the Galveston Bay Watershed and complete the ongoing projects underway.

The overall goal of the CAP is to support GBEP and its partners' efforts to preserve wetlands, prairies, and other important coastal habitats to protect the long-term health and productivity of Galveston Bay. CAP will continue to accomplish these goals by:

- Identifying priority conservation properties with the help and consensus of conservation partners
- Building funding strategies through grant identification, grant writing, and fundraising
- Working with willing sellers to negotiate fee simple or conservation easement transactions
- Carrying out legal, title, and other due diligence transaction support
- Finalizing the sale and transfer of title to a third-party organization or government entity

Full Project Description (1,000 words or less):

The objectives of the CAP for conservation include:

1. Preserve coastal wetlands and natural areas that:

- Possess unique conservation value, such as wetlands, bottomland hardwood forests, floodplains, and associated habitats;
- Have a direct link to coastal riparian areas, coastal prairies, or Galveston Bay
- Provide public access, where applicable, to Galveston Bay and its coastal tributaries
- Reduce or prevent nonpoint source pollution by providing storm water abatement.

2. Facilitate a conservation workgroup of local stakeholders for project input and to build sustaining support for open space conservation that meets the goals of this program.

3. Provide technical, legal, and grant writing assistance for coastal habitat conservation projects in the Lower Galveston Bay watershed (including identifying a conservation property; negotiating terms of a sale; managing funding sources; completing surveys; preparing legal, title and closing paperwork; finalizing sale(s); and transferring title to a third party.

Efforts will be prioritized within the West Galveston Bay Conservation Initiative and the East Galveston Bay Conservation initiative in order to maximize return on investment. Land parcels within these two priority areas will help protect habitats critical to the sustainability of native plant and animal populations, protect regional biodiversity, and maintain local water quality.

This proposal seeks to continue a long-standing program supported by GBEP and many members of the NRU subcommittee. GBF continues to seek out and secure matching funds for due diligence tasks that support land acquisition projects. GBF is also seeking acquisition funding from federal sources that will be directed toward priority land conservation projects within the region. These matching funds are typically disseminated via consensus achieved within the CAP workgroup structure and applied to the highest priority land conservation projects throughout the watershed.

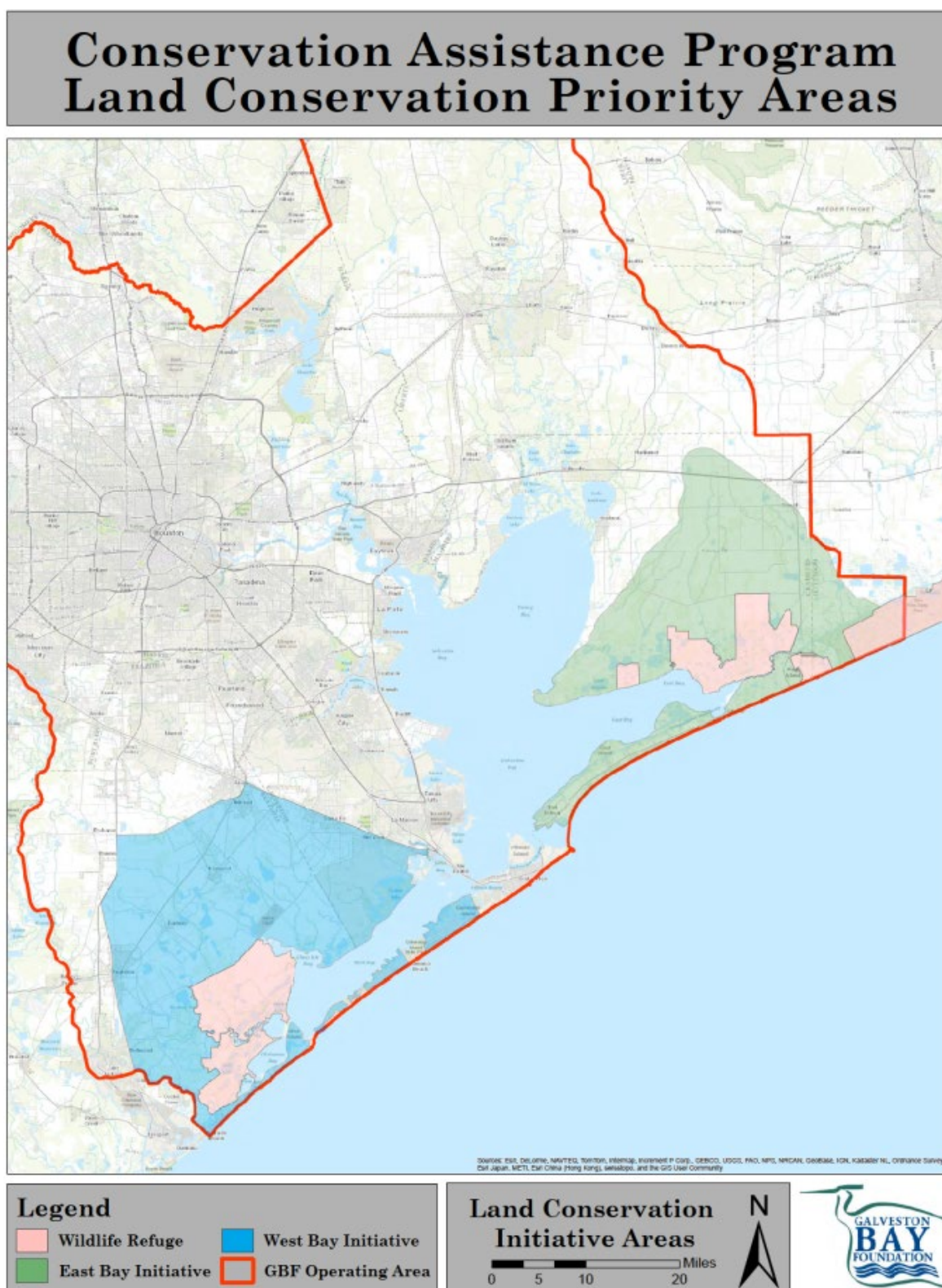
Latitude/Longitude (Optional):

Projects are located throughout the lower Galveston Bay Watershed.

Location:

Work conducted under this grant will be solely within the lower Galveston Bay Watershed. Primarily, the actions will take place in Chambers, Harris, Galveston, and Brazoria Counties, with emphasis on the West Bay and East Bay Conservation Initiative areas, depicted in the map below.

Projects Map



Supplemental Photos/Graphics (Optional):

N/A

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	120,000
b.	Fringe Benefits	18,000
c.	Travel	7,700
d.	Supplies	500
e.	Equipment	
f.	Contractual	70,000
g.	Construction	
h.	Other*	
i.	Total Direct Costs (Sum a - h)	216,200
j.	Indirect Costs	13,800
k.	Total (Sum of i & j)	230,000

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate proposed for this Contract is 10% of (check one):

- ☒ salary and fringe benefits
☐ modified total direct costs
☐ other direct costs base
If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
☒ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

GBF has a NICRA that is approved for 34% of salary and fringe benefits. Due to the higher-than-normal percentage of salary/fringe costs identified in the project budget, GBF is proposing to utilize a smaller indirect rate than allowed in the NICRA.

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

Natural Resources Uses

Project Name:

Bay Harbor Island Stabilization (Adaptative Management & Enhancement)

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer:

Galveston Bay Foundation (GBF)

- ☐ Federal, State, or Local Government ☐ Council of Government ☐ Public ISDs or Universities
☒ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Sally Clark
Project Representative Phone	832-536-2280
Project Representative Email	sclark@galvbay.org

Amount Requested:

\$132,700.00

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$100,000.00
FY 2026 (09/01/2025-08/31/2026)	\$25,000.00
FY 2027 (09/01/2026-05/31/2027)	\$7,700.00
Total	\$132,700.00

Total Project Cost:

\$1,300,000.00±

The total project cost includes planning, engineering & design, and permitting (\$200,000±) as well as the estimated cost for construction (\$1,100,000±). Please note, the cost for construction is preliminary and will become more defined upon finalization of the design plans. This proposal requests funding solely for the engineering and design phase to produce 30-50% design plans and secure the necessary state and federal permits.

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 – 2.5-year maximum project length):

1.5 to 2.5 years for planning, engineering & design, and permitting

Project Urgency:

The Bay Harbor Rookery Island has been showing signs of erosion since 2015 when the geotubes, originally installed in 2010 for erosion control, began to fail. Since that time, abnormal high tides and impacts from Hurricane Harvey as well as other tropical systems have further exacerbated erosion at the project site. Based on 2018 surveys, it is estimated that over 1.0 acre of the original island footprint has eroded and up to 4.0 feet of elevation has been lost on the island crown. Without additional protection from wind and wave action, the island will continue to erode, and valuable colonial waterbird nesting habitat will be lost. Furthermore, as the geotubes continue to fail and island elevations continues drop, the adjacent marsh and seagrass habitat is at higher risk for erosion. The proposed project will develop an adaptive management strategy to stabilize the shoreline and ensure sustainability of the nesting island and surrounding estuarine habitat.

Leveraging (in-kind and/or cash):

Private Donation: \$5,700.00; secured; cash

In addition to the funding source shown above, GBF previously secured funding from the U.S. Fish and Wildlife Service Coastal Program in the amount of \$27,500.00 (cash). These funds were secured prior to the period of performance for the GBEP-NRU FY 25 funding and are therefore not reported as leverage. However, these funds were invested in the project to conduct hydrographic and topographic surveys in 2018 to assess the site conditions relative to the original island design. The funds were also used to hire an engineering firm to produce conceptual design plans in 2021. These conceptual design plans will guide the next steps of the project to restore and potentially expand the island footprint, restore nesting elevations, and further stabilize the northern shoreline of the island.

Partners and Their Roles:

Bay Harbor Improvement Association – funder; permittee; local stakeholder
US Fish and Wildlife Service Coastal Program – funder; technical guidance/advisory team member
TX Parks and Wildlife Department – technical guidance/advisory team member

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION*Galveston Bay Plan, 2nd Edition References*

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>
<https://gbep.texas.gov/protect-and-sustain-living-resources/>
<https://gbep.texas.gov/engage-communities/>
<https://gbep.texas.gov/inform-science-based-decision-making/>

The Bay Harbor Island Stabilization Project aligns with the 2018 Galveston Bay Plan by protecting, enhancing, and restoring multiple habitats: nesting island and estuarine marsh. With an overall goal of supporting colonial waterbird populations, the proposed project will also implement native species management. Therefore, the proposed project addresses the following Living Resources Action Plans:

- HC-2: Habitat Restoration
- HC-3: Habitat Enhancement
- SC-1: Native Species Management

The proposed island stabilization will restore and/or enhance up to 3.50 acres of colonial waterbird nesting habitat. The proposed installation of a wave barrier to protect the island will also allow for the establishment of intertidal marsh and seagrass. The total acreage of these habitats will become more defined upon completion of the design plans. Based on past monitoring efforts via the Texas Colonial Waterbird Surveys, it is anticipated these restoration and protection efforts will provide nesting habitat for roughly 8,000 colonial waterbirds.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒
SC-1 ☒ SC-2 ☐
FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

The Bay Harbor Island Stabilization Project will support three actions under Plan Priority 2: habitat restoration (HC-2), habitat enhancement (HC-3), and native species management (SC-1).

HC – “Habitat Conservation”

The proposed project identifies lost and degraded habitats (eroding nesting islands in West Bay). It also serves as a project that can be adapted to multiple funding sources, such as previously secured and utilized USFWS Coastal Program funds. If awarded the GBEP-NRU FY 25 funds, GBF will deliver a shovel ready project that will result in up to 3.50 acres of colonial waterbird nesting habitat as well as the restoration and/or protection of adjacent estuarine habitat. These restored habitats will contribute to the overall Plan Priority 2 goal of 2,500 acres restored and 5,000 acres enhanced within 10 years.

SC – “Species Conservation”

The proposed project was developed specifically for “species needs” and will result in the conservation of both aquatic (estuarine marsh) and terrestrial (nesting island) habitat. The protection and restoration of the existing nesting island will provide vital habitat for colonial waterbirds and restore and/or protect surrounding estuarine habitat essential to native finfish, crustaceans, and waterbirds.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
☒ PPE (Engage Communities)
☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

The Bay Harbor Island Stabilization Project specifically addresses the protection and restoration of an eroding nesting island and adjacent estuarine habitat. At this time, other Subcommittee priorities are not directly addressed. However, upon completion of construction, local volunteers will be engaged to plant native species on the nesting island and in the estuarine marsh as deemed feasible/necessary. In addition, post-construction monitoring will be conducted to ensure project success and allow for adaptive management.

Other Plans Implemented:

The proposed Bay Harbor Island Stabilization Project is a Tier 1 Project included in the Texas Coastal Resiliency Master Plan (TCRMP), specifically Project 9230. The island stabilization activities will achieve key “Ecological Resiliency Strategies” identified by the Master Plan: Restoration and Monitoring; Rookery Island Protection, Restoration and Creation. In addition, the project directly aligns with R1-33: Galveston Bay Rookery Island Restoration.

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☒ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☒ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

The Bay Harbor Island Stabilization Project (Bay Harbor) will address three of the NRU Subcommittee's priorities for FY 25: enhancement of existing or ongoing restoration/conservation efforts, benefit to native fish and wildlife, and funding/work leverage.

The Bay Harbor Island project will expand upon more than 20 years of habitat restoration efforts in West Galveston Bay, providing connection to over a dozen projects. The proposed island stabilization aims to protect and enhance existing nesting habitat from further erosion by constructing a new wave barrier to compensate for failed geotubes installed in 2010. Thus, the project directly addresses the failure of geotubes and results in the restoration and protection of nesting habitat for colonial waterbirds as well as intertidal marsh and seagrass.

By protecting and restoring these coastal habitats, the project provides a benefit to native fish and wildlife. Natural features, such as a stone wave barrier and native marsh and/or seagrass restoration, will be incorporated in the project to result in a living shoreline. These elements will provide valuable habitat for bivalve mollusks as well as finfish and crustaceans. The restored estuarine marsh will also help absorb floodwaters and wind/wave energy, thus enhancing the resiliency of the nesting island. In addition, past monitoring efforts via the Texas Colonial Waterbird Surveys have documented approximately 8,000± colonial waterbirds utilizing the island, including black skimmers, royal terns, sandwich terns, laughing gulls, cattle egrets, tricolored herons, and white ibis. Seagrass has also been documented growing on the leeward side of the restored island.

Without the proposed stabilization, the nesting island and adjacent estuarine habitat may be lost. While \$27,500 was previously secured through the USFWS Coastal Program to produce conceptual plans, additional funds are needed to support full engineering and design services as well as permitting. If awarded, FY 25 funds enable GBF to provide a shovel ready project within 1.5-2.5 years.

Does the Project work with new, smaller communities/partnerships?

- ☐ Yes
- ☒ No

The Bay Harbor Improvement Association (BHIA) is a lead partner on the project and initiated the original restoration effort in 2010. While this is not a new partnership, the support of the BHIA is integral to the success of the project. GBF will continue to partner with the BHIA to complete the proposed island stabilization project.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The Bay Harbor Rookery Island was originally restored in 2010, resulting in the creation of 2.20 acres of nesting habitat for colonial waterbirds. While the island continues to serve as valuable nesting habitat, ongoing erosion has decreased the island's footprint and elevation. This proposal requests funding to support the engineering and design phase of the Bay Harbor Island Stabilization project to expand the island footprint by up to 3.50 acres, restore nesting elevations, and further stabilize the northern shoreline.

Full Project Description (1,000 words or less):

In 2010, the Galveston Bay Foundation (GBF), US Fish and Wildlife Service (USFWS) Coastal Program, and other partners worked with the Bay Harbor Improvement Association (BHIA) to utilize dredge material to restore estuarine wetlands and create suitable nesting habitat for colonial waterbirds. The Bay Harbor Rookery Island has been successful to-date, establishing 0.50 acre of emergent marsh and providing nesting habitat for approximately of 8,000 colonial waterbirds including black skimmers, royal terns, sandwich terns, laughing gulls, cattle egrets, tricolored herons, and white ibis. Seagrass has also been documented growing on the leeward side of the restored island.

While successful, the island is showing signs of erosion. In 2013, GBF worked with the BHIA and USFWS to install approximately 225 feet of multi-row reef dome breakwaters in the designed gaps between existing geotubes. Following installation, sediment began to accrete behind the newly protected areas. The reef domes also created substrate for oyster attachment and growth. However, the original geotubes designed to protect the island began to fail in 2015. Since that time, the geotubes have lost material and are beginning to flatten. Some sections have lost nearly all their original elevation and no longer provide protection from the erosional forces of West Galveston Bay. Abnormally extended periods of high tides in 2016, Hurricane Harvey in 2017, and effects from several tropical systems in 2020 further exacerbated the erosion at the project site.

To address the failure of the geotubes and continued erosion along the north side of the island, GBF and USFWS initiated the Bay Harbor Island Stabilization Project with the goal to develop an adaptive management strategy to stabilize the shoreline and ensure sustainability of the rookery island and surrounding estuarine habitat. GBF contracted Gahagan & Bryant Associates (GBA), who provided the original island design in 2010, to conduct new hydrographic and topographic surveys in 2018 to assess the site conditions relative to the original island design. Based on the 2018 surveys, GBA estimates over 1.0 acre of nesting habitat was lost since the original construction in 2010. In 2021, GBA utilized the 2018 survey data to produce conceptual design plans to restore and protect the island's footprint and elevations. The conceptual design proposes the construction of a wave barrier along the northern shoreline and additional placement of dredge material to restore and potentially expand the island footprint by up to 3.50 acres.

If awarded the GBEP FY 25 funds, GBF will secure an engineering firm to conduct additional surveys required to produce 30-50% design plans for the stabilization of the rookery island. These design plans will allow GBF to secure the necessary state and federal permits, thus providing a shovel-ready project within 1.5-2.5 years.

Latitude/Longitude (Optional):

29° 7'56.88"N, 95° 4'27.57"W

Location:

The Bay Harbor Rookery Island is located in West Galveston Bay adjacent to the community of Bay Harbor in Galveston County, Texas.

