

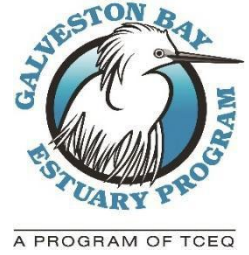
Natural Resource Uses (NRU) Subcommittee Fiscal 2028 Proposal Summaries 2-(Monitoring and Research)

Project	Lead Implementer
1. Avian Bioacoustic Assessment Across Armand Bayou Nature Center	Armand Bayou Nature Center
2. Eastern Black Rail genomics and acoustic density assessment in the Galveston Bay Watershed	Texas A&M University
3. Mapping Green Sea Turtle Foraging Using Galveston Bay Estuary System Isoscapes	Texas A&M University at Galveston
4. Building a Baseline for Sandy Beach Ecosystem Health: Monitoring the Ecological Effects of Beach Nourishment and Contaminant Exposure in Galveston Bay¹	Texas A&M University at Galveston
5. A Coast of Thorns and Roses: Autonomous Detection and Treatment of Invasive Macartney Rose in the Coastal Prairies of the Lower Galveston Bay Watershed	Texas A&M University at Galveston
6. Post-Restoration Terrapin Nesting Habitat Surveys at Galveston Island State Park	University of Houston-Clear Lake

¹ A revised version of this proposal was submitted August 19, 2026.

Galveston Bay Estuary Program

Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

This Call for Project Proposals complies with 30 Texas Administrative Code (TAC) § 14.7, which lays out requirements for a competitive solicitation by TCEQ for grant awards. For convenience, specific citations to 30 TAC § 14.7 are identified in the text.

SECTION ONE: INTRODUCTION

Purpose [required by 30 TAC § 14.7(1)]: The purpose of the proposed grant from the Galveston Bay Estuary Program (GBEP), a program of the Texas Commission on Environmental Quality (TCEQ), is to implement *The Galveston Bay Plan, 2nd Edition* (the Plan), a comprehensive conservation and management plan falling under Section 320, of the Federal Water Pollution Control Act (33 U.S.C. Section 1330), for a designated national estuary in the State of Texas.

Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

Authority [see 30 TAC § 14.7(2)]: Grants issued by GBEP under this solicitation are authorized by: the Federal Water Pollution Control Act (Clean Water Act) § 320 (33 UNITED STATES CODE § 1330), commonly referred to as the National Estuary Program; TEX. WATER CODE § 5.124; and 30 TAC ch. 14.

Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

Task	Date Due
Release of Request for Proposals	June 22, 2026
Proposals Due	July 24, 2026
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Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Monitoring and Research (M&R).
Secondary Subcommittee (if applicable): Natural Resource Uses (NRU).
Tertiary Subcommittee (if applicable): Public Participation and Education (PPE).

Project Name:

Avian Bioacoustic Assessment Across Armand Bayou Nature Center
Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Armand Bayou Nature Center (ABNC)

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

[If other, please identify pass-through partner.]

Unique Entity ID (UEI) Number:	CTBHH28PCJB8
Vendor Identification Number (VIN) or Tax ID:	23-7403757

Contact Information:

Project Representative Name	Jennifer Bock, Stewardship Coordinator
Project Representative Phone	(850)445-8065
Project Representative Email	jen@abnc.org

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

24 Months (September 1, 2027 – August 31, 2029)

Amount Requested from GBEP:

\$ 78,312.50

Federal ☐ State ☐ No Preference ☒

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$63,212.50
FY 2029 (09/01/2028-08/31/2029)	\$15,000.00
FY 2030 (09/01/2029-05/31/2030)	\$0.00
Total	\$78,312.50

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

\$78,312.50

Is this an estimate? ☒

Leveraging (in-kind and/or cash):

Armand Bayou Nature Center: In-kind staff time for land access, volunteer coordination, and adaptive management integration (Secured).
American Bird Conservancy: Technical support and bioacoustic pipeline access (Secured).

SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:
<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☐ NPS-3 ☐ NPS-4 ☐
PS-1 ☐ PS-2 ☐ PS-3 ☐
PHA-1 ☐ PHA-2 ☐ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☐ SPO-2 ☐ SPO-3 ☐ SPO-4 ☐
PEA-1 ☒ PEA-2 ☐ PEA-3 ☐

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:

This project implements the goals and actions outlined in the **Galveston Bay Plan, 2nd Edition (GBP)**, leveraging past GBEP investments:

Priority 2: Protect and Sustain Living Resources (HC-1, SC-1, FWI-1): Building on GBEP's landmark \$340,000 investment toward ABNC's acquisition of 1,147 acres of the former ExxonMobil tract, this project establishes automated acoustic tracking across both legacy sanctuary lands and the newly integrated parcel. It targets native wildlife species, including federal and state listed Species of Greatest Conservation Need (SGCN), evaluating ecological health across coastal tallgrass prairie, riparian forest, fresh/saltwater marsh, and riparian bayou habitats.

Priority 4: Inform Science-Based Decision Making (RES-1, RES-2): By establishing continuous, standardized bioacoustic monitoring, this project fills critical data gaps on species distributions and delivers actionable baseline assessments of urban-wilderness interface dynamics. Specifically, the study quantifies how multi-year coastal tallgrass prairie restoration influences avian community structure across grassland, riparian forest, and coastal marsh habitats, while evaluating key shifts in avian biodiversity along a gradient from restored preserve lands to adjacent urban corridors.

Priority 3: Engage Communities (PEA-1): This project advances conservation and environmental workforce development by training ABNC staff, early-career researchers, university students, and community partners in state-of-the-art bioacoustic hardware deployment, machine-learning identification pipelines, and spatial ecological data analysis.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☒ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☒ Adaptive management for previously completed projects; and
 - ☐ Projects that may have lost/delayed funding from other federal sources.
- ☒ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☐ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☐ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☐ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☒ PPE: Conservation and environmental workforce development.
- ☐ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☒ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☐ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☐ Legacy contaminants.

Subcommittee Priority Detail:

Monitoring and Research (M&R) Priority: This project addresses the M&R mandate for baseline assessments of large-scale, man-made changes along Galveston Bay. By utilizing continuous acoustic sampling across 50 deployment sites (or 24 under the modular scale-down), it measures how vocal species communities and overall biodiversity metrics adapt or degrade along the urban-wilderness transition zone.

Natural Resource Uses (NRU) Priority: The project directly benefits native wildlife and SGCN species by assigning site-level conservation weights to acoustic detections. It evaluates the success of multi-year coastal tallgrass prairie restoration efforts compared to surrounding urban corridors. Following GBEP's land acquisition funding for the 1,147-acre ExxonMobil tract, establishing this baseline provides critical data to evaluate restoration outcomes amidst surrounding regional urbanization. Furthermore, ABNC will retain all ARU hardware post-grant, ensuring long-term adaptive management and tracking across the North Property.

Public Participation and Education (PPE) Priority: This project advances conservation and environmental workforce development by training ABNC interns, early-career researchers, and university students in state-of-the-art bioacoustic hardware deployment, automated machine-learning identification pipelines, and spatial ecological data analysis.

Does the Project align with any EPA Areas of Special Interest?

- ☐ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☒ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

High-resolution bioacoustic monitoring across coastal tallgrass prairie, riparian forest, and tidal marsh habitats provides essential baseline data to measure ecosystem resilience against climate drivers and surrounding urban expansion.

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

To implement an automated bioacoustic monitoring framework across four core habitat types at Armand Bayou Nature Center, evaluating the impact of long-term coastal tallgrass prairie restoration on bird communities relative to urban areas and establishing a quantifiable site-level biodiversity accounting index (BirdsPlus) to direct adaptive land management.

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

Introduction & Ecological Need

Migratory birds and vocal wildlife communities across North America face severe population declines. As documented in the *American Bird Conservancy (ABC) BirdsPlus Index Technical Overview*, over 2.5 billion native migratory birds have been lost from breeding populations since 1970, representing a 30% reduction driven primarily by habitat fragmentation and anthropogenic stressors.