Project Map



Supplemental Photos/Graphics (Optional):



Figure 1. Google Earth image of original project shortly after completion (2011)

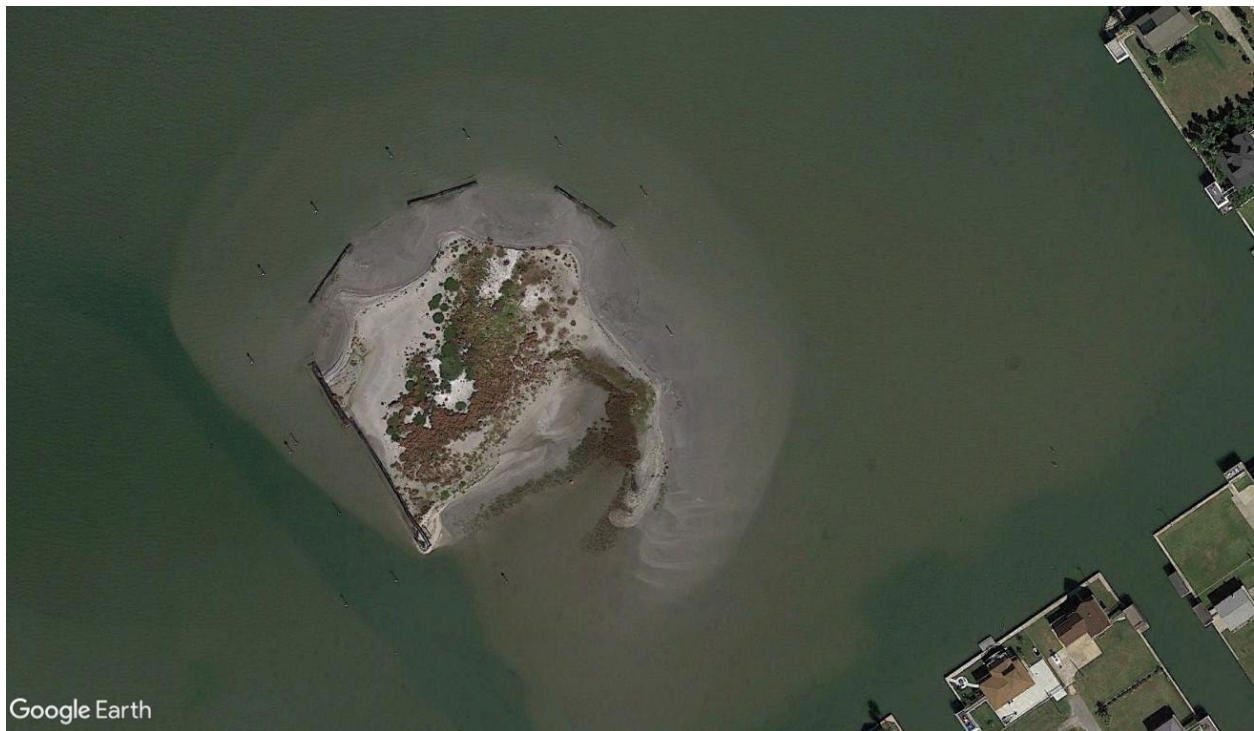


Figure 2. Google Earth image of original project showing erosion behind gaps in geotubes (2012)

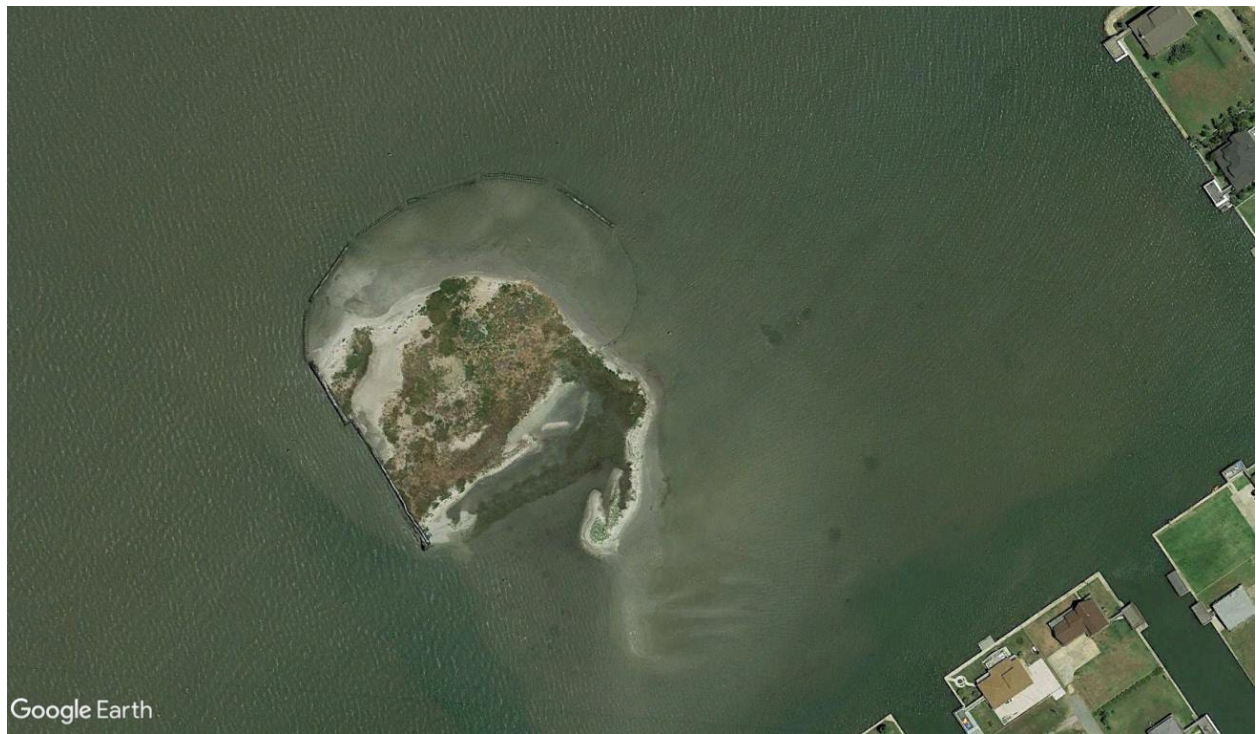


Figure 3. Google Earth image of original project showing shoreline stabilizing after reef ball installation (2014)



Figure 4. Aerial view of rookery island facing east (May 2015)



Figure 5. Google Earth image of rookery island showing loss after Hurricane Harvey (2018)



Figure 6. Aerial view of the rookery island facing east (March 2021)



Figure 7. Aerial view of the rookery island facing south (March 2021)



Figure 8. Aerial view of the rookery island facing west (March 2021)



Figure 9. Western shoreline of the rookery island during nesting season (May 2021)



Figure 10. Northeastern shoreline of rookery island during nesting season (May 2021)

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$8,000.00
b.	Fringe Benefits	\$1,300.00
c.	Travel	\$200.00
d.	Supplies	\$0.00
e.	Equipment	\$0.00
f.	Contractual	\$120,000.00
g.	Construction	\$0.00
h.	Other*	\$100.00
i.	Total Direct Costs (Sum a - h)	\$129,600.00
j.	Indirect Costs	\$3,000.00
k.	Total (Sum of i & j)	\$132,700.00

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents: NA

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 34% of (check one):

- ☒ salary and fringe benefits
☐ modified total direct costs
☐ other direct costs base
If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☒ Predetermined Rate—an audited rate that is not subject to adjustment.
☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#) - NA

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

Natural Resources Uses

Project Name:

Galveston Bay Foundation Wetland Planting Assistance

Project Previously Funded by GBEP?

Yes ☐

No ☒

Lead Implementer:

Galveston Bay Foundation

☐ Federal, State, or Local Government

☐ Council of Government

☐ Public ISDs or Universities

☒ Nonprofit

☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Philip Smith
Project Representative Phone	281-332-3381
Project Representative Email	psmith@galvbay.org

Amount Requested:

\$93,840.00

Is the project scalable? ☐

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$80,000.00
FY 2026 (09/01/2025-08/31/2026)	\$13,840.00
FY 2027 (09/01/2026-05/31/2027)	\$0.00
Total	\$0.00

Total Project Cost:

\$120,840.00

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

18 months

Project Urgency:

Construction of two large scale shoreline protection projects (Gordy Marsh and Oyster Lake Phase III) are anticipated to be constructed in the first half of 2024. These funds would be utilized for initial wetland transplanting of smooth cordgrass at the site(s) in spring 2024. These transplants will be critical to the long-term establishment of intertidal wetlands at the site(s).

Leveraging (in-kind and/or cash):

The proposed project will include in-kind plant donations with a value of \$0.60 per stem of smooth cordgrass planted. It is estimated that the project would plant 45,000 stems at a value of \$27,000.00. The stem count is estimated on a planting cost of \$1.88 per stem, with the pricing being estimated from similar projects completed by GBF in 2022.

At this time, it is anticipated that construction of the Gordy Marsh and Oyster Lake Shoreline Protection Projects would be completed prior to September 1, 2024. However, should either project see a delay in construction start, additional significant leverage funds may be available. At this time it is anticipated that the construction budget for each project is as follows: Gordy Marsh ~\$5.2 million and Oyster Lake ~\$4.5 million. Construction delay(s) could see all or a portion of these construction budget estimates utilized as additional leverage.

Partners and Their Roles:

The proposed project would occur at either or both the Gordy Marsh and/or Oyster Lake project sites. Both projects are currently partnering with USFWS Coastal Program and Texas GLO CEPRA/GOMESA. Additionally, the Oyster Lake project site is supported by the Brazoria NWR. Both Coastal Program and GLO have provided project funding and technical assistance services as part of the project partnership.

GBEP, NRU has supported both project sites in the past included the use of CAP funding to secure a conservation easement for Gordy Marsh and funding to assist in the construction of phase II of Oyster Lake.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

The proposed project aligns with the 2018 Galveston Bay Plan by protecting, enhancing, and restoring multiple habitats: intertidal and emergent estuarine wetlands. Shoreline protection construction materials will also provide suitable habitat for oyster colonization. The wetlands and reef areas will provide habitat for many important fisheries species within the Galveston Bay system. Therefore, the proposed project addresses the following Living Resources Action Plans:

- HC-2: Habitat Restoration
- HC-3: Habitat Enhancement
- SC-1: Native Species Management

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒

SC-1 ☒ SC-2 ☐

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

The proposed will support three actions under Plan Priority 2: habitat restoration (HC-2), habitat enhancement (HC-3), and native species management (SC-1).

HC – Habitat Conservation

The proposed project identifies lost and degraded habitats (eroding and lost coastal wetlands) within Galveston Bay. Combined it is anticipated that the Gordy Marsh and Oyster Lake PIII shoreline projects will protect up to 20,000 feet of eroding shorelines. The actual length of shoreline to be protected will be determined during construction bidding but is anticipated to be approximately 16,000 feet. Currently the eroding shorelines are void of intertidal wetland habitat. The project seeks to transplant, via contractors, approximately 45,000 stems of smooth cordgrass to kickstart the restoration and reestablishment of intertidal wetlands at the project site.

SC Species Conservation

The restoration of intertidal wetlands at the project site(s) will provide nursery habitat and foraging areas essential to native finfish, crustaceans, and waterbirds. These typically include blue crab, brown shrimp, white shrimp, red drum, sheepshead, spotted seatrout, and eastern oyster.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☒ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☐ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

Admittedly this is a stretch to meet the specific goals of WSQ. However, both oysters and intertidal estuarine wetlands have been proven to be effective natural habitats that assist in improving water quality.

Other Plans Implemented:

Both Gordy Marsh and Brazoria NWR shoreline habitats are listed in GBF's Habitat Conservation Blueprint.

Both project sites are Tier 1 projects in the Texas Coastal Resiliency Master Plan as follows:

Gordy Marsh: R1-8 (2017), R1-4 (2019), Listed as funded project in 2023 Plan

Oyster Lake: R1-17 (2019), Listed as funded project in 2023 Plan

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

Enhancement of Existing or Ongoing Restoration/Conservation Efforts:

Gordy Marsh

GBEP-NRU first supported the Gordy Marsh property with NRU funding via CAP in 2014. CAP funding allowed for due diligence work related to the property and ultimately resulted in GBF executing a conservation easement on the property. Since the establishment of the conservation easement, GBF has been working to fund, design, and construct a project that protects the eroding Trinity Bay shoreline and restores/reestablished intertidal wetland habitat along the shoreline. GBF has secured funds for these activities and expects to be able to construct shoreline protection measures along the property's shoreline in early 2024 (\$5.2 million). The proposed project will build upon these previous and current, ongoing restoration and conservation efforts.

Oyster Lake

GBEP-NRU has supported previous phases of construction at the Oyster Lake project site. NRU provided \$80,000.00 to this previous work in FY 2015. Since completing Phase I and II of the project GBF and partners have been looking to secure funds to expand the length of shoreline protected at the project site. GBF has secured partial funding for construction expects construction to begin in early 2024 (\$4.5 million). The proposed project will build upon these previous and current, ongoing restoration and conservation efforts.

Both projects have been identified as Tier 1 project in the TCMRP.

Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife:

The restoration of intertidal wetlands at the project site(s) will provide nursery habitat and foraging areas essential to native finfish, crustaceans, and waterbirds. These typically include blue crab, brown shrimp, white shrimp, red drum, sheepshead, spotted seatrout, and eastern oyster.

Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee:

The proposed project will include in-kind plant donations with a value of \$0.60 per stem of smooth cordgrass planted. It is estimated that the project would plant 45,000 stems at a value of \$27,000.00. The stem count is estimated on a planting cost of \$1.88 per stem, with the pricing being estimated from similar projects completed by GBF in 2022.

At this time, it is anticipated that construction of the Gordy Marsh and Oyster Lake Shoreline Protection Projects would be completed prior to September 1, 2024. However, should either project see a delay in construction start, additional significant leverage funds may be available. At this time it is anticipated that the construction budget for each project is as follows: Gordy Marsh ~\$5.2 million and Oyster Lake ~\$4.5 million. Construction delay(s) could see all or a portion of these construction budget estimates utilized as additional leverage.

Does the Project work with new, smaller communities/partnerships?

☐ Yes

☒ No

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The proposed project aims to kickstart intertidal fringe wetland restoration by contractually transplanting an estimated 45,000 stems of smooth cordgrass along up to 16,000 feet of bay shoreline at up to two upcoming shoreline protection projects (Gordy Marsh and Oyster Lake Phase III). The resulting area of restored intertidal wetlands is undetermined but estimated to be in the 5+ acre range.

Full Project Description (1,000 words or less):

The objective of the project is to assist the Galveston Bay Foundation in its efforts to planting wetland vegetation, primarily *Spartina alterniflora*, at two upcoming shoreline protection project sites. The sites include Gordy marsh (Trinity Bay) and Oyster Lake (West Bay)

Coastal wetland loss in Texas and in the Galveston Bay system is significant and is a continuing concern because of the essential roles that wetlands perform. Wetland loss in coastal Texas has been rated by the Environmental Protection Agency (EPA) as severe (EPA, 1999). Wetland loss in the Galveston Bay system is greater than in many other areas of the state. It is estimated that between 1950 and 1990, Galveston Bay experienced a net loss of approximately 35,000 acres of wetlands. Due to the alarming loss of wetlands in the Galveston Bay system, the Galveston Bay National Estuary Program (GBNEP) identified wetland restoration, creation, and protection as the number one priority in the *Galveston Bay Plan* (1995).

Since the late 1990's, the Galveston Bay Foundation has been restoring marsh habitat to Galveston Bay through the steps of restoring marsh elevations, growing plants for marsh restoration, and planting salinity-appropriate marsh grasses at the restoration sites. In the entire Galveston Bay area, historical subsidence and subsequent erosion have resulted in elevations which are too low to support marsh vegetation. Marsh restoration work is conducted by raising the elevations of the substrate to those which will support marsh vegetation and planting intertidal reaches with marsh vegetation. At some sites, depending upon conditions and need, shoreline protection measures are also needed. Following construction, GBF typically involves the Galveston Bay community in transplanting emergent marsh vegetation to the marsh restoration sites during public "Marsh Mania" restoration and education events, held annually since 1999. However, in recent years due to the influx of potential funding from the Deepwater Horizon oil spill being available, restoration projects are becoming larger in scale and in more remote locations. At these type of project sites, it is logistically difficult to have community volunteers plant these remote sites. It is also difficult for staff and project partners to harvest enough plants for larger project sites to be planted at large volunteer events. To fill these gaps the requested funds would be used to enter into agreements with contractors to plant all or parts of some of these restoration sites. The funds would also allow for GBF to pay a contractor to harvest a large number of plants for large scale volunteer planting events such as Marsh Mania, if such an event is deemed logistically feasible at these tow project sites.

This project should result in approximately 45,000 stems of *Spartina alterniflora* being planted at either or both the Gordy Marsh and/or Oyster Lake project sites. The project will allow for GBF to enter into agreements with contractors to plant project sites that provide logistical challenges making it difficult to get volunteer planters to the project location. As an example, the Oyster Lake project site, which is a remote site accessible only via an approximately 11 mile boat trip, making it difficult to get volunteers and planting materials to and from the site. Funding would also allow for the contractual harvesting of plants for events in which volunteers or staff cannot meet the demand for the number of plants required to be harvested to support the event, if logistically feasible.

Latitude/Longitude (Optional):

Gordy: 29.581247; -94.734393

Oyster Lake: 29.110320; -95.165483

Location:

Oyster Lake: West Bay

Gordy Marsh: Trinity Bay

Projects Map



Oyster Lake Phase 3

Legend
Proposed Breakwater extensions

Google Earth

Basrop Bay

1 mi



Supplemental Photos/Graphics (Optional):



Example of shoreline conditions pre-project (Phase II). Photo is looking to north, notice lack of intertidal vegetation/fringing marsh.



June 2021 photo looking to north. This is a reference to the first photo in this collection of photos. Notice the accretion of sediment behind breakwaters and the established intertidal fringe marsh (smooth cordgrass) and the natural expansion of the intermediate marsh. Photo of Phase II.



Oyster recruitment on bayside of breakwater structure, November 2019. Photo from Phase II

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$5,000.00
b.	Fringe Benefits	\$1,000.00
c.	Travel	\$750.00
d.	Supplies	
e.	Equipment	
f.	Contractual	\$85,000.00
g.	Construction	
h.	Other*	\$50.00
i.	Total Direct Costs (Sum a - h)	\$91,800
j.	Indirect Costs	\$2040.00
k.	Total (Sum of i & j)	\$93,840.00

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 34% of (check one):

- ☒ salary and fringe benefits
☐ modified total direct costs
☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☒ Predetermined Rate—an audited rate that is not subject to adjustment.
☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU

Project Name:

Greens Bayou Riparian Restoration Project

Project Previously Funded by GBEP?

Yes ☐

No ☒

Lead Implementer:

Houston Parks and Recreation Department (HPARD)

☒ Federal, State, or Local Government

☐ Council of Government

☐ Public ISDs or Universities

☐ Nonprofit

☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Kelli Ondracek
Project Representative Phone	(832) 395-7090
Project Representative Email	Kelli.Ondracek@houstontx.gov

Amount Requested:

\$150,000

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$150,000
FY 2026 (09/01/2025-08/31/2026)	\$0.00
FY 2027 (09/01/2026-05/31/2027)	\$0.00
Total	\$150,000

Total Project Cost:

\$150,000

Is this an estimate? ☐

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

Two years

Project Urgency:

HPARD is working to restore all riparian buffers in parks by 2030 to meet Houston's resilience goals of providing clean water in adjacent waterways, reducing urban heat, and supporting native wildlife.