As a crucial ecological refuge within the Houston-Galveston urban landscape, ABNC provides essential habitat for resident and migratory species, including numerous federal and state-listed Species of Greatest Conservation Need (SGCN). Following GBEP's pivotal \$340,000 grant supporting the acquisition of 1,147 acres of the former ExxonMobil tract, ABNC has expanded its protected footprint. However, evaluating wildlife usage and assessing the ecological returns of multi-year prairie restoration across these newly protected lands and along urban perimeter zones has traditionally been limited by surveyor bias, field safety constraints, weather variability, and high financial overhead.

To overcome these barriers, ABNC and ABC will deploy an innovative bioacoustic monitoring infrastructure utilizing the BirdsPlus Index platform.

Project Methodology & Technical Framework

The BirdsPlus platform utilizes a standardized four-stage bioacoustic pipeline:

1. **Acoustic Data Capture:** Autonomous Recording Units (ARUs) are deployed in key biological windows (e.g., spring/fall migration) across coastal tallgrass prairie, riparian forest, fresh/saltwater marsh, and riparian bayou systems.
2. **Automated Species Identification:** Raw audio files are passed through cloud-based automated classification models (machine-learning algorithms) to catalog species presence without human observer bias.
3. **Conservation Tier Weighting:** Detected species are assigned conservation values based on rarity, state/federal listing, and SGCN status, generating a customized raw Site-Level Index Score.
4. **Remote Sensing Integration:** The site score is integrated with remote sensing metrics to generate a normalized, relative BirdsPlus Index score comparing local ecological performance against regional expectations and urban baselines.

Study Design & Scalability

Primary Ask (Extensive Sampling Scenario - \$78,312.50): Structured under the 'Higher Intensity' sampling configuration, this design deploys **50 sampling locations** distributed across core habitats, prairie restoration zones, urban transition perimeters, and the newly acquired 1,147-acre tract. This spatial density enables high-resolution mapping of avian communities across restored vs. urbanized areas.

Alternative Ask (Minimal Sampling Scenario - \$28,590.00): Structured under the 'Lower Intensity' sampling configuration, this design scales down to **24 sampling locations** focused on core interior natural habitats, maintaining core methodology and scientific validity.

Project Urgency:

With grant funding beginning in FY2028 (September 2027), immediate deployment upon award execution is critical. Installing the bioacoustic hardware in tandem with the initial rollout of conservation and land management activities on the newly acquired 1,147-acre North Property ensures operational efficiency and allows ABNC to capture unrepeatable baseline ecological data before active prairie restoration and surrounding urban development progress further.

Other Plans Implemented:

The Galveston Bay Plan, 2nd Edition: Directly implements Priorities 2 and 4 by establishing continuous bioacoustic monitoring across ABNC's legacy sanctuary lands and newly acquired acreage.

GLO Coastal Resiliency Master Plan: Supports GLO Tier One priorities by tracking ecological health and biodiversity resilience across critical coastal prairie and wetland buffers.

Texas Conservation Action Plan (TCAP): Advances TPWD priority monitoring directives for state-listed species and Species of Greatest Conservation Need (SGCN) across coastal prairie, marsh, and forest habitats

Partners¹ and Their Roles:

Armand Bayou Nature Center (ABNC): Responsible for overall project management, field deployment/retrieval of ARU hardware, spatial design execution, and integration of findings into local land management plans. ABNC will retain all ARU hardware post-grant to conduct long-term monitoring across the 1,147-acre North Property.

American Bird Conservancy (ABC): Responsible for technical study design oversight, cloud storage hosting, running automated classification pipelines, remote sensing integration, and generating BirdsPlus validation reports.

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

☒ Yes

☐ No

ABNC will partner with university students, early-career environmental practitioners, and community science volunteers to assist with hardware maintenance, field sampling protocols, and data outreach.

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

☐ Yes

☒ No

[TBD.]

Latitude/Longitude (Optional):

29°36'15" N / 95°04'45" W (Preserve Centroid / Headquarters reference point; sampling grid spans 50 distributed sites across ABNC acreage)

Location:

Armand Bayou Nature Center (including legacy preserve acreage and the newly acquired 1,147-acre tract). ABNC is located in the lower Galveston Bay watershed with Armand Bayou flowing into Lake Mark Kramer (formerly known as Mud Lake), then into Clear Lake and directly into Galveston Bay.

Projects Map

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

Supplemental Photos/Graphics (Optional):

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

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.

SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$0.00
Fringe Benefits (###)% ²	\$0.00
Travel	\$2,500.00
Supplies	\$11,812.50
Equipment	\$0.00
Contractual	\$50,000.00
Construction	\$0.00
Other	\$14,000.00
Total Direct Cost	\$78,312.50

b. Indirect Costs³

Distribution Base Amount (<i>identify Base type below</i>)	\$
Indirect Cost Rate for Reimbursement	%
Total Indirect Costs	\$

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$ 78,312.50
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Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☐ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

- ☐ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.
- ☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

² If fringe is not a single rate, please attach calculation or explanation as an appendix.

³ Please attach Indirect Cost Agreement as an appendix if applicable

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☐ **Other:** [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

Supplies (\$11,812.50): Total ARU hardware purchase (initial hardware plus additional units/accessories for attrition as needed) for 50 field units.

Travel (\$2,500.00): Travel expenses for technical project staff for initial deployment set-up and field auditing.

Contractual (\$50,000.00): Technical services provided by American Bird Conservancy (ABC) for study design, automated classification algorithm execution, data validation, remote sensing integration, and final BirdsPlus Index reporting.

Other (\$14,000.00): Direct operational expenses including field ARU deployment (\$2,000), ARU retrieval (\$2,000), and cloud data storage/processing (\$10,000).

Modular Scale-Down Option (Option B - \$38,090.00 Breakdown):

If full funding is unavailable, the project can be scaled down to 24 sites: Supplies (\$5,670), Travel (\$2,500), Contractual (\$23,000), Other (\$6,920: \$960 deployment, \$960 retrieval, \$5,000 storage).

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting's time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.
- Unless otherwise communicated or implied, GBEP requires 1 (one) completed copy of your Project Proposal per corresponding Subcommittee Coordinator.
- Project Proposals must be received electronically, through the email address of the relevant Subcommittee Coordinator listed on this page, by the deadline listed on both this page and the first page of this Project Proposal document.

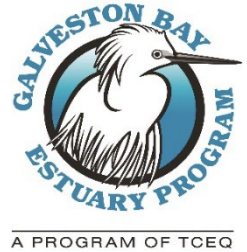
Submittal Process and Deadline [see 30 TAC § 14.7(8) and 30 TAC § 14.7(9)]:

Please Submit Project Proposals (Microsoft Word Only – No PDFs) by July 24, 2026 to the relevant Subcommittee Coordinators below:

WSQ Subcommittee: Christian.Rines@tceq.texas.gov
NRU Subcommittee: Lindsey.Lippert@tceq.texas.gov
PPE Subcommittee: Zoe.Gapayao@tceq.texas.gov
M&R Subcommittee: Jenelle.Estrada@tceq.texas.gov
Programmatic Projects: Lisa.Marshall@tceq.texas.gov

Galveston Bay Estuary Program

Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

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Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

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Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

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Present Proposals to Subcommittees for Council Recommendation	September 2, 2026 (NRU and PPE) September 9, 2026 (M&R and WSQ)
Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Monitoring and Research (M&R)
Secondary Subcommittee (if applicable): Natural Resource Uses (NRU)
Tertiary Subcommittee (if applicable): Choose an item.