Leveraging (in-kind and/or cash):

All HPARD staff time spent as in-kind contributions:

- Grant and funds management
- Field work
- Hosting volunteer events
- Hiring and overseeing contractors
- Habitat assessment- vegetation surveys, data analysis

Partners and Their Roles:

N/A

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

HC: Habitat Conservation:

Riparian areas are considered a habitat of “special conservation concern in the Lower Galveston Bay” by the TCEQ Galveston Bay Estuary Program State of the Bay, and the loss of riparian forests in the Galveston Bay watershed threatens the health of the Bay. This project seeks to enhance 46.5 acres of riparian forest within the Greens Bayou watershed.

SC: Species Conservation:

Native species management will occur through the planting of a diverse mix of native trees and shrubs. This will provide a habitat corridor for native wildlife that have struggled with habitat loss. Invasive species control will continue throughout the grant period with an invasive species removal contractor and trained HPARD staff.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☐ HC-3 ☒

SC-1 ☒ SC-2 ☒

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

HC-3- Habitat Enhancement:

The proposed project will enhance severely degraded natural areas along Greens Bayou through the removal of existing non-native trees and replacement with a diverse mix of native canopy and understory species.

SC1- Native Species Management:

The proposed project will install a diverse mix of canopy, understory, and shrub species into the riparian restoration sites. The restored areas will provide habitat for many species of native wildlife, including many that are listed as Species of Greatest Conservation Need due to the loss of habitat along the upper Texas coast.

SC-2: Invasive Species Control:

The proposed project will remove invasive species, including Chinese Tallow (*Triadica sebifera*) and Privet species (*Ligustrum* sp.).

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☒ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ PPE (Engage Communities)
- ☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

WSQ:

The proposed project will enhance riparian forests that will trap sediment and pollutants from non-point source runoff before it enters the waterway.

PPE:

The proposed project implements actions to engage communities. Each riparian restoration project begins with outreach to local communities and community planting events to encourage appreciation of Houston's natural habitats and waterways. In addition, interpretive signs will be installed to provide educational opportunities for park visitors.

Other Plans Implemented:

Resilient Houston, Houston Climate Action Plan, Texas Coastal Management Plan, Texas Coastal Resiliency Master Plan, Gulf Houston Regional Conservation Plan (RCP), City of Houston Riparian Restoration Initiative

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

Enhancement of Existing or Ongoing Restoration/Conservation Efforts:

The proposed project is targeting enhancement of degraded riparian habitat in support of ongoing efforts by the City of Houston to restore habitat within all parks adjacent to waterways. A total of 25 parks have been restored with the goal of reaching 70 restorations by 2030. These habitat projects address water quality, erosion, invasive species control, enhanced species diversity, reduction in urban heat, and improved habitat for native wildlife.

Benefit to Native Fish and Wildlife:

The proposed project includes restoration of 46.5 acres of riparian habitat along Greens Bayou. The current state of the habitat contains a heavy mix of non-native trees, vines, and understory vegetation. This project will benefit native fish and wildlife by restoring the native riparian forest that was historically present along Houston's waterways. The project will provide a linear corridor of habitat for local and migratory wildlife with a diverse variety of tree species that supports requirements for food, nesting, and shelter. The water quality improvements resulting from the restoration of riparian forest will benefit aquatic life in Greens Bayou and Galveston Bay.

Brings Funding, Work Leverage, Multiple Goal Benefit to the Subcommittee:

This project cites multiple goals of the "Protect and Sustain Living Resources" Action Plans and is a component of HPARD's Riparian Restoration Initiative in which all parks adjacent to waterways are targeted for riparian restoration. The overall initiative is included in the City of Houston's Resilient Houston Plan, Houston Climate Action Plan, and the GLO Texas Coastal Resiliency Master Plan.

Does the Project work with new, smaller communities/partnerships?

☒ Yes

☐ No

HPARD will be reaching out to local community groups, schools, and churches to engage them in the habitat restoration process through community planting events.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The Houston Parks and Recreation Department will restore 46.5 acres of riparian forest habitat within two parks adjacent to Greens Bayou. The habitat restoration will improve wildlife habitat, enhance the ecosystem services of these areas, and provide community engagement during the restoration process.

Full Project Description (1,000 words or less):

The Greens Bayou Riparian Restoration Project will restore 46.5 acres of riparian forest within two City of Houston Parks. Maxey Park and Crooker Moody Park both contain riparian forest habitat along Greens Bayou and are protected from development by the city's Nature Preserve Ordinance.

The parks contain historic riparian habitat along Greens Bayou, as seen on aerial imagery from the 1940's, with some disturbance in portions of each park. The 35.5-acre Nature Preserve at Maxey Park and the 11-acre Nature Preserve at Crooker Moody Park now contain a mix of native and invasive trees and understory. Crooker Moody Park also contains the confluence of Jordan Gully to Greens Bayou.

The Houston Parks and Recreation Department (HPARD) is proposing to restore Maxey and Crooker Moody Parks by removing non-native species and creating a dense forest of native canopy, understory, and shrub species. This will create a riparian buffer approximately 1,600 linear feet along Greens Bayou.

This project is a component of the larger Houston Parks Riparian Restoration Initiative where all City of Houston parks that are adjacent to a waterway are targeted for creation or enhancement of forested riparian buffers. This initiative will restore and enhance Houston's historic riparian habitat in 70 parks across 1,000 acres of park land by the year 2030.

The Riparian Restoration Initiative aims to reestablish this important habitat in parks where the trees have been completely removed, enhance existing riparian areas across through the targeted removal of invasive plants, and reestablish native canopy and understory trees. This initiative is focused on improving water quality in Houston's impaired waterways and supports a diverse mix of trees that support wildlife species. Since the reforestation projects are located adjacent to Houston's major bayou systems, the plantings help reduce nonpoint source pollution, prevent erosion, and mitigate flooding.

HPARD will host one community planting event at each park to educate the community on the importance of riparian habitat and promote stewardship and appreciation of nature preserves in local communities. Interpretive signs will be installed at both sites to provide educational opportunities for park visitors. Restoration areas will be monitored to measure changes in the composition and diversity of plant material and animal species and provide an indicator of future management needs. Two six-month SCA interns will be hired to assist with restoration activities and community outreach.

The Greens Bayou Watershed is located in north Harris County, flowing from west to east and then south into the Houston Ship Channel. According to Harris County Flood Control District, the watershed contains 212 square miles, 308 miles of open streams, and is one of the more populous watersheds in the county. TCEQ lists Greens Bayou Tidal as impaired for PCBs and Dioxin and "Of concern" for nutrients.

Latitude/Longitude (Optional):

Maxey Park Latitude: 29°46'49.39"N
Maxey Park Longitude: 95°12'54.04"W

Crooker/Moody Park Latitude: 29°46'36.03"N
Crooker/Moody Park Longitude: 95°12'14.55"W

Location:

Maxey Park: 601 Maxey Road, Houston, TX 77013
Crooker/Moody Park: 400 Westmont/West Canal, Houston, TX 77015

TCEQ Stream Segment Assessment Unit 1006_03: Greens Bayou Tidal
USGS HUC 12: Lower Greens Bayou (120401040606)

Projects Map



Supplemental Photos/Graphics (Optional):

[\[Insert Here or Attach as an Appendix\]](#)

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$0
b.	Fringe Benefits	\$0
c.	Travel	\$0
d.	Supplies	\$41,500
e.	Equipment	\$0
f.	Contractual	\$108,500
g.	Construction	\$0
h.	Other*	\$0
i.	Total Direct Costs (Sum a - h)	\$150,000
j.	Indirect Costs	\$0
k.	Total (Sum of i & j)	\$150,000

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is % of (check one):

- ☐ salary and fringe benefits
- ☐ modified total direct costs
- ☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
- ☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
- ☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 NRU Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU

Project Name:

Monitoring and Managing the Threatened Eastern Black Rails in the Galveston Bay Area

Project Previously Funded by GBEP?

Yes ☐

No ☒

Lead Implementer:

Dr. Chris Butler, Texas A&M University

☐ Federal, State, or Local Government

☐ Council of Government

☒ Public ISDs or Universities

☐ Nonprofit

☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Dr. Chris Butler
Project Representative Phone	405-215-5806
Project Representative Email	Chris.butler@tamu.edu

Amount Requested:

\$174,235

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$105,888
FY 2026 (09/01/2025-08/31/2026)	\$53,680
FY 2027 (09/01/2026-05/31/2027)	\$14,667
Total	\$174,235

Total Project Cost:

\$174,235

Is this an estimate? ☐

Project Duration (beginning no earlier than September 1, 2024 - 2.5-year maximum project length):

2.5 years

Project Urgency:

Currently have funding from 4 different sources to study Eastern Black Rails (NOAA, USFWS, TPWD, and NPS), of which three (NOAA, USFWS, and TPWD) are currently being used to study Eastern Black Rails in the Galveston Bay watershed. TPWD and NOAA funding expires 31 Aug 2024, USFWS is funded through 2027.

Leveraging (in-kind and/or cash):

USFWS - \$60,000 - “Assessing the response of Black Rail populations to management actions in coastal Texas marshes”. Submitted, told that it will be funded, but no official letter yet. Research will be carried out at Texas mid-Coast NWR complex, including Brazoria NWR which falls within Galveston Bay Watershed boundary, as well as two locations in the Galveston Bay area.

Texas Parks & Wildlife Department - \$442,817 - “Comparing detectability and efficiency of multiple methods for surveying rails”. Funded, but funding expires 31 Aug 2024. Study sites include research at Galveston Island State Park.

NOAA RESTORE (co-PI on this one) - \$3,922,699 - “Fire effects in Gulf of Mexico marshes: Historical perspectives, management, and monitoring of Mottled Ducks and Black and Yellow Rails”. Funded, but funding expires 31 Aug 2024. Planning on submitting 5-year renewal request. Study sites include Bolivar Peninsula (Houston Audubon properties).

National Park Service - \$93,605 - “Inventory of Eastern Black Rail to Inform Padre Island National Seashore Prescribed Fire Management”. Study site is at Padre Island National Seashore, but can use equipment and software for the proposed research once fieldwork is complete. Funded through 1 April 2025.

Partners and Their Roles:

US Fish & Wildlife Service – will assist with selection of study sites on USFWS-managed properties, will provide housing for field techs during field season. Will also assist with field work and will oversee some habitat enhancement activities.

Texas Parks & Wildlife Department – will provide access to Galveston Island State Park.

Houston Audubon – will provide access to properties on Bolivar peninsula.

Ducks Unlimited – will be responsible for habitat enhancement and restoration (funded through other grants)

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>
<https://gbep.texas.gov/protect-and-sustain-living-resources/>
<https://gbep.texas.gov/engage-communities/>
<https://gbep.texas.gov/inform-science-based-decision-making/>

The second edition of the Galveston Bay Plan includes four plan priorities, two of which (#2: Protect and sustain living resources; and #4: Inform science-based decision making) are directly relevant to this project. Within plan priority #2, there is an Action Plan, “Support Species Conservation”. The International Union for the Conservation of Nature considers Black Rails (*Laterallus jamaicensis jamaicensis*) to be “Endangered” (IUCN 2022) and the American Bird Conservancy considers it to be “At Risk” (American Bird Conservancy 2012). Populations that have been monitored in the eastern U.S. have declined at a rate of 4.7 – 9.2% annually since the late 1980s and it is estimated that the total breeding population along the Atlantic and Gulf Coast states consists of only 455 – 1315 breeding pairs (Watts 2016). The Texas Gulf Coast appears to be one of the few remaining strongholds for this species in the US, with occupancy of suitable habitat in the being approximately 75% (Butler et al. 2015, Butler et al. in press). Based on fieldwork conducted during 2021 and 2022 in the Texas mid-Coast NWR complex, it appears that there may be >200 pairs on these refuges, with good numbers also present at other suitable high marsh sites within the Galveston Bay watershed (e.g., Anahuac, Bolivar Peninsula, Galveston Island State Park, etc.) Consequently, there is an urgent need to monitor Black Rails and evaluate management techniques in order to maintain these birds.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☐ HC-2 ☒ HC-3 ☒
SC-1 ☒ SC-2 ☐
FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

HC-2 is habitat restoration and **HC-3** is habitat enhancement. One of the grants that will be leverage for this project (the USFWS grant) involves aspects of habitat restoration (e.g., cattle exclosures and woody vegetation removal) as well as habitat enhancement (e.g., modifying habitat microtopography). While the proposed project will not fund these actions (as they are funded elsewhere), it will allow us to better monitor how effective the habitat restoration and habitat enhancement is for enhancing Black Rail populations. Within 2 years we anticipate a measurable increase in Black Rail use of restored and enhanced habitats, as well as a measurable improvement in the quality of the high salt marsh.

SC-1 is to protect and sustain living resources. The proposed project will evaluate how effective we are at sustaining native populations of Black Rails (along with their food sources) by restoring and enhancing high salt marsh. Within 2 years, we anticipated demonstrating that our approach can more efficiently quantify the number of Black Rails using an area and will be able to provide guidance on how management techniques such as cattle exclosures, woody vegetation removal, and modifying microtopography can enhance Black Rail populations.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☐ PPE (Engage Communities)
- ☒ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

The existing research is scalable and is part of a larger project examining Black Rails and high salt marsh along the northern Gulf Coast. The proposed research fits in with **RES-6: Evaluate Best Management Practice (BMP) Project**. Although the Atlantic Coast Joint Venture (ACJV) has published the “Black Rail Conservation Plan”, there is no similar plan for the Gulf Coast. However, it seems likely that a comparable plan will eventually be adopted for Gulf Coast region as well. The ACJV plan includes the following items:

- Create new non-tidal Black Rail habitat
- Promote targeted impoundment management
- Develop and promote Black Rail-friendly fire best management practices (BMPs)
- Develop and promote Black Rail-friendly agricultural BMPs
- Develop and implement BMPs to facilitate marsh migration
- Develop Landowner Assurances Program

The proposed and ongoing research will help inform fire best management practices (indeed, this is one of the goals of the NOAA Firebird project that would be leveraged with this project), agricultural best management practices (e.g., stocking density and the potential of cattle exclosures), and facilitating marsh migration by evaluating the effects of modifying microtopography.

Other Plans Implemented:

TPWD’s Texas Conservation Action Plan identifies the Black Rails as a Species of Greatest Conservation Need that requires additional life history information. Although the GCJV does not yet have a plan specifically for Black Rails (unlike the Atlantic Coast Joint Venture), the Black Rail is one of the priority species for the Gulf Coast Joint Venture.

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☐ Habitat Acquisition
- ☐ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☐ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

The proposed research directly addresses the action of "Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife" by focusing on the restoration and conservation of high salt marsh habitats in the Galveston Bay watershed. These habitats play a crucial role in supporting populations of the federally threatened Eastern Black Rail (*Laterallus jamaicensis jamaicensis*). By implementing management practices to maintain and restore these salt marsh habitats, including prescribed fire, vegetation treatments, and hydrological improvements, this research seeks to improve the suitability of the habitat for these species, support their occupancy, and enhance their prey base. As a result, the project directly contributes to the benefit and conservation of native fish and wildlife, particularly those of conservation concern, fostering their resilience and overall health within the Galveston Bay ecosystem.

Does the Project work with new, smaller communities/partnerships?

☐ Yes

☒ No

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The project aims to study and conserve the Black Rail (*Laterallus jamaicensis*), a threatened species heavily reliant on high salt marsh habitats. Leveraging multiple grants, the research involves using ARUs and a FLIR-equipped drone to evaluate management techniques and response effects on Black Rail populations, as well as conducting mark-recapture studies and fecal metagenomics to understand their diet.

Full Project Description (1,000 words or less):

Introduction

Salt marshes occur at the interface between the marine and terrestrial environments, and are important locations for primary productivity, biodiversity, and ecological services such as denitrification (Gedan et al. 2009). They may also act as a storm surge buffer (Möller et al. 2014). These coastal wetlands provide vital habitat for several major fisheries and dozens of migratory birds, including multiple species federally listed under the Endangered Species Act (Kelleway et al. 2017). Globally salt marshes have declined in extent by 25-50%, with pollution, development, altered hydrology, and rising sea levels contributing to declines of salt marsh quantity and quality (Crooks et al. 2011, Duarte et al. 2008).

One of the most vulnerable habitats within this landscape, high marsh, is characterized by high salinity soils, infrequent tidal inundation, and a unique suite of wetland plant species (Eddleman et al. 1994, NatureServe 2009, Texas Conservation Action Plan 2012). In Texas, for example, high marsh differs from low marsh in that high marsh generally is dominated by *Spartina patens* whereas low marsh generally is dominated by *S. alterniflora* (USFWS 1999, Elliot et al. 2014). High marsh may be especially susceptible to loss because management in adjacent upland habitats can prevent wetland migration, and high marsh can be overtaken by low marsh as sea level rise pushes it upslope (Borchert et al. 2018).

One species that appears to be heavily reliant upon high salt marsh is the rare and elusive Black Rail (*Laterallus jamaicensis*). In October 2020, the US Fish & Wildlife Service listed the Black Rail as a Threatened species (FWS-R4-ES-2018-0057). Qualitative observations suggest a drastic population decrease between the 1920s and 1970s (Eddleman et al. 1994). Populations that have been monitored in the eastern U.S. have declined at a rate of 4.7 – 9.2% annually since the late 1980s and it is estimated that the total breeding population along the Atlantic and Gulf Coast states consists of only 455 – 1315 breeding pairs (Watts 2016).

The Texas coast appears to be a significant stronghold for the species. Although published population estimates for this area do not exist, surveys on the mid-Coast National Wildlife Refuge (NWR) complex (Brazoria NWR, San Bernard NWR, and Big Boggy NWR) during 2021-2022 detected approximately 130 vocalizing individuals (Butler, unpubl. data). Fieldwork for other projects suggests that the Galveston Bay estuary and environs (e.g., Galveston Island State Park, Houston Audubon properties on the Bolivar peninsula, etc.) also have substantial numbers of this species (Butler, unpubl. data). Consequently, there is an urgent need to effectively manage and monitor this Threatened Species in the Galveston Bay area in order to help maintain one of the last strongholds of this species.

Ongoing research

As noted in Section 1, “Leveraging (in-kind and/or cash)”, we currently have multiple grants for studying Black Rails along the Texas Coast. The USFWS grant, which will begin next year will focus on evaluating management activities that may benefit Black Rails, including grazing exclosures, restoring microtopography, and reducing woody vegetation persistence. The Texas Parks & Wildlife Department focused on evaluating multiple methods of surveying for rails, including call-playback, deploying ARUs (Autonomous Recording Devices), using game cameras, and flying a UAV (unmanned aerial vehicle, i.e., a drone) equipped with a FLIR camera that is capable of detecting heat signatures. The UAV has proven to be effective at finding rails (see Olsen et al. 2023), allowing us to find and photograph a recent fledgling, and to

demonstrate that individuals appear to pair up as early as February (Olsen et al. in prep). However, the UAV, will need to be turned over to TPWD in 2024 as per the grant agreement. The NOAA Firebird grant is a collaborative effort between multiple institutions along the northern Gulf of Mexico, conducting surveys for breeding and non-breeding Black Rails (along with two other species of interest), using rope-drags to flush and band non-breeding individuals, and collecting feathers for a stable isotope analysis. In addition, I have also been collecting fecal samples from individuals that I band in order to perform fecal metagenomics to quantify the diet of these rails and have obtained preliminary results on the invertebrate component of their diet from approximately 15 individuals.

Goals and Objectives

The goal of this project is to leverage the existing grants in order gather additional information that will facilitate surveys and management of Black Rails. Specifically, the objectives are:

- 1.) Use ARUs and a FLIR-equipped drone to facilitate research on the response effects of different treatment methods on Black Rail populations in marshes in coastal Texas to better understand management techniques and how to manage sites to benefit of this species in the context of other land uses.
- 2.) While conducting mark-recapture studies of Black Rails during the non-breeding season, collect fecal samples from banded birds that will be used in a fecal metagenomics study that will quantify diet.
- 3.) Engage with local landowners and stakeholders to provide technical assistance and share the findings of the study to promote the conservation and management of Black Rail populations, as well as the overall health of marsh ecosystems in coastal Texas.

Study sites

This research will be conducted at six sites (Brazoria NWR, Galveston Island, Bolivar Flats, Frost Dean, Gordy Marsh, and Mundy Marsh. See “Projects Map” for locations of these sites

Methodology

Surveys

After consultation with appropriate refuge personnel, ARUs (Autonomous Recording Units) will be deployed to determine when Black Rails recolonize an area after treatments at sites within broader management goals. A FLIR-equipped UAV will also be used to survey for Black Rails in control and treatment areas. Additionally, habitat (such as above-ground biomass) and landscape-level metrics (such as patch size) will be examined to further refine our understanding of how habitat quality influences Black Rail occupancy.

Mark-recapture and fecal metagenomics

During the non-breeding season, rope-drags will be conducted at selected locations in order to determine if Black Rails are present. Individuals that flush will be banded, measured, and any fecal material present will be collected and analyzed in order to quantify the diet.

Latitude/Longitude (Optional):

Various; see “Projects Map” for map of study sites

Location:

The six study sites include: (1) Brazoria National Wildlife Refuge; (2) Galveston Island State Park; (3) Bolivar Flats; (4) Frost Dean (USFWS property); (5) Mundy Marsh (Houston Audubon property); and (6) Gordy Marsh (USFWS property)

Projects Map



Supplemental Photos/Graphics (Optional):

None

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$34,783
b.	Fringe Benefits	\$9,735
c.	Travel	\$11,250
d.	Supplies	\$31,839
e.	Equipment	\$36,950
f.	Contractual	
g.	Construction	
h.	Other*	\$3,542
i.	Total Direct Costs (Sum a - h)	\$128,099
j.	Indirect Costs	\$46,136
k.	Total (Sum of i & j)	\$174,235

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 52.5% of (check one):

- ☐ salary and fringe benefits
☒ modified total direct costs
☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
☒ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program FY 2025 NRU Project Proposal



A PROGRAM OF TCEQ

Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

SECTION ONE: GENERAL INFORMATION

Subcommittee:

NRU

Project Name:

The 9th and 10th Additions to the Coastal Heritage Preserve at Anchor Bay and Galveston Preserve at West Beach, Galveston Island, Texas.

Project Previously Funded by GBEP? Yes ☒ No ☐

Lead Implementer:

Texas Parks and Wildlife Department and Artist Boat, Inc.

☒ Federal, State, or Local Government ☐ Council of Government ☐ Public ISDs or Universities
☒ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Savannah Horton (TPWD) and Karla Klay (AB)
Project Representative Phone	409-289-9138 (TPWD) and 409-632-0388 (AB)
Project Representative Email	Savannah.horton@tpwd.texas.gov ; executive.director@artistboat.org

Amount Requested:

\$200,000 10th Addition; \$600,000 9th Addition = \$800,000

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$0.00
FY 2026 (09/01/2025-08/31/2026)	\$0.00
FY 2027 (09/01/2026-05/31/2027)	\$0.00
Total	\$0.00

Total Project Cost:

Galveston Preserve at West Beach \$1,684,400; Anchor Bay \$6,615,000 = \$8,229,400

Is this an estimate? ☒

Project Duration (beginning no earlier than September 1, 2024 – 2.5-year maximum project length):

2 Years

Project Urgency:

Coastal wetland loss in Texas and in the Galveston Bay system is significant and is a continuing concern because of the essential roles that wetlands perform. Wetland loss in coastal Texas has been rated by the Environmental Protection Agency (EPA) as severe (U.S. EPA, 1999). Additionally, coastal prairie is now a critically imperiled habitat and has been reduced to less than one percent of its original extent (USFWS 2000). Some of the threats to these habitats include industry, agriculture, urban land use, and habitat fragmentation. The majority of tracts surrounding the Coastal Heritage Preserve (Preserve) are for sale. Once these tracts are sold for development, the opportunity to conserve them is generally also gone, as it is nearly impossible to buy out a large commercial business or subdivision and restore the habitat.

Artist Boat has been successful at conserving 898 acres through 14 distinct transactions and is working on completing the funding and acquisition of 138.8 acres from Anchor Bay by March of 2024 (protecting the Preserve from the development of 52 canal homes) and has begun to secure funding to acquire 39.46 acres (adjacent to 86+ acres protecting the slough and wetlands south of Stewart Road in partnership with GBEP with CIAP funds). These acquisitions were accomplished because there have been willing sellers (and donations of land in three cases). There have been willing sellers because funding has been available for the purchases. If conservation funding slows down or ceases to exist, the land will continue to be sold and bought for development purposes. The demand for second homes on Galveston Island has increased dramatically with 8.5 million visitors coming to Galveston Island annually. Most of these homes are on the west end of Galveston Island.

Artist Boat is seeking funding to support the acquisition of the 39.46 acres at Galveston Preserve at West Beach, along with some additional funding to secure the total matching funds required for the Anchor Bay tract, which received a 2024 NCWCGP grant (\$1M and a 2024 GBEP NRU grant \$115,000). The acquisition of the Anchor Bay tract is currently listed as a preferred alternative in the NRDA's Texas Trustee Implementation Group (TX-TIG) Draft Restoration Plan/Environmental Assessment #2 (published in February of 2022) with funding allocated for \$2,120,000. This tract is at immediate risk of development into a 52-home canal subdivision if Artist Boat is unable to acquire it by March 1, 2024.

Leveraging (in-kind and/or cash):

TPWD, in partnership with Artist Boat (AB), has drafted a proposal to submit to the 2025 NCWCGP funding opportunity, requesting \$1M cash for the 39.46-acre acquisition (total project cost of \$1,684,400). The request from GBEP for this acquisition is \$200,000. AB will provide the balance of the project cost, \$484,000, which includes the required match of \$333,335 in cash and \$80,000 in due diligence/legal. Funded projects would be announced March 2025. Funds will be sought from individuals, foundations, and governmental entities. \$200,000 will leverage \$1,484,400.

For the Anchor Bay acquisition, AB has secured \$2,120,000 from the TX-TIG, \$1,000,000 from NCWCGP, \$115,000 from GBEP (requesting additional \$600,000 in funds towards the total non-federal match requirement of \$3,333,334), \$200,000 from The Brown Foundation, \$75,000 from CenterPoint Foundation, \$25,000 from the Partnership for Gulf Coast Land Conservation, \$7,000 from GBF CAP, and \$50,000 from individual donors. Applications are in progress to the Texas General Land Office and other sources; AB has a campaign – Be One in a Million – actively going for individual donors and is making 7 more applications to foundations. A total of \$715,000 from GBEP will leverage \$5,900,000.

Partners and Their Roles:

Texas Parks and Wildlife will be the recipient of the USFWS NCWCGP and GBEP grants and assist with grant management and reporting requirements. TPWD will pass the funds to Artist Boat at the time of closing. Contact: Savannah Horton - 281-534-0111 - savannah.horton@tpwd.texas.gov Artist Boat will be the recipient of grants from other entities and responsible for grant management and reporting

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION.

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

HC, SC - The project is a land acquisition project that will be managed to sustain and restore native species populations, including the control and reduction of invasive species populations. The project will benefit federal and state listed species and listed species of greatest conservation need, including non-game wildlife (please see the attached tables).

PEA - Artist Boat's mission, and Artist Boat's programs are all specifically designed to increase environmental awareness and to develop support for coastal wetlands conservation. Artist Boat's vision is to pioneer educational programming and partnerships for integrated artistic and scientific exploration, interpretation, and preservation of coastal margins and marine ecosystems. They actively work with K-12 students to provide environmental education programming. This project will help facilitate their mission by providing additional beach-to-bay barrier island habitats on West Galveston Island, to learn from and within for their education programs.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 2: Protect and Sustain Living Resources

HC-1 ☒ HC-2 ☐ HC-3 ☒

SC-1 ☒ SC-2 ☒

FWI-1 ☐ FWI-2 ☐ FWI-3 ☐

Plan Priority Area Actions Detail:

HC1- The project acquires land that preserves habitat vital to the Galveston Bay watershed.

HC3, SC1, and SC2 - Once land is acquired the property will be managed to sustain and restore native species populations, including the control and reduction invasive species populations.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

☐ WSQ (Ensure Safe Human and Aquatic Life Use)

☒ PPE (Engage Communities)

☐ M&R (Inform Science-Based Decision Making)

Other Subcommittee Detail:

SPO1, SPO2, PEA1, PEA2, PEA3: Artist Boat's mission, and Artist Boat's programs are all specifically designed to increase environmental awareness and to develop support for coastal wetlands conservation. Artist Boat's vision is to pioneer educational programming and partnerships for integrated artistic and scientific exploration, interpretation, and preservation of coastal margins and marine ecosystems. This project will help facilitate their mission.

The objective of this NCWCGP proposal is to acquire the funds required to purchase and conserve in perpetuity approximately 39.46 acres of coastal habitats, part of the remaining Galveston Preserve at West Beach tracts (Figures 2 and 3). The purchased tract would be added to and be managed as part of the Preserve, supporting its long-term management goals.

The long-term management goals of the Preserve are to:

- Enhance the habitats and their functions and values.
- Provide public access opportunities such as kayak adventures, walking tours, and volunteer conservation initiatives, through the development of infrastructure such as parking areas, boardwalks, viewing platforms, kayak lunches, trails, and interpretative signage.
- Provide educational outreach through the construction and management of an environmental educational facility with laboratory facilities, class and meeting rooms, environmental arts gallery, and dormitories.

Other Plans Implemented:

Please see Table 2. Management Plan Implementation

SECTION THREE: SUBCOMMITTEE PRIORITIES

NRU Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☒ Habitat Acquisition
- ☒ Enhancement of Existing or Ongoing Restoration/Conservation Efforts
 - ☐ Special emphasis on projects addressing geotubes failing across West Bay through design and/or construction.
- ☒ Benefit to Native Fish and Wildlife, including Federal and State Listed Species, Species of Greatest Conservation Need, or Nongame Wildlife
 - ☐ Special emphasis on projects addressing seagrasses, intertidal reef/shell hash, and benthic communities.
- ☒ Brings Funding, Work Leverage, or Multiple Goal Benefits to the Subcommittee
- ☒ Project Urgency: Project must be completed in next 24 months or opportunity is lost

Subcommittee Priority Detail:

This project is a land acquisition project working to conserve fish and wildlife habitat on West Galveston Island. Since 2013 Artist Boat has successfully conserved 898 acres through 14 distinct transactions (including one ongoing transaction totaling 139 acres), plus three donations. Five of the acquisitions were purchased with partial funding from the NRU and one transaction was supported in full with a CIAP Grant. The purchased tracts in this proposal would be added to and be managed as part of the Preserve bringing the total to eight supported transactions.

The long-term management goals of the Preserve are to:

- Enhance the habitats and their functions and values.
- Provide public access opportunities such as kayak adventures, walking tours, and volunteer conservation initiatives through the development of infrastructure such as parking areas, boardwalks, viewing platforms, kayak lunches, trails, and interpretative signage.
- Provide educational outreach through the construction and management of an environmental educational facility with laboratory facilities, class and meeting rooms, environmental arts gallery, and dormitories.

The acquisition tract will benefit federal and state listed species and species listed on the species of greatest conservation need including non-game wildlife (please see Tables 3-5). The tract is within the migratory bird corridor and is important stopover habitat for many important coastal dependent and migratory bird species (Table 4).

If funded by NCWCGP for the requested \$1M, including the additional required match, the \$200,000 requested from the NRU will leverage \$1,534,400.

If AB is unable to accomplish the acquisition of the 139 acres at Anchor Bay within the two-year option/agreement with the landowner, development plans will be implemented, and the habitat converted to a subdivision. The additional funding requests will assist in moving this forward to meet the deadline of securing all funding by February 2024 and closing March 2024.

Does the Project work with new, smaller communities/partnerships?

☒ Yes

☒ No

Artist Boat fosters new partnerships annually. This project has engaged the West Galveston Island Homeowners Associations, Beachside Village, Spanish Grant Homeowners Associations to spread the word with requests for matching funds, has brought in new funding partners for land with the CenterPoint Foundation, and will be bringing over 5,000 youth to the Preserve in the coming year from schools in the Houston-Galveston region at no cost to schools or students, via kayak and walking adventures that have not experienced the Preserve previously.

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The objective of this proposal is to acquire funds to purchase and conserve approximately 39.46 acres of coastal habitat and to seek additional funds to meet match requirements to acquire 139 acres at Anchor Bay. These two acquisition projects will bring the Coastal Heritage Preserve to 1,077 acres.

Full Project Description (1,000 words or less):

The objective of this project is to purchase in fee simple, and to conserve in perpetuity, approximately 39 acres of coastal habitats from one proposed development tract, along with approximately 139 acres from another proposed development tract, both on West Galveston Island. The purchased tracts would be added to and be managed as part of the 898-acre Coastal Heritage Preserve (please see Figure 2).

Coastal wetland loss in Texas and in the Galveston Bay system is significant and is a continuing concern because of the essential roles that wetlands perform. Wetland loss in coastal Texas has been rated by the Environmental Protection Agency (EPA) as severe (U.S. EPA, 1999). Wetland loss in the Galveston Bay system is greater than in many other areas of the state.

Once covering most of the Texas coastal plain, 6.5 million acres, the coastal prairie is now also a critically imperiled habitat and has been reduced to less than one percent of its original extent (USFWS 2000). Threats to this habitat include industry, agriculture, urban land use, and fragmentation. Other threats include loss of natural processes such as fire and periodic grazing causing the degradation of prairie and leaving it more susceptible to invasion from exotic plant species, such as the Chinese tallow tree (*Triadica sebifera*) and the Brazilian peppertree (*Schinus terebinthifolius*).

The proposed 39-acre Acquisition Tract will directly benefit and protect approximately five (5.16) acres of temporarily flooded palustrine emergent persistent marsh habitat (PEM1A), less than an acre (0.2 acres) of semipermanent flooded palustrine emergent persistent marsh habitat (PEM1F), less than an acre (0.01 acres) of temporarily flooded palustrine scrub shrub (PSS1A), less than an acre (0.31 acres) of seasonally flooded palustrine scrub shrub (PSS1C) and thirty-four (33.98) acres of upland coastal prairie (please see Figure 3).

This project will conserve breeding, nesting, foraging, roosting, and wintering habitats that benefit numerous coastal-dependent and migratory bird species (please see Table 4). The project will also protect coastal habitats that is breeding, nursery, juvenile and foraging habitat to marsh resident fishery species, (please see Table 4 and Photographs).

Latitude/Longitude (Optional):

29°13'15.18"N, 94°54'39.83"W

Location:

San Jacinto-Brazos Coastal Basin Watershed- Lower Galveston Bay Watershed- West Galveston Bay

Projects Maps

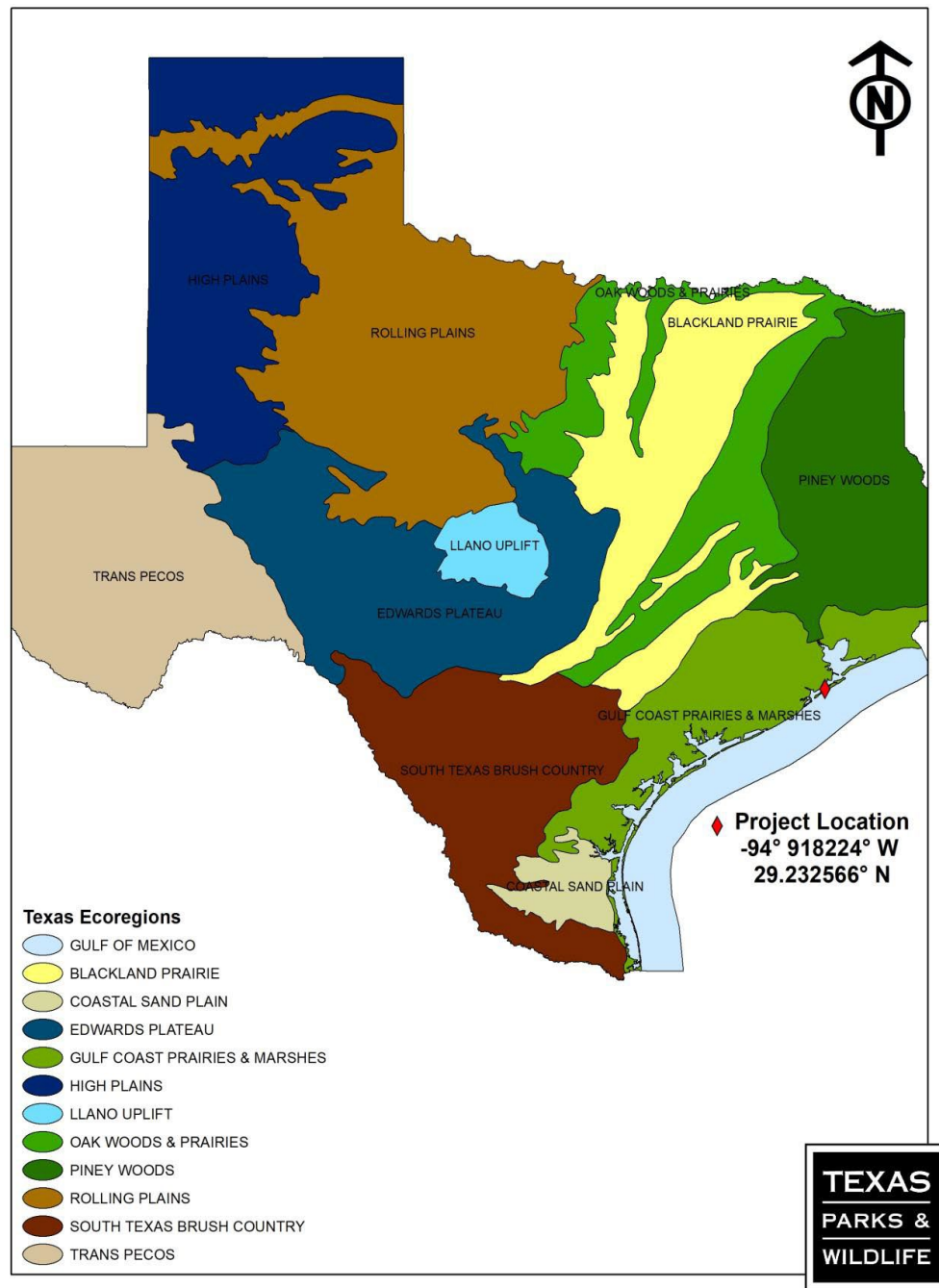


Figure 1. The proposed project is located adjacent to West Galveston Bay along the north shoreline of Galveston Island, Texas.

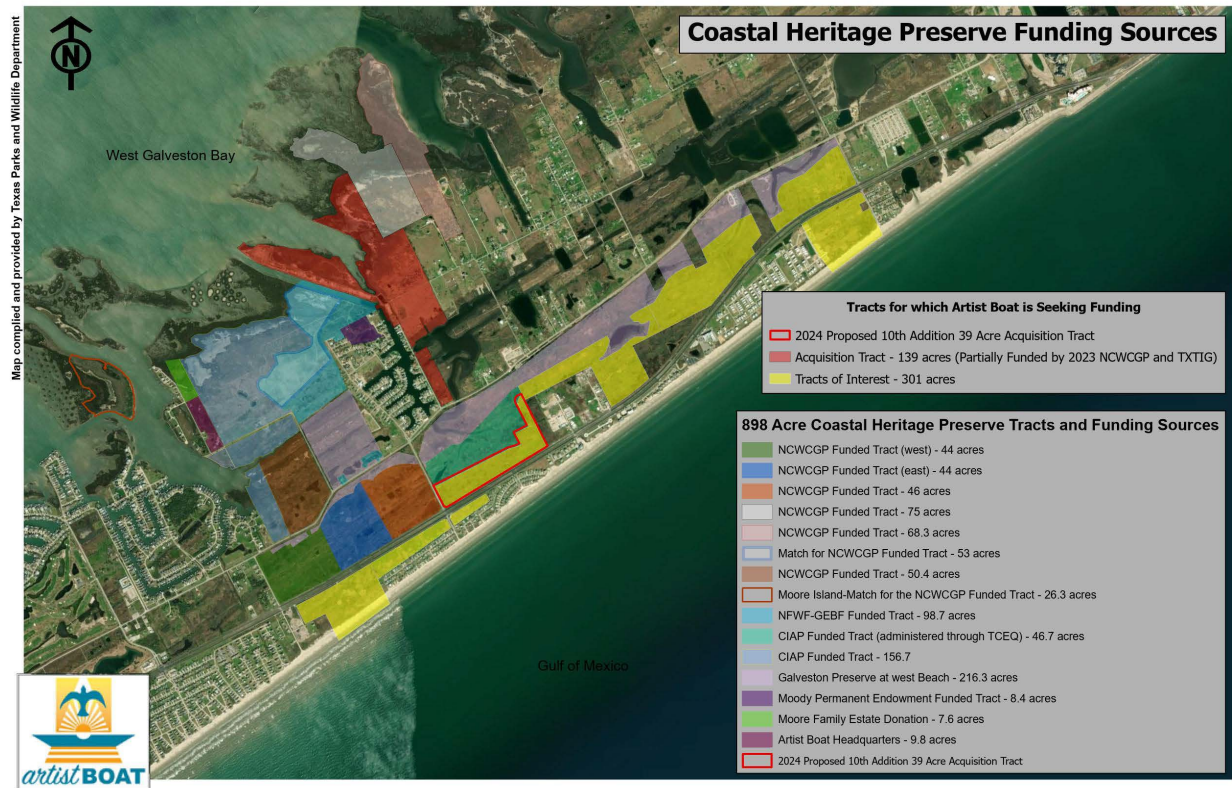


Figure 2. Existing Acreage within the Coastal Heritage Preserve and proposed Acquisition Tract.

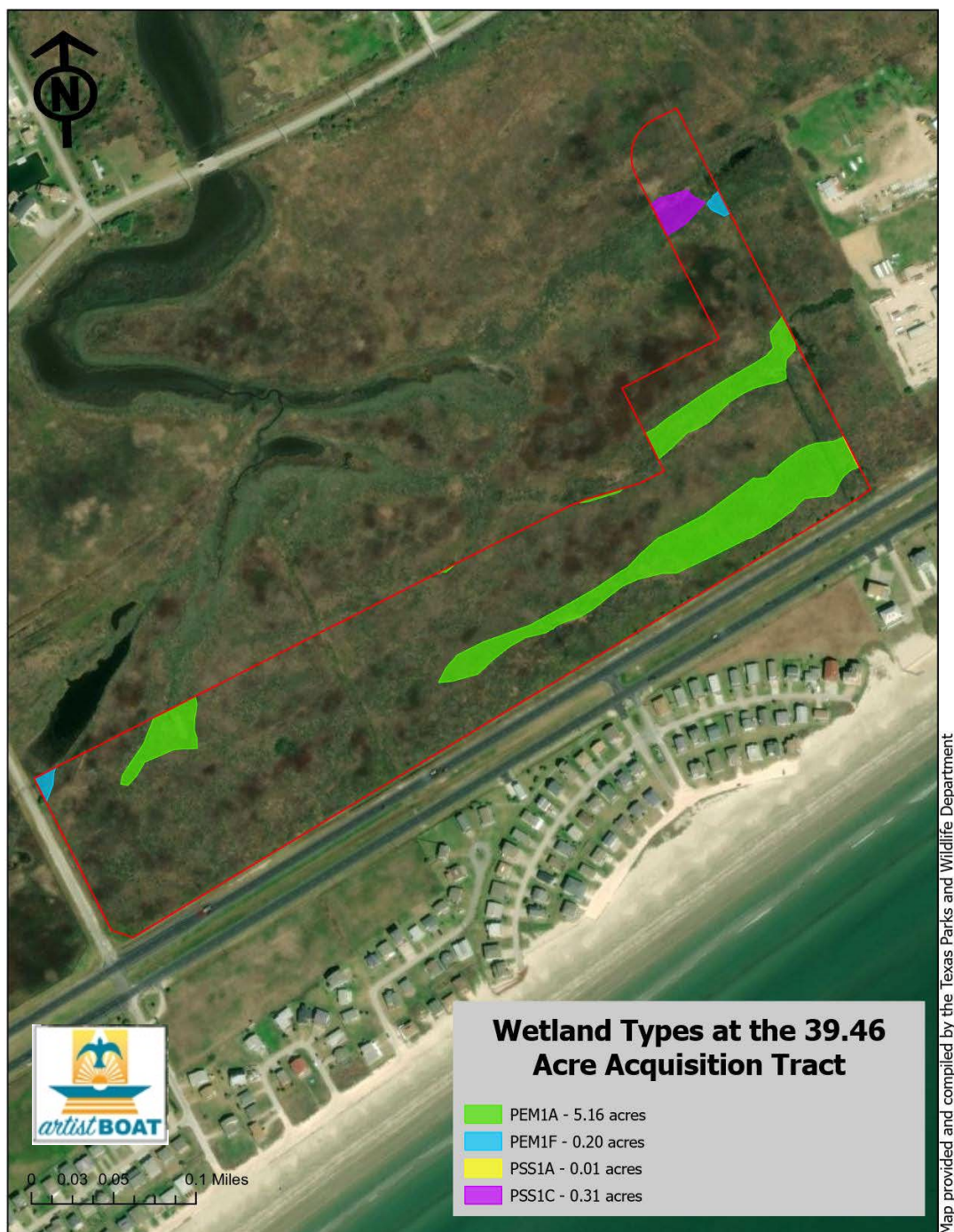


Figure 3. Wetland Types and Amounts at the proposed Acquisition Tract.

Supplemental Photos/Graphics (Optional):

Table 1. Habitat types and amounts within the Galveston Preserve at West Beach Acquisition Tract potentially protected by the requested funding. *Wetland acreage modified from National Wetland Inventory maps through ground truthing*.

Habitat Types	NWI Codes	Acreage*
Temporarily Flooded Freshwater Emergent Marsh	PEM1A	5.16
Semipermanent Flooded Palustrine Emergent Persistent Marsh	PEM1F	0.20
Temporarily Flooded Freshwater Scrub Shrub	PSS1A	0.01
Seasonally Flooded Freshwater Scrub Shrub	PSS1C	0.31
Upland Coastal Prairie	-	33.78
Total		39.46

Table 2. **Coastal Watershed Management.** This project supports the natural resource goals of numerous coastal ecosystem and watershed management plans including both statewide plans and plans specific to the Galveston Bay system and West Galveston Bay.

Management Plan or effort	How this plan implements management plan goals
<i>Texas Coastal Management Program</i>	Preserves, restore, and enhances the diversity, quality, quantity, functions and values of coastal natural resource areas.
<i>Texas Wetlands Conservation Plan</i>	Enhances wetland resources with respect to function and value through voluntary conservation of the quality, quantity, and diversity of Texas wetlands.
<i>Coastal Wetlands Acquisition Plan for Texas</i>	Assists in the goal on no net loss of coastal wetland functions and values through preservation.
<i>Galveston Bay Plan</i>	Protect [and restore] wetlands, the number one management action of the Galveston Bay system.
<i>Galveston Bay Foundation Habitat Conservation Blueprint</i>	Restore and protect important Galveston Bay habitats, including freshwater marsh. Supports conservation of habitat identified as a priority conservation site.

Management Plan or effort	How this plan implements management plan goals
<i>Gulf Coast Joint Venture's Texas Mid-Coast and Chenier Plain Initiative Plans and Mottled Duck Conservation Plan</i>	Conserves migratory birds and their habitats along the western U.S. Gulf of Mexico.
<i>Texas Comprehensive Wildlife Conservation Strategy 2005-2010</i>	Conserves habitats within the Gulf Coast Prairies and Marshes Ecoregion and conserves coastal area in the Galveston Bay system.
<i>U.S. Shorebird Conservation Plan Lower Mississippi/Western Gulf Coast Shorebird Planning Region</i>	Conserve Gulf coastal habitat, one of the most important regions in the United States for migratory shorebirds, and waterbirds.
<i>West Galveston Island Greenprint for Growth</i>	Conserves Galveston Island's west end prairies and marshes and is in the priority habitat conservation area of the Greenprint.
<i>The Nature Conservancy's Gulf Coast Prairies & Marshes Ecoregional Conservation Plan</i>	Preserves habitat within the Gulf Coast Prairies and Marshes ecoregion.
<i>The Nature Conservancy West Galveston Bay Conservation Area Plan</i>	Conserves ecologically functioning landscape with intact tallgrass prairies and coastal marshes.
<i>West [Galveston] Bay Conservation Initiative</i>	Protect habitats along Galveston Bay.
<i>Comprehensive Plan a Shared Vision for Galveston Island</i>	Preserves and protect sensitive natural resources, including wetlands and permanently protect open space on Galveston Island.
<i>Long-Term Community Recovery Plan-City of Galveston, Texas</i>	Implements one of the projects in the plan, addressing land conservation for ecological services and hazard mitigation during storms.
USFWS Blueprint for the Future of Migratory Birds (2004).	Protects, restores and manages priority terrestrial and aquatic habitat for birds.

The *West Galveston Island Greenprint for Growth* identifies the land that is encompassed within the Preserve and the acquisition tract for this proposal as a high priority for habitat conservation goals and preserving the island's local character conservation goals. The wetlands encompassed within the Preserve and the acquisition tract are rated as a high priority for protecting drainage and flood management conservation goals. Portions of the Preserve and acquisition tract perimeters are rated as a high priority to provide access and connectivity for public recreation conservation goals, with high priority being the highest priority achievable.

Table 3. **Conservation of Threatened and Endangered Species.** This project will provide benefits to both federally and state listed threatened and endangered species and species of greatest conservation need (SGCN) in the Texas Conservation Action Plan (TCAP). The SGCN included in this list have a S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) ranking.

Common/ Scientific Name	Observed within General Vicinity (✓) Observed at the Acquisition Site (✱)	Status	Project Benefits
Piping plover <i>Charadrius melodus</i>	✓	Federally and State threatened	The Preserve protects migratory and winter foraging and roosting habitat
Rufa red knot <i>Calidris canutus rufa</i>	✓	Federally threatened, S3 (non-breeding)	The Preserve protects migratory and winter foraging and roosting habitat
White-faced ibis <i>Plegadis chihi</i>	✓	State threatened	The acquisition tract and Preserve protects year-round foraging, roosting and nesting habitat
Reddish egret <i>Egretta rufescens</i>	✓	State threatened	The acquisition tract and Preserve protects juvenile foraging habitat
Black Rail <i>Laterallus jamaicensis</i>	✓	Federal Candidate Species S2 (breeding)	The acquisition tract and Preserve protects year-round foraging, roosting, and nesting habitat and wintering habitat
Northern Harrier <i>Circus cyaneus</i>	✓	S3 (non-breeding)	The acquisition tract and Preserve protect migrating and winter foraging and roosting habitat
Hudsonian Godwit <i>Limosa haemastica</i>	Acquisition tract has habitat used by this species during migration	S2	The acquisition tract and Preserve protect stopover habitat during migration
Scissor-tailed Flycatcher <i>Tyrannus forficatus</i>	✱	S3 (breeding)	The acquisition tract and Preserve protects spring foraging, roosting, and nesting habitat
Grasshopper Sparrow <i>Ammodramus savannarum</i>	Acquisition tract has habitat used by this species	S3 (breeding)	The acquisition tract and Preserve protects spring foraging, roosting and nesting habitat and migrating and winter foraging and roosting habitat
Henslow's Sparrow <i>Ammodramus henslowii</i>	Acquisition tract has habitat used by this species	S3	The acquisition tract and Preserve protects migrating and winter foraging and roosting habitat
Eastern box turtle <i>Terrapene carolina triunguis</i>	Observed on the west end of Galveston Island	S3	The acquisition tract and Preserve protects year-round habitat including nesting habitat
Ornate box turtle <i>Terrapene ornata ornata</i>	Observed on the west end of Galveston Island	S3	The acquisition tract and Preserve protects year-round habitat including nesting habitat

Table 4. **Benefits to Coastal-Dependent or Migratory Bird Species.** This project will conserve foraging, roosting, and wintering habitats that benefit numerous coastal-dependent and migratory bird species, including Federal and State threatened species, *species in moderate and significant decline* (Lester and

Gonzales, 2009), species listed on the USFWS 2008 List of Birds of Conservation Concern, Bird Conservation Region 37, Priority species with the Gulf Coast Joint Venture (GCJV) Mottled Duck Conservation Plan and the Texas Conservation Action Plan: species of greatest conservation need (SGCN) in the Texas Conservation Action Plan (TCAP) Gulf Coast Prairies and Gulf of Mexico Ecoregion (TPWD 2011).

The species listed here have been observed on lands now managed as the Coastal Heritage Preserve or have been observed at Galveston Island State Park, ~2 miles to the southwest, using the same habitats present at the acquisition tract. Many songbird species use habitat associated with the acquisition tract as stopover habitat during migration. Some examples of those species are included in this table.

Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✕)	Project Benefits	Specific Management Plan or List
Mottled Duck <i>Anas fulvigula</i>	✓	Protects year-round foraging, roosting, and nesting habitat. Site contains essential brood rearing habitat	Texas Conservation Action Plan: Species of Greatest Conservation Need in the Gulf Coast Prairies and Gulf of Mexico Ecoregion (TCAP-SGCN); GCJV-Mottled Duck Conservation Plan and Priority Species; Coastal Dependent Bird
Blue-winged Teal <i>Anas discors</i>	✓	Protects migrating and winter foraging and roosting habitat	Wetland Dependent Bird
American Widgeon <i>Anas americana</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Gadwall <i>Anas strepera</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Northern Shoveler <i>Anas clypeata</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Northern Pintail <i>Anas acuta</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Green-winged Teal <i>Anas crecca</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Redhead <i>Aythya americana</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Lesser scaup <i>Aythya affinis</i>	✓	Protects migrating and winter foraging and roosting habitat	Gulf Coast Joint Venture – Midcoast Initiative, North American Waterfowl Management Plan
Ruddy Duck <i>Oxyura jamaicensis</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Black-bellied Whistling-Duck <i>Dendrocygna autumnalis</i>	✕	Protects year-round foraging, roosting, and nesting habitat	Wetland Dependent Bird
Pied-billed Grebe <i>Podilymbus podiceps</i>	✓	Protects year-round foraging, roosting, and nesting habitat	Wetland Dependent Bird

Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✗)	Project Benefits	Specific Management Plan or List
Neotropic Cormorant <i>Phalacrocorax brasilianus</i>	✓	Protects year-round foraging and loafing habitat	Galveston Bay Status and Trends, 2007- 2008 (moderately decreasing) (GBEP); Wetland Dependent Bird
Double-crested Cormorant <i>Phalacrocorax auritis</i>	✓	Protects migrating and winter foraging and loafing habitat	Wetland Dependent Bird
Tricolored Heron <i>Egretta tricolor</i>	✓	Protects year-round foraging habitat	TCAP-SGCN; 20-year decline in Galveston Bay Status and Trends, 2007- 2008 (moderately decreasing) (GBEP); Coastal Dependent Bird
Great Egret <i>Ardea alba</i>	✓	Protects year-round foraging habitat	Wetland Dependent Bird
Great Blue Heron <i>Ardea herodias</i>	✓	Protects year-round foraging habitat	GBEP (significant decline); Coastal Dependent Bird
Little Blue Heron <i>Egretta caerulea</i>	✓	Protects year-round foraging habitat	TCAP-SGCN; GCJV Priority Species; Wetland Dependent Bird
Roseate Spoonbill <i>Ajaia ajaja</i>	✓	Protects year-round foraging habitat	Coastal Dependent Bird
Snowy Egret <i>Egretta thula</i>	✓	Protects year-round foraging habitat	TCAP-SGCN; Coastal Dependent Bird
White-faced Ibis <i>Plegadis chihi</i>	✓	Protects year-round foraging, roosting and nesting habitat	State listed threatened species; TCAP-SGCN; GBEP (moderately decreasing); Coastal Dependent Bird
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	✓	Protects year-round foraging and roosting habitat	GBEP (significant decline); Wetland Dependent Bird
Yellow-crowned Night Heron <i>Nyctanassa violacea</i>	✓	Protects year-round foraging and roosting habitat	Wetland Dependent Migratory Bird
White Ibis <i>Eudocimus albus</i>	✓	Protects year-round foraging habitat	Coastal Dependent Bird
White-tailed Kite <i>Elanus leucurus</i>	✓	Protects year-round foraging habitat	Grassland Dependent Bird
Northern Harrier <i>Circus cyaneus</i>	✓	Protects migrating and winter foraging and roosting habitat	TCAP-SGCN; Migratory Bird
Red-tailed Hawk <i>Buteo jamaicensis</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Crested Caracara	✓	Protects year-round foraging habitat	Migratory Bird
Peregrine Falcon <i>Falco peregrines</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; State Listed Threatened; Migratory Bird
Merlin <i>Falco columbarius</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
American Kestrel <i>Falco sparverius</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird

Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✗)	Project Benefits	Specific Management Plan or List
Osprey <i>Pandion haliaetus</i>	✓	Protects fall through spring foraging and roosting habitat	Wetland Dependent, Migratory Bird
Sandhill Crane <i>Grus canadensis</i>	✓	Protects fall and winter foraging and roosting habitat	Migratory Bird
Clapper Rail <i>Rallus Longirostris</i>	✓	Protects year-round foraging, roosting, and nesting habitat	Coastal Dependent Bird
Black Rail <i>Laterallus jamaicensis</i>	✓	Protects year-round foraging, roosting, and nesting habitat and wintering habitat	BCR 37; TCAP-SGCN; Coastal Dependent Bird Federal Candidate Species
Yellow Rail <i>Coturnicops noveboracensis</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; Migratory Bird
Sora <i>Porzana carolina</i>	✓	Protects migrating and winter foraging and roosting habitat	Wetland Dependent Bird
American Coot <i>Fulica americana</i>	✓	Protects year-round foraging, roosting, and nesting habitat and wintering habitat	Wetland Dependent Bird
American Golden-Plover <i>Pluvialis dominica</i>	✓	Protects migrating habitat	Wetland Dependent Migratory Bird
Semipalmated Plover <i>Charadrius semipalmatus</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Killdeer <i>Charadrius vociferus</i>	✓	Protects year-round foraging, roosting, and nesting habitat and migrating and wintering habitat	Migratory Bird
Black-necked Stilt <i>Himantopus mexicanus</i>	✗	Protects year-round foraging, roosting, and nesting habitat and migrating and wintering habitat	Wetland Dependent Bird
Greater Yellowlegs <i>Tringa melanoleuca</i>	✓	Protects migrating and winter foraging and roosting habitat	Wetland Dependent Bird
Lesser Yellowlegs <i>Tringa flavipes</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; SCP; Migratory Bird

Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✗)	Project Benefits	Specific Management Plan or List
Willet <i>Catoptrophorus semipalmatus</i>	✓	Protects year-round foraging, roosting and nesting habitat	Coastal Dependent and Migratory Bird
Spotted Sandpiper <i>Actitis macularius</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Solitary Sandpiper <i>Tringa solitaria</i>	✓	Protects stopover habitat during migration	BCR 37; Migratory Bird
Whimbrel <i>Numenius phaeopus</i>	✓	Protects migrating foraging and roosting habitat	BCR 37; SCP; Migratory Bird
Short-billed Dowitcher <i>Limnodromus griseus</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; SCP
Long-billed Curlew <i>Numenius americanus</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; SCP; TCAP-SGCN; Migratory Bird
Marbled Godwit <i>Limosa fedoa</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; SCP; Migratory Bird
Semipalmated Sandpiper- <i>Calidris pusilla</i>	✓	Protects migrating foraging and roosting habitat	Migratory Bird
Western Sandpiper <i>Calidris mauri</i>	✓	Protects migrating and winter foraging and roosting habitat	TCAP-SGCN; Migratory Bird
Least Sandpiper <i>Calidris minutella</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
White-rumped Sandpiper <i>Calidris fuscicollis</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Upland Sandpiper <i>Bartramia longicauda</i>	✓	Protects stopover habitat during migration	BCR 37; Grassland Dependent Bird
Pectoral Sandpiper <i>Calidris melanotos</i>	✓	Protects stopover habitat during migration	Migratory Bird
Dunlin <i>Calidris alpina</i>	✓	Protects migrating and winter foraging and roosting habitat	Migratory Bird
Stilt Sandpiper <i>Calidris himantopus</i>	✓	Protects migrating foraging and roosting habitat	TCAP-SGCN; Migratory Bird
Wilson's Phalarope <i>Phalaropus tricolor</i>	✓	Protects stopover habitat during migration	Migratory Bird

Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✗)	Project Benefits	Specific Management Plan or List
Long-billed Dowitcher <i>Limnodromus scolopaceus</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; SCP; Migratory Bird
Black Tern <i>Chlidonias niger</i>	✓	Protects migrating foraging and roosting habitat	TCAP-SGCN; Migratory Bird
Forster's Tern <i>Sterna forsteri</i>	✓	Protects year-round foraging, roosting and nesting habitat	TCAP-SGCN; Coastal Dependent
Gull-billed Tern <i>Gelochelidon nilotica</i>	✓	Protects year-round foraging, roosting and nesting habitat	BCR 37; TCAP-SGCN; Coastal Dependent
Least Tern <i>Sterna antillarum</i>	✓	Protects spring through fall foraging, roosting, and nesting habitat	BCR 37; Migratory Bird
Laughing Gull <i>Larus atricilla</i>	✓	Protects wetland habitat adjacent to openwater feeding and loafing habitat	GBEP (moderately decreasing); Coastal Dependent
Black Skimmer <i>Rynchops niger</i>	✓	Protects wetland habitat adjacent to openwater feeding and loafing habitat	BCR 37: TCAP-SGCN; Coastal Dependent
Belted Kingfisher <i>Megasceryle alcyon</i>	✓	Protects wintering forage habitat	Wetland Dependent Bird
Ruby-throated Hummingbird <i>Archilochus colubris</i>	✓	Protects migrating habitat during migration	Migratory Bird
White-winged Dove <i>Zenaida asiatica</i>	✓	Protects year-round foraging habitat	Migratory Bird
Mourning Dove <i>Zenaida macroura</i>	✓	Protects year-round foraging, roosting and nesting habitat	Migratory Bird
Eastern Kingbird <i>Tyrannus tyrannus</i>	✓	Protects migrating and nesting habitat	Migratory Bird
Scissor-tailed Flycatcher <i>Tyrannus forficatus</i>	✗	Protects spring foraging, roosting, and nesting habitat	TCAP-SGCN; Migratory Bird
Eastern Phoebe <i>Sayornis phoebe</i>	✓	Protects migrating and wintering habitat	Migratory Bird
Loggerhead Shrike <i>Lanius ludovicianus</i>	✓	Protects year-round foraging, roosting, and nesting habitat	BCR 37; TCAP-SGCN
American Robin <i>Turdus migratorius</i>	✓	Protects winter foraging and roosting habitat	Migratory Bird


Common/ Scientific Name	Observed within the general vicinity (✓) Observed at the Acquisition Site (✗)	Project Benefits	Specific Management Plan or List
Northern Mockingbird <i>Mimus polyglottos</i>	✓	Protects year-round foraging, roosting and nesting habitat	State Bird of  and Migratory Bird
Common Yellowthroat <i>Geothlypis trichas</i>	✓	Protects year-round foraging, roosting and nesting habitat	Wetland Dependent Bird
Seaside Sparrow <i>Ammodramus maritimus</i>	✓	Protects year-round foraging, roosting, and nesting habitat	BCR 37; TCAP-SGCN; Coastal Dependent
Nelson's Sharp-tailed Sparrow <i>Ammodramus nesloni</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; Migratory Bird
Le Conte's Sparrow <i>Ammodramus leconteii</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; TCAP-SGCN; Migratory Bird
Marsh Wren <i>Cistothorus palustris</i>	✓	Protects year-round foraging, roosting, and nesting habitat	Wetland Dependent Bird
Sedge Wren <i>Cistothorus platensis</i>	✓	Protects migrating and winter foraging and roosting habitat	BCR 37; TCAP-SGCN; Migratory Bird
Dickcissel <i>Spiza Americana</i>	✓	Protects spring through fall foraging, roosting, and nesting habitat	BCR 37; TCAP-SGCN; Migratory Bird
Eastern Meadowlark <i>Strunella magna</i>	✓	Protects year-round foraging, roosting, and nesting habitat	TCAP-SGCN
Painted Bunting <i>Passerina ciris</i>	✓	Protects migrating foraging and roosting habitat	BCR 37; TCAP-SGCN; Migratory Bird
Yellow Warbler <i>Dendroica petechia</i>		Protects stopover habitat during migration	Migratory bird

Table 5. **Benefits to Fish.** The project site contains temporarily flooded palustrine emergent persistent marsh habitat, seasonally flooded palustrine emergent persistent marsh habitat, excavated seasonally flooded palustrine emergent persistent marsh habitat, and excavated permanently flooded palustrine unconsolidated bottom wetland habitats.

Due to the ephemeral nature of these wetlands, the site primarily provides habitat for marsh resident fish species. Most of the time these freshwater wetlands only receive water from rainfall and local runoff but are susceptible to hurricane generated storm surges. A surge of 10 feet is sufficient to inundate all of the freshwater wetlands on Galveston Island (Mueller 1985). The average annual precipitation on Galveston Island is approximately 44 inches with the average temperature approximately 71° F (www.usclimatedata.com). Extended periods with limited precipitation are common (Mueller 1985) and in combination with high evaporation rates, the majority of the freshwater wetlands on Galveston Island dry without regular rainfall.

The table below represents the fish species caught in wetland type PEM1C on the Preserve adjacent to the acquisition site. The other wetland types were dry and not able to be sampled. The sampling was

performed June 2, 2020 utilizing a bag seine. Also caught were unknown tadpole species. Photographs (photographs 1-8) of the habitat and some species caught while seining are provided in the Photographs section.

Common/ Scientific Name	Observed at the Preserve adjacent to the Acquisition Site (✖)	Habitat Type Utilized	Project Benefits
Sheepshead minnow <i>Cyprinodon variegatus</i>	✖	PEM1C	Protects breeding, nursery, juvenile and foraging habitat
Western mosquitofish <i>Gambusia affinis</i>	✖	PEM1C	Protects breeding, nursery, juvenile and foraging habitat
Sailfin molly <i>Poecilia latipinna</i>	✖	PEM1C	Protects breeding, nursery, juvenile and foraging habitat
unknown crawfish	✖	PEM1C	Protects breeding, nursery, juvenile and foraging habitat

Supplemental Photos/Graphics (Optional):



Photograph 1. Seining wetland type PEM1A (same wetland type as the acquisition site) at the Preserve adjacent to the acquisition site. When inundated these wetlands provides breeding, nursery, juvenile and foraging habitat for resident fish species. Without regular rainfall these wetlands dry up, providing opportunistic opportunities for avian species to feed on trapped fish and invertebrates including aquatic insect larvae.



Photograph 2. Sailfin molly (*Poecilia latipinna*) caught in wetland type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 3. Unknown crawfish caught in wetland type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 4. Wetland Type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 5. Wetland Type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 6. Wetland Type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 7. Wetland Type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).



Photograph 8. Wetland Type PEM1A at the Preserve adjacent to the acquisition site (same wetland type as the acquisition site).

SECTION FIVE: BUDGET DETAILS**10th addition Galveston Preserve at West Beach**

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$10,000
b.	Fringe Benefits	
c.	Travel	
d.	Supplies	
e.	Equipment	
f.	Contractual	\$1,674,400
g.	Construction	
h.	Other*	
i.	Total Direct Costs (Sum a - h)	\$1,684,400
j.	Indirect Costs	
k.	Total (Sum of i & j)	\$1,684,400

Estimated Costs (Budget Narrative)

Land Acquisition	\$1,594,400
Due diligence (service provider, appraisals, survey, phase I)	\$ 60,000
Artist Boat Project Management	\$ 10,000
Legal (contract review, closing)	<u>\$ 20,000</u>
Total Cost	\$1,684,400

9th addition Anchor Bay

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$10,000
b.	Fringe Benefits	
c.	Travel	
d.	Supplies	
e.	Equipment	
f.	Contractual	\$6,605,000
g.	Construction	
h.	Other*	
i.	Total Direct Costs (Sum a - h)	\$6,615,000
j.	Indirect Costs	
k.	Total (Sum of i & j)	\$6,615,000

Estimated Costs (Budget Narrative)

Land Acquisition	\$6,500,000
Due diligence (service provider, appraisals, survey, phase I)	\$ 50,000
Artist Boat Project Management	\$ 10,000
Legal (contract review, closing)	\$ 20,000
<u>Conservation Easement</u>	<u>\$ 35,000</u>
Total Cost	\$6,615,000

*Other: If Budget Category “Other” is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 0% of (check one):

- ☐ salary and fringe benefits
- ☐ modified total direct costs
- ☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☐ Predetermined Rate—an audited rate that is not subject to adjustment.
- ☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
- ☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

[\[Insert Indirect Cost Agreement or Attach as an Appendix if Applicable\]](#)

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

WSQ Subcommittee
Christian.Rines@tceq.texas.gov

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

PPE Subcommittee
Kari.Howard@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 M&R Project Proposal



Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

A PROGRAM OF TCEQ

SECTION ONE: GENERAL INFORMATION

Subcommittee:

M&R (with cross interest in NRU)

Project Name:

Best practices for future restoration of ground nester habitat in Galveston Bay: Partner interviews and past project database of completed nesting sites

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer:

Texas A&M University Galveston

☐ Federal, State, or Local Government ☐ Council of Government ☒ Public ISDs or Universities
☐ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Dr. David Retchless
Project Representative Phone	(409) 741-7130
Project Representative Email	retchled@tamug.edu

Amount Requested:

\$87,315

Is the project scalable? ☐

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$39,763
FY 2026 (09/01/2025-08/31/2026)	\$40,905
FY 2027 (09/01/2026-05/31/2027)	\$6,647
Total	\$87,315

Total Project Cost:

\$87,315

Is this an estimate? ☐

Project Duration (beginning no earlier than September 1, 2024 - 2.5 year maximum project length):

9/1/2024 - 2/28/2027 (2.5 years)

Project Urgency:

No contract related urgency.

Leveraging (in-kind and/or cash):

Proposals have been submitted to other agencies for completion of an earlier phase in this project that would run spatial models to determine habitat “hotspots” for BLSK and AMOY in Galveston Bay and collect data on known foraging, roosting, and non-breeding season habitat use via GIS spatial models. Additionally, we expect to collect similar project data from European Oystercatcher researchers in the Netherlands in summer 2024 via an NSF program through TAMUG. This Netherlands data would incorporate novel island designs in an environment that has been heavily dredged and managed for major flood control for decades.

Partners and Their Roles:

The Gulf Coast Bird Observatory (GCBO) will be acting as a subcontractor on this project. GCBO will assist with field data collection of AMOY and BLSK habitat data and with boat transportation.

Various partners involved in restoration and construction of rookery islands will be interviewed for this project. Individuals that are experts in rookery island work or specific ground nesting species will also be interviewed.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

This project seeks to collect on-the-ground and individual experience data that has not previously been gathered into one final product. To plan the best future restoration projects targeting bare ground nesters, parameters on “ideal” productive sites and non-productive “failure” sites should be analyzed. Our conservation community holds a wealth of experience in planning, restoration, managing, and monitoring of rookery sites. To date, little data exists on macro and micro habitat variables on AMOY and BLSK preferred nesting sites. By comparing field collected data from both successful and unsuccessful locations, we expect to produce a set of ideal habitat metrics. We aim to capture all of this knowledge into one central reference to be used to inform science-based decision making on future projects, ensuring the highest quality habitat is created with future funding.

This project also supports protecting and sustaining living resources. Only three natural rookery islands still exist in Galveston Bay: North Deer, South Deer, and West Bay Bird Island (old). The remainder of sites used by birds are the product of extensive dredging projects, some dating back to the 1930s. As caretakers of the bay, future sites will only be created and persist with human intervention. By collecting data on what makes a functional, successful island work, this project will ensure that data is available for construction and planning.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 4: Inform Science-based Decision Making

RES-1 <input checked="" type="checkbox"/>	RES-2 <input type="checkbox"/>	RES-3 <input checked="" type="checkbox"/>	RES-4 <input type="checkbox"/>
RES-5 <input type="checkbox"/>	RES-6 <input type="checkbox"/>	RES-7 <input type="checkbox"/>	RES-8 <input checked="" type="checkbox"/>
ACS-1 <input checked="" type="checkbox"/>	ACS-2 <input checked="" type="checkbox"/>	ACS-3 <input type="checkbox"/>	

Plan Priority Area Actions Detail:

RES-1 Conduct Biological Stressor Monitoring and Research- Direct research on ground nesting waterbird species that have populations affected by anthropogenic land use changes. Specific targets will include American Oystercatchers and Black Skimmers, but results will apply to other colonial nesters using similar habitat (Gull-billed Terns, Royal Terns, Caspian Terns, Least Terns).

RES-3 Conduct Physical Stressor Monitoring and Research- Direct research on physical changes to restoration projects and existing islands used by these species over time and assessment of current and past site parameters like elevation, ground cover percentages, distance to anthropogenic features, etc. Long and short term physical changes to sites will also be assessed: erosion effects on various designs (HC-3), succession of plant communities, and aftermath of hurricane or storm-related damage and associated recovery.

RES-8 Complete Coastal Resiliency and Acclimation Studies- Rookery islands, and bare ground nesting habitat in particular, are extremely vulnerable to threats from intensifying hurricanes and tropical storms as well as sea level rise. Understanding how islands weather storms and regular rates of erosion in normal vs. extreme weather years will allow for best practices in planning and designing new restoration projects.

ACS-1 Tracking Ecosystem Health Indicators- Waterbirds are considered biological indicators of overall bay health and rookery islands provide important habitat for a variety of species.

ACS-2 Access to Monitoring and Research Data- An interactive, online StoryMap will be created project to communicate research objectives and progress in a form understandable to the general public (see <https://storymaps.arcgis.com/stories/9b7d40a98df54645a070ad0dd29dddac> for a similar project example).

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ NRU (Protect and Sustain Living Resources)
- ☐ PPE (Engage Communities)

Other Subcommittee Detail:

HC-2 Habitat Restoration- This project will provide important vetted, on the ground habitat data to decision makers and engineers working on restoration planning and construction.

SC- 1 Support projects that sustain and restore native species populations- While this project will not physically restore habitat and native species populations, it is expected that project deliverables will drive better-informed project planning and provide region specific successful variables for island construction.

Other Plans Implemented:

- Coastal Resiliency Master Plan
- North American Waterbird Conservation Plan
- Gulf Coast Joint Venture Texas Mid-Coast Initiative Area Plan, GCJV Chenier Plain Initiative Area Plan
- American Oystercatcher Focal Species Business Plan,
- Gulf Coast Joint Venture Priority Science Needs for Landbirds, Shorebirds, & Waterbirds: (Specific identified science needs listed below)
 - 1. Develop and validate a population-habitat model for Black Skimmer in the GCJV region (proposed project will provide needed data)
 - 2. Validate population response of priority colonial nesting waterbirds (e.g., Black Skimmer, Gullbilled Tern, Reddish Egret and Little Blue Heron) to colony site management measures, including erosion control, dredged material placement, vegetation management, disturbance minimization and predator control
 - 6. Assess effectiveness of marsh and beach creation through sediment deposition in providing habitat used by shorebirds with abundant prey

SECTION THREE: SUBCOMMITTEE PRIORITIES

M&R Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☒ Meaningful and effective monitoring of existing and new projects (NRU/WSQ/PPE support)
- ☐ Exposure and response to emerging contaminants across trophic levels
- ☐ Reestablishing dermo monitoring programs (Ex. Oyster Sentinel)
- ☒ Project Component: Results translated to plain language/practical knowledge

Subcommittee Priority Detail:

We seek to gather meaningful data from shareholders, project managers, and on-the-ground measurements on vital ground nesting rookery island habitat. GCBO has been monitoring for AMOY and BLSK for many years and we seek to compare the metrics of a site's fledge success and outcomes (if known) with physical parameters that can be replicated in future rookery restoration and construction. We will work closely with NRU members to gather information on past projects and use interview questions to assess the success of a site to attract groundnesting species and produced fledglings. This will be combined with on the ground field observations of nesting habitat post breeding season. Data will be collected on variables like elevation, slope, percent vegetation coverage, and possibly nest microhabitat characteristics. This sort of site data has not often been collected, particularly in Galveston Bay. We expect to examine data for sites like: Struvy Lucy, Jigsaw, North and South Deer, Marker 52, Texas City Prairie Preserve Spit, Dickinson Bay, Dollar Bay Terraces, and Bay Harbor Bar Islands, some of the more recent 1-to-2 year use skimmer sites along Galveston Island State Park (like Carancahua Cove), small/unnamed shell rakes used by AMOY, and any other locations where we have at least 2 years of quality monitoring data. By completing this work with a combination of input from past project managers, engineers, site managers, bird biologists, and GIS specialists, we expect our final product to represent the full spectrum of specialists involved in restoration planning and monitoring.

Our final products will also be user friendly and easy to access for partners and engineers. We will construct an online ESRI StoryMap of the sites analyzed, including habitat parameters and fledge success. All information will be summarized in a white paper report, with specific sections designed for quick reference and easy use by engineers and designers. Our model for this final report is a 2021 paper by Ridlon et.al.: Conservation of Marine Foundation Species: Learning from Native Oyster Restoration from California to British Columbia <https://link.springer.com/article/10.1007/s12237-021-00920-7> . This paper synthesized oyster restoration projects from the California coast to British Colombia, CA and analyzed project goals, methods and outcomes. We expect our final report to be similar to this article, summarizing goals, methods, and outcomes for ground nester sites with the addition of physical parameters from field work.

Does the Project work with new, smaller communities/partnerships?

☐ Yes

☒ No

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

This project will gather previously unknown or scattered information via partner interviews and literature reviews on best practices for the design and construction of ground nesting bird habitat, particularly Black Skimmer and American Oystercatcher. These interviews will be combined with field data collection to create an end product report and interactive online StoryMap that will offer future designers, engineers, and site managers a collection of known successful habitat metrics for future restorations.

Full Project Description (1,000 words or less):

Coastal regions host a unique habitat type that is vital to the success of many species- overwash beaches. These ecosystems are molded by disturbance (erosion, accretion, overwash) as a result of regular tidal and storm events (Von Holle et al. 2019). While storm events are important to build these habitat patches, they can also be detrimental to sites already weakened by climate change related issues (e.g., accelerated sea level rise and erosion). Coastal habitats already negatively affected by anthropogenic factors are likely to be squeezed even more as sea levels rise (Von Holle et al. 2019).

Many species of North American breeding birds that depend on coastal systems have suffered loss and degradation of vital habitat, raising concern about their population stability (Jodice et al. 2014). These bird species seek out overwash beaches for nesting on Gulf of Mexico facing sites, dredge spoil islands, estuarine marsh ridges, shell rakes, and the (often rare in Texas) natural bay islands. Ideally, overwash activity in the fall and winter provides freshly cleared habitat with minimal vegetation for these beach nesting species. Sparse vegetation allows for clear sightlines to see approaching predators and aids in camouflaging eggs evolved to blend with shell and sand. Some cover in the form of beach debris or nearby marsh plants are important for use by precocial chicks as shade or hiding spaces. However, the unlucky nests laid at lower elevations in these areas are vulnerable to non-typical flooding events in the spring and summer. When selecting a nest site, adult coastal birds must compromise between open beach that allows for surveillance and maintaining an elevation low enough to have past overwash but high enough to be protected from high, high tides.

The Galveston Bay area has long supported populations of beach nesting birds. Coastal nesting waterbirds specifically seek out islands free of mammalian predators; as natural islands disappeared, dredge spoil islands began to replace these necessary habitats. Today, few natural islands exist due to changes in hydrology and erosion rates and those artificial islands that remain are experiencing higher erosion rates due to large ship wakes, altered shorelines, disrupted hydrology, and overall sea-level rise. Depending on the year, Galveston Bay is home to approximately 20-30 active rookery islands (TWS 2023). In 2023, just six Galveston Bay area sites were counted on the annual Texas Waterbird Society rookery surveys.

Real world experience is invaluable when designing new waterbird islands or restoring old locations. Past methodology that has successfully drawn in birds to a new breeding location can be replicated on new islands. While techniques for creating and maintaining shrub-nester habitats are well known, ground nesting species tend to have more nuanced requirements. Information on successful techniques is spread throughout many final report-type documents and as anecdotal in-person conversations.

We will prepare a set of questions for project leaders and land managers involved with past rookery islands hosting bare ground nesting colonies. Answers and materials will be collected into a final report that will be made available for partners.

We will gather data similar to the list below from each interviewee about any projects they have been directly involved with or have managed post-construction:

- Dates of construction.
- Information on site conditions pre-construction.
- Use by ground nesting species before, during, and after construction.
- Materials cost, composition, acquisition.
- Substrates used and any techniques for preparing prior to application.
- Phase timelines, time for permitting, design, construction, eventual use by waterbirds.
- Planned final habitat goals and if they were met.
- Target wildlife species considered during planning.
- Any maintenance or repairs performed after construction.
- Any regular management performed annually.
- When available, copies of project photos and designs.
- Methods used for shoreline protection/ stabilization.
- After effects of major storms on site and habitat composition.
- Any “lessons learned” or suggestions for future work.

We will work to develop a series of interview questions to obtain the most relevant information for engineers and designers. We will contact firms known to work on these restoration sites and obtain suggested construction related parameters their designers need. We will possibly host a series of workshops

to interview partners or may arrange in person/hybrid meetings with individual agencies to ensure the best participation rate possible.

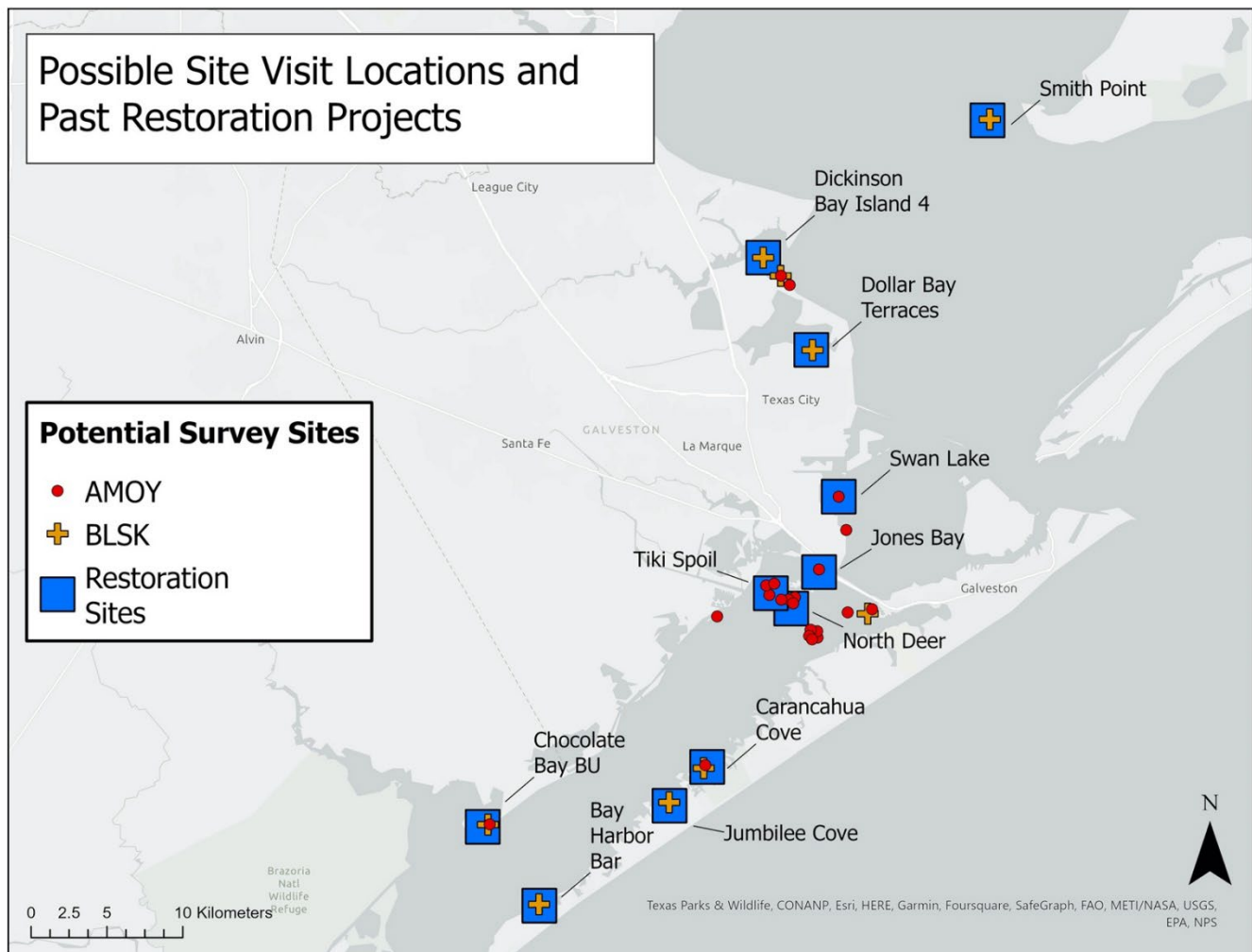
In addition to the partner interviews, we will collect field data on known BLSK and AMOY nesting sites. We expect to examine data for sites like: Struvy Lucy, Jigsaw, North and South Deer, Marker 52, Texas City Prairie Preserve Spit, Dickinson Bay, Dollar Bay Terraces, and Bay Harbor Bar Islands, some of the more recent 1-to-2 year use skimmer sites along Galveston Island State Park (like Carancahua Cove), small/unnamed shell rakes used by AMOY, and any other locations where we have at least 2 years of quality monitoring data. Data will be collected on metrics like elevation, vegetation percent cover, vegetation types, substrate types, and microhabitat parameters around known nests (when possible). GCBO will work with TAMUG to assess these sites, gather field data, and use GCBO's extensive monitoring records to help determine a site's past and present successes or failures for fledging new birds.

All data collected during this phase will be written up in a report with individual sections for each site covered. If possible, photographs and design plans will be included. This report will be made available to all partners and posted on the Texas Waterbird Society website. Additionally, material will be summarized in an online ESRI StoryMap, providing an interactive resource for partners.

Location:

Galveston Bay estuarine habitats: see attached map of known sites hosting ground nesting species.

Projects Map



SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	\$25,481
b.	Fringe Benefits	\$6,084
c.	Travel	\$0
d.	Supplies	\$1,000
e.	Equipment	\$0
f.	Contractual	\$17,800
g.	Construction	\$0
h.	Other*	\$10,100
i.	Total Direct Costs (Sum a - h)	\$60,465
j.	Indirect Costs	\$26,850
k.	Total (Sum of i & j)	\$87,315

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

- PhD Student tuition and fees (10 calendar months total over 2.5 years)

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 52.5% (Year 1) and 54.0% (Years 2 & 3) % of (check one):

- ☐ salary and fringe benefits
☒ modified total direct costs
☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☒ Predetermined Rate—an audited rate that is not subject to adjustment.
☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
☐ Default rate—a standard rate of ten percent of salary/wages may be used in lieu of determining the actual indirect costs of the service.

Indirect Cost Rate Agreement dated 9/2/2022 is attached as Appendix A.

Cognizant Federal Agency: Department of Health & Human Services, Denise Shirlee, (214) 767-3261

**Please Submit Project Proposals (Microsoft Word Only – No PDFs) by
August 4, 2023 to:**

NRU Subcommittee
Lindsey.Lippert@tceq.texas.gov

M&R Subcommittee
Cassandra.Taylor@tceq.texas.gov

Galveston Bay Estuary Program

FY 2025 M&R Project Proposal



A PROGRAM OF TCEQ

Please complete the proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **August 4, 2023**. No late submittals will be considered for funding.

SECTION ONE: GENERAL INFORMATION

Subcommittee:

Monitoring & Research

Project Name:

Monitoring to assess long-term restoration success in Galveston Bay wetlands

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer:

Texas A&M University at Galveston

- ☐ Federal, State, or Local Government ☐ Council of Government ☒ Public ISDs or Universities
☐ Nonprofit ☐ Other*

* If lead implementer not listed above, the proposing party will need to partner with an interlocal/interagency entity to be selected for funding. Please reach out to GBEP staff with any questions.

Contact Information:

Project Representative Name	Anna Armitage
Project Representative Phone	409-740-4842
Project Representative Email	armitage@tamu.edu

Amount Requested:

\$151,161

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2025 (09/01/2024-08/31/2025)	\$50,227
FY 2026 (09/01/2025-08/31/2026)	\$53,681
FY 2027 (09/01/2026-05/31/2027)	\$47,253
Total	\$151,161

Total Project Cost:

\$151,161

Is this an estimate? ☐

Project Duration (beginning no earlier than September 1, 2024 - 2.5 year maximum project length):

9/1/24 - 2/28/27

Project Urgency:

Funding during this cycle will generate data that can be applied to improve upcoming restoration projects, thus maximizing the efficient use of taxpayer dollars to support wetland restoration. In addition, funding in the current cycle will enable the PI to leverage existing funding from Ducks Unlimited to support additional personnel. (see below)

Leveraging (in-kind and/or cash):

This project will leverage findings from previous work supported by the GBEP (Jurgens & Armitage, FY 2022). Specifically, that project quantified substantial spatial heterogeneity in restoration success, but the mechanisms driving that variation in success are not yet clear. Success may be partially linked to the presence (or failure) of erosion control structures such as geotubes, as well as to the degree of subsidence in older restored sites in mound configurations. The proposed work will build on that previous work by increasing the number and type of sites, and will provide a more robust assessment of structural features that are linked to restoration success.

This project will also leverage current funding to PI Armitage from Ducks Unlimited. This project (funded through June 2025) seeks to determine if the provision of ecosystem services (e.g., carbon sequestration potential, trophic support) improves or declines over time in older restoration sites. The Ducks Unlimited funding will support additional personnel (one technician and one student), thus allowing us to sample more sites when combined with GBEP funding.

In addition, this project will leverage existing research equipment and computing resources at TAMUG, including PI Armitage's fully equipped field ecology laboratory and a fleet of vehicles and vessels at TAMUG to support site access.

Partners and Their Roles:

Project partners will include the Texas Parks & Wildlife Department (TPWD) for permitting and site access. Additional project partners will include numerous end users that will benefit from information to support science-based decision-making, including restoration practitioners, decision makers, and non-profit agencies. PI Armitage has already established a network of natural resource partners, including contacts from the TPWD, the Texas General Land Office (TGLO), the U.S. Fish & Wildlife Service, the Galveston Bay Foundation, the Gulf Coast Joint Venture, and a variety of industry partners. These contacts (e.g., Woody Woodrow/US FWS; Tara Whittle/TGLO; Philip Smith & Vanessa Mintzer/GBF) will serve as liaisons to community stakeholder groups to ensure that a broad range of perspectives and inputs are considered in the application of project outputs. In addition, these contacts will serve as primary lines of communication to convey the project's scientific outputs to restoration decision makers in agencies such as TPWD and TGLO, ensuring that the results will be considered in future restoration project design.

SECTION TWO: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Galveston Bay Plan, 2nd Edition References

<https://gbep.texas.gov/ensure-safe-human-and-aquatic-life-use/>

<https://gbep.texas.gov/protect-and-sustain-living-resources/>

<https://gbep.texas.gov/engage-communities/>

<https://gbep.texas.gov/inform-science-based-decision-making/>

The 2021 Galveston Bay Report Card indicates that wetlands in Galveston Bay are experiencing multiple stressors, including habitat loss, pollution, and sea level rise. Wetland restoration is an increasingly important part of effective and forward-looking coastal management strategies to compensate for these stressors. However, the long-term (10+ years) resilience of these restored areas and the sustained provision of ecosystem services are rarely quantified. Furthermore, there are likely to be substantial differences in long-term ecosystem service provision in sites with different soil configurations, such as mounds vs. beneficial uses tidal flats. By conducting research to fill a critical information gap in evaluating the provision of ecosystem services in older wetland restoration sites, this project will address both of the *Inform Science-Based Decision Making Action Plans* described in the Galveston Bay Plan:

Action Plan 1: Collaborate with Research Institutions to Support Focus Area Applied Research and Monitoring (RES). TAMUG and PI Armitage have a long record of conducting rigorous, peer-reviewed scientific research that supports actionable wetland restoration decisions.

Action Plan 2: Increase Access to Galveston Bay Ecosystem Information (ACS). Active dissemination of research findings to project partners, management decision makers, and stakeholders (e.g., through presentations to the GBEP M&R committee) will ensure that the information collected as part of this project will be widely accessible to end users.

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 4: Inform Science-based Decision Making

RES-1 ☐ RES-2 ☐ RES-3 ☐ RES-4 ☐

RES-5 ☐ RES-6 ☐ RES-7 ☒ RES-8 ☒

ACS-1 ☐ ACS-2 ☒ ACS-3 ☐

Plan Priority Area Actions Detail:

Action Plan 1:

This project will directly support RES-7 (Evaluate Ecosystem Services) and RES-8 (Complete Coastal Resiliency and Acclimation Studies) by assessing ecosystem service provision in older (10+ year) restoration sites in mound and beneficial uses tidal flat configurations. These plans address a priority issue where a “*lack of available applied research and monitoring data can prevent understanding of Galveston Bay ecosystem components.*” The proposed research will facilitate the improved implementation of “*estuary preservation initiatives*” such as wetland restoration. Outputs supported by this project will include open access datasets and management guidance recommendations shared through open access websites and technical publications.

Action Plan 2:

The project will also implement ACS-2 (Provide Access to Monitoring and Research Data). Outputs supported by this project will include published datasets and journal articles, and the dissemination of information to GBEP stakeholders, decision makers, Galveston Bay user groups, and the public. Outcomes will be shared through presentations at the State of the Bay symposium and to GBEP Stakeholders through quarterly GBEP meetings. In addition, a press release of findings in lay terms will be distributed to local community media outlets through the TAMUG media office.

Does the project implement any other Galveston Bay Plan Priority Area Actions, or the other Subcommittee priorities?

- ☐ WSQ (Ensure Safe Human and Aquatic Life Use)
- ☒ NRU (Protect and Sustain Living Resources)
- ☐ PPE (Engage Communities)

Other Subcommittee Detail:

Natural Resources Uses Subcommittee:

One of the NRU subcommittee priorities is to *enhance existing or ongoing restoration/conservation efforts*, with a particular focus on projects addressing *failing geotubes across West Galveston Bay*. The central goal of the proposed project is to identify structural features (e.g., elevation profile, erosion control structures) that are linked to the sustenance of ecosystem services in restoration wetlands. One actionable recommendation will be to identify areas where amendments or other topographical modifications to existing restoration projects would boost ecosystem service provision, thus *enhancing existing restoration efforts*.

In addition, the proposed project will address the NRU-identified issue of *failing geotubes* by building on previous work supported by the GBEP (Jurgens & Armitage, FY 2022). Specifically, outcomes from that project identified heterogeneity in restoration success, which may have been at least partially due to the presence (or failure) of erosion control structures such as geotubes. Funding in the upcoming cycle will increase the number of sites across a wider range of soil configurations, and will provide a more robust assessment of structural features that are linked to restoration success. Findings from this study will provide scientific support for prioritizing the maintenance and repair of geotubes in West Galveston Bay.

Galveston Bay Plan:

This project also addresses Action Plan HC-2 (Habitat Restoration) of the Galveston Bay Plan through direct study of ecosystem functions and services in restored wetlands. By filling knowledge gaps about the resilience of restoration wetland functions over time, this project will improve science-based management of these critical coastal habitats.

Other Plans Implemented:

The proposed project supports multiple local and regional conservation and management plans that prioritize wetland restoration and monitoring. For example:

The *Texas Coastal Management Plan* specifies the need to “Monitor the success of enhancement/restoration projects.”

The *Texas Wetland Conservation Plan* states that “The overall purpose of State Wetlands Conservation Plans is to improve the efficacy and efficiency of governmental and private sector efforts to protect, restore and create wetlands in a state or on tribal lands.”

The *Gulf Coast Joint Venture Conservation Plans* focus on wetland restoration and monitoring, as described in their mission statement: “...to advance the conservation of important bird habitats within the GCJV region through biological planning and design, implementation of habitat conservation actions, and focused monitoring and evaluation of the planning and implementation process”

SECTION THREE: SUBCOMMITTEE PRIORITIES

M&R Subcommittee Identified Priorities

Proposals must address one or more of the following actions:

- ☒ Meaningful and effective monitoring of existing and new projects (NRU/WSQ/PPE support)
- ☐ Exposure and response to emerging contaminants across trophic levels
- ☐ Reestablishing dermo monitoring programs (Ex. Oyster Sentinel)
- ☐ Project Component: Results translated to plain language/practical knowledge

Subcommittee Priority Detail:

The fundamental goal of habitat restoration is to increase the amount of a target habitat and improve the associated ecological functions and services. However, the full recovery of ecosystem functions and services – including the development of food webs and carbon sequestration – occurs on a decadal time scale, often spanning ten years or more. However, most restoration monitoring and assessment occurs on a relatively short time scale, over a period of a few years. As such, the long-term sustenance of ecosystem service provision is often assumed but seldom verified. This project will fill a critical information gap by *monitoring existing projects* to evaluate the provision of ecosystem services in older restoration sites. Furthermore, there are likely to be substantial differences in long-term ecosystem service provision in sites with different soil configurations, such as mounds vs. tidal flats created with beneficial uses material. The study will focus on restored mounds in Jumbile Cove, Dalehite/Starvation Cove, and Bird Island Cove/McAllis Point (Galveston, TX; see **Project Map**). Portions of these areas were restored in 2004-2005, and other portions were restored more recently (between 2011 and 2015). Restored sites in each of these areas will be compared to nearby reference wetlands. At full scale, this project will also include sites with expansive tidal flats created through beneficial uses (BU) material placement, paired with reference areas on Bolivar Flats; these BU sites can be removed and integrated into future project proposals if it is required to scale the current project down.

This project will leverage previous work funded by Ducks Unlimited; this previous work highlighted the critical need to monitor and assess existing projects. In that project, we determined that the older restored sites had distinctly less elevation heterogeneity than the middle-aged site (see **Supplemental Photos**). On the older (20-year-old) mounds, the highest elevation points were dominated by mid-marsh species such as the succulents *Batis maritima* and *Salicornia* spp. In contrast, younger (10-year-old) mounds had a higher midpoint elevation that included salt pan habitat and upland and high marsh species such as *Tamarix* (salt cedar), *Phragmites*, and *Spartina spartinae*. This difference in elevation profile is unlikely to be an artifact of construction technique, since salt marsh restoration in the region typically targets a narrow elevation range (~0.5 m above mean lower low water) in order to promote *S. alterniflora* establishment. Rather, these elevation differences are likely due to subsidence and relative sea level rise in the time since construction. A review of historical aerial imagery indicates that the reference areas also experienced subsidence during this time period (since 2000), and that adjacent upland habitat transitioned into tidal marsh habitat. This difference between older and newer sites suggests that restored mounds are prone to substantial subsidence within 20 years of construction. Without a higher elevation refuge, this will likely result in a degradation of the quality and extent of vegetated habitat over time. Future sampling efforts will build on this previous work by (a) increasing replication to ensure that this is not a site-specific outcome, and (b) quantitatively characterizing differences in plant communities at the whole-site level in order to account for the full range of elevation zones present. This previous work highlights the need to monitor existing projects to identify potential shortcomings in existing restoration projects, and will thus provide rigorous scientific support to improve the design of future restoration projects.

Does the Project work with new, smaller communities/partnerships?

- ☐ Yes
- ☒ No

n/a

SECTION FOUR: PROPOSAL DETAILS

Project Summary:

The goal of this project is to fill a needed information gap in evaluating the provision of ecosystem services in older wetland restoration sites across a range of soil configurations. This study will conduct research to understand the links between coastal wetland restoration design and the successful long-term provision of ecosystem services, thus providing rigorous scientific support for future restoration projects.

Full Project Description (1,000 words or less):

As wetland restoration becomes an increasingly important part of effective and forward-looking coastal management strategies, it is vital that the best available science is used to boost near-term and long-term restoration success. Restoration projects vary widely in terms of size, soil configuration (e.g., mounds vs. continuous fill), and the inclusion of erosion control structures such as sills or geotubes. These designs often boost emergent plant cover over near-term (5-year) scales, but links to improved ecosystem service provision over a longer time period are largely unquantified. Furthermore, some erosion control structures in Galveston Bay have subsided over time, thus exposing restored areas to more fetch and wave action, potentially leading to degradation of restored sites. Thus, the overarching goal of this project is to assess the relationships between standard success metrics (plant cover), key restoration project design features, and ecosystem service provision in older (10+ year) restoration sites. One of the key outcomes of this project is a robust assessment of site design features that yield successful restoration of key ecosystem services, including carbon sequestration and food web support. This outcome will generate rigorous scientific support for the design of future restoration projects and will ensure appropriate and efficient use of regional resources in ecosystem management.

The overarching goal of this project is to assess the relationships between standard success metrics, key restoration project design features, and ecosystem service provision in older (10+ year) restoration sites across a range of soil configurations. To achieve this goal, the project team will conduct field studies to test the following hypotheses:

H1: Carbon sequestration potential will be (a) positively related to site size and areal cover of emergent vegetation, and (b) higher at sites reinforced by erosion control structures such as breakwaters or berms.

H2: Trophic support for coastal food webs will be positively related to the area of nonvegetated tidal mudflats.

Site selection

Several study areas in Galveston Bay have been identified based on site age and accessibility (see **Project Map**). Each study area includes restored marshes that vary in age, ranging from 17+ years (restored in 2005) to 7 years old (restored in 2015). Restored portions of the study areas are comprised of either mound formations or tidal flats (beneficial uses) (see **Project Map** and **Supplemental Photos**). Each study area also includes expanses of unmanaged (reference) marsh. A minimum of three sampling stations will be established in each of three restored and reference areas. Each sampling station will include areas of high elevation salt marsh, low elevation salt marsh, and tidal flat (3-5 replicate stations x 3 elevations x 3 ages x 2 soil configurations = 54-90 samples; can be scaled if needed).

Field measures

Field measures will be stratified across habitat elevation zones (e.g., tidal flat, low marsh, high marsh), with randomly located (based on pre-determined GPS coordinates) replicate (3-5) sampling stations

within each elevation zone at each site. Field sampling will occur in early fall of project years, corresponding with peak biomass at the end of the growing season. A comprehensive suite of abiotic features (e.g., soil and water characteristics, mound size and shape, elevation profile, presence of erosion control structures) will be measured at each site. Response metrics will focus on characteristics that are closely linked to the ecosystem services identified in the study hypotheses, including:

Carbon sequestration potential. Carbon sequestration potential, often estimated as carbon pools in plant and soil fractions, is closely linked to plant biomass and productivity. Therefore, relevant indicators for the ecosystem service of carbon sequestration include aboveground plant cover and productivity, species identity, and belowground biomass. Therefore, the team will sample the following metrics: (1) Aboveground plant cover (total and by species) will be visually estimated in 10 1-m² quadrats along 100-m transects at each sampling station. Productivity of common species will be measured with a SPAD-502 portable leaf meter (Konica Minolta Corporation). (2) Relative belowground biomass will be assessed by extracting a core (5 cm diameter, 30 cm deep). Cores will be sectioned into 2-cm segments and washed through a 2-mm sieve to remove sediment. Roots will be dried and weighed to determine biomass.

Faunal communities and trophic support. Coastal wetland restoration is often intended to boost habitat value for charismatic vertebrates with commercial or recreational value (e.g., fishery species or birds). The value of restored wetlands for these targeted fish or bird species is closely linked to food availability. Therefore, relevant indicators for the ecosystem service of supporting faunal communities include measures of basal trophic sources: (1) Benthic microalgal biomass (total and fractions of diatoms, cyanobacteria, and green algae) will be measured in situ with a Benthotorch (bbe Moldaenke), which returns total biomass and algal composition data, calculated from measured fluorescence from the substrate. (2) Biofilms are the thin surficial layer of diatoms, cyanobacteria, and other bacteria and microorganisms, enveloped in a coating of extracellular mucus on the sediment surface, and are important food sources for many small-bodied shorebirds. Chlorophyll a (the common proxy for biofilm biomass) and total organic matter will be measured in samples from the top 1-mm of sediment to assess biofilm quantity and quality. (3) For infaunal communities, replicate cores (10 cm diameter, 30 cm deep) will be collected and rinsed through a 0.5-mm sieve. Samples will be sorted to the lowest practical taxonomic level, enumerated, and then dried to determine biomass.

Analysis and expected outcomes

Biotic and abiotic data will be analyzed with univariate and multivariate approaches to identify site characteristics that are linked to successful and persistent restoration of target ecosystem services. The outputs will provide rigorous scientific evidence to support future decisions about restoration projects that intend to provide carbon sequestration and trophic support for ten or more years after restoration.

Latitude/Longitude (Optional):

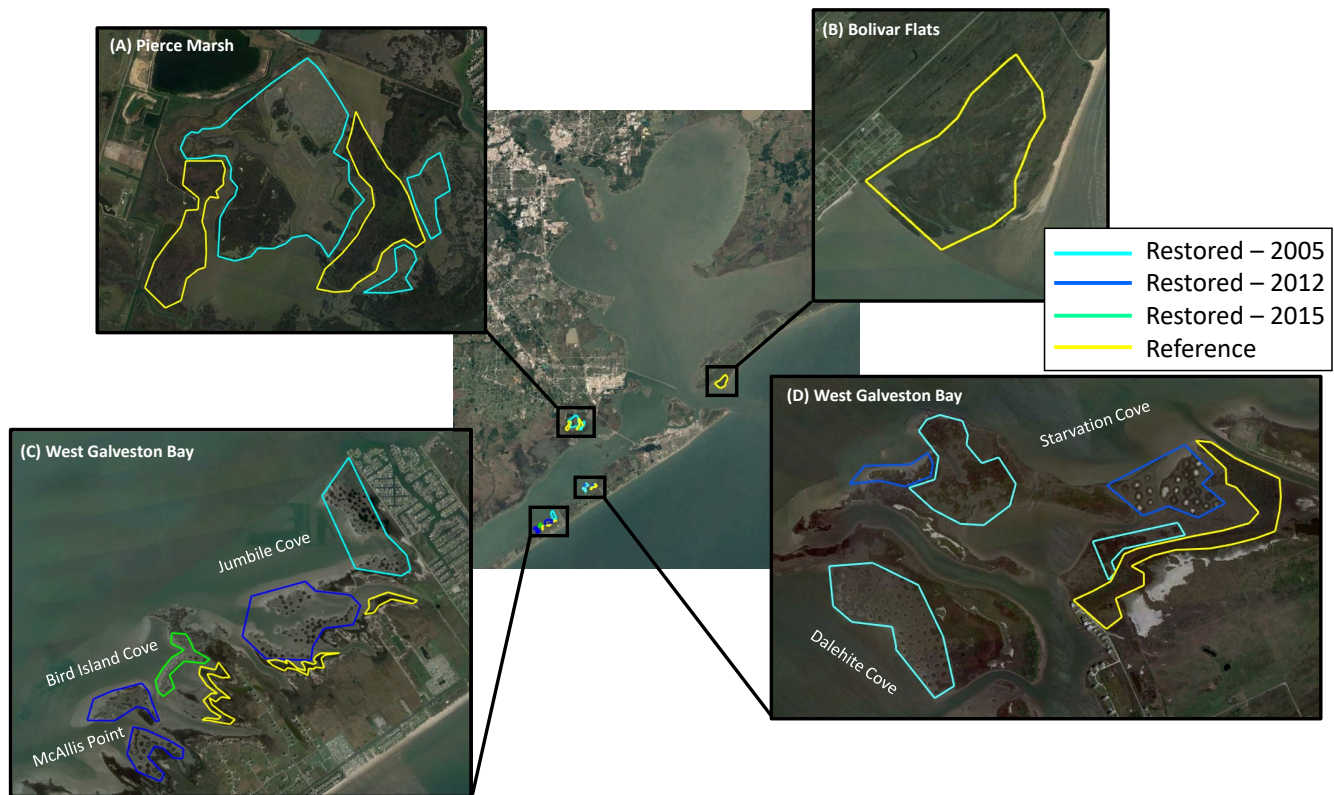
Tentative site locations (see **Project Map**):

Site name	Coordinates
Dalehite/Starvation Coves	N 29.225720°, W 94.943898°
Jumbile Cove	N 29.192890°, W 94.990611°
Bird Island Cove/McAllis Point	N 29.180917°, W 95.008082°
Pierce Marsh	N 29.316737°, W 94.967956°
Bolivar Flats	N 29.369174°, W 94.742337°

Location:

West Bay, Segment ID 2424, Hydrologic Code Unit 12040204
Lower Galveston Bay, Segment ID 2439, Hydrologic Code Unit 12040204

Project Map

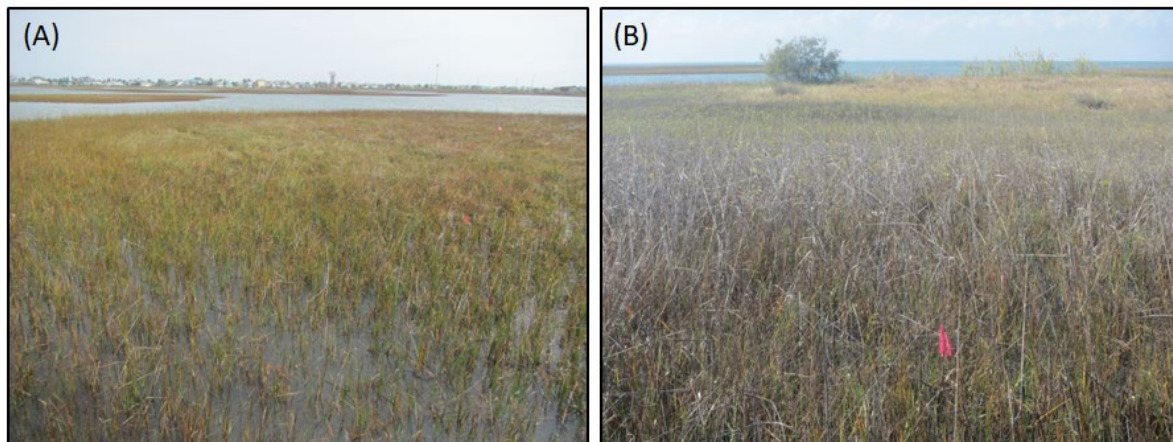


Project map depicting potential restored and reference study sites in Galveston Bay. (A) Pierce Marsh contains a combination of beneficial uses and mound configurations. (B) Bolivar Flats is a reference area that has not undergone active sediment placement. (C) and (D) Restoration sites in mound configurations in West Galveston Bay. Polygon colors indicate the year that restoration was completed.

Supplemental Photos/Graphics (Optional):



Representative site photo showing circular mounds of restored marsh vegetation in Jumbile Cove, West Galveston Bay.



Images of the highest point of (A) older (20 year old) and (B) younger (10 year old) restoration sites, illustrating higher elevation and increased plant diversity at the younger site.

SECTION FIVE: BUDGET DETAILS

BUDGET CATEGORIES:		Budget
a.	Personnel/Salary	56090
b.	Fringe Benefits	10512
c.	Travel	6000
d.	Supplies	5800
e.	Equipment	0
f.	Contractual	0
g.	Construction	0
h.	Other*	23867
i.	Total Direct Costs (Sum a - h)	102269
j.	Indirect Costs	48892
k.	Total (Sum of i & j)	151161

*Other: If Budget Category "Other" is greater than \$25,000 or more than 10% of budget total, identify the main constituents:

Other expenses include airboat charters (\$6,400), truck and boat fuel during field work (\$2,000), graduate student tuition (\$10,867), publication costs (\$3,000), and conference registration fees (\$1,600).

Indirect Cost Agreement

Indirect Cost Reimbursable Rate: The reimbursable rate for this Contract is 52.5 (year 1); 54% (years 2 & 3) of (check one):

- ☐ salary and fringe benefits
☒ modified total direct costs
☐ other direct costs base

If other direct cost base, identify:

This rate is less than or equal to (check one):

- ☒ Predetermined Rate—an audited rate that is not subject to adjustment.
☐ Negotiated Predetermined Rate—an experienced-based predetermined rate agreed to by Performing Party and TCEQ. This rate is not subject to adjustment.
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Cognizant Federal Agency: Department of Health & Human Services, Denise Shirlee, (214) 767-3261

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