Project Name:

Eastern Black Rail genomics and acoustic density assessment in the Galveston Bay watershed
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Project Previously Funded by GBEP? Yes ☒ No ☐

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Dr. Chris Butler, Texas A&M University
--

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

Unique Entity ID (UEI) Number:	JF6XLNB4CDJ5
Vendor Identification Number (VIN) or Tax ID:	3-711-711-711-1016

Contact Information:

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

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

September 1, 2027 – May 31, 2030

Amount Requested from GBEP:

\$248,936

Federal ☐ State ☐ No Preference ☒

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$65,844
FY 2029 (09/01/2028-08/31/2029)	\$141,921
FY 2030 (09/01/2029-05/31/2030)	\$41,171
Total	\$248,936

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

\$275,029 (\$248,936+\$26,093)

Is this an estimate? ☒

Leveraging (in-kind and/or cash):

USGS Western Ecological Research Center — \$26,093 in-kind (geneticist analysis/writing hours and bioinformatics time contributed by Dr. Laurie Hall and Dr. Amy Vandergast) — secured, committed via subcontract Texas A&M University - Related federal and state funding leveraged (not GBEP-funded, but providing equipment, sites, and complementary data): USFWS ("Assessing the response of Black Rail populations to management actions in coastal Texas marshes"); NOAA RESTORE Firebird ("Fire Effects in Coastal High Marshes"); CBBEP (Black Rails and Nocturnal Flight Calls: Bioacoustical Monitoring at PINS) — secured
--

SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:
<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☐ NPS-3 ☐ NPS-4 ☐
PS-1 ☐ PS-2 ☐ PS-3 ☐
PHA-1 ☐ PHA-2 ☐ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☐ SPO-2 ☐ SPO-3 ☐ SPO-4 ☐
PEA-1 ☐ PEA-2 ☐ PEA-3 ☐

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:

This project implements four Action Plan items of The Galveston Bay Plan, 2nd Edition, spanning two Plan Priorities.

Under **Protect and Sustain Living Resources**, the project addresses SC-1 (Support Species Conservation) by advancing the conservation of a native, federally and state-threatened species, the Eastern Black Rail (*Laterallus jamaicensis jamaicensis*), within the Galveston Bay watershed. The genomic component will characterize population structure, gene flow, effective population size, and local adaptation of Galveston Bay black rails, providing resource managers with the population-genetic information needed to sustain this species at viable levels.

Under **Inform Science-based Decision Making**, the project addresses RES-1 (Conduct Biological Stressor Monitoring and Research) as its central action item. Both the genomic assessment and the proof-of-concept acoustic-localization approach to estimating black rail density generate primary biological monitoring and research data on a threatened, biologically stressed wetland species, directly fulfilling the RES-1 focus on species of special concern. The project also addresses ACS-1 (Tracking Ecosystem Health Indicators), as the black rail is a sensitive indicator of high-marsh condition and its genetic and demographic status serves as a measurable indicator of estuary health, and ACS-2 (Access to Monitoring and Research Data), as all genomic and acoustic data will be shared with USFWS, TPWD, and other regional resource managers. Additionally, USGS typically make all data publicly available through a USGS data release after analysis and completion of any products and they plan to include a data release as one of their products.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☐ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☐ Adaptive management for previously completed projects; and
 - ☐ Projects that may have lost/delayed funding from other federal sources.
- ☒ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☐ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☐ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☐ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☐ PPE: Conservation and environmental workforce development.
- ☒ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☐ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☐ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☐ Legacy contaminants.

Subcommittee Priority Detail:

This project directly addresses the NRU Subcommittee priority to benefit native fish and wildlife, including federal- and state-listed species. The focal species, the Eastern Black Rail (*Laterallus jamaicensis jamaicensis*), is listed as Threatened under the U.S. Endangered Species Act (2020) and as Threatened in Texas and is a Species of Greatest Conservation Need in the Texas Conservation Action Plan. The Galveston Bay watershed represents one of the last strongholds for this secretive, declining marsh bird. By generating the first population-genomic data for black rails in the Galveston Bay area, characterizing population structure, gene flow, effective population size, and local adaptation, and by piloting an acoustic-localization approach to estimating density, the project delivers information that resource managers currently lack for conserving this listed species.

The project also addresses two M&R Subcommittee priorities. Under Assessment, Exposure, and Response to Stressors, it targets a Species of Greatest Conservation Need, quantifying the black rail's genetic status and population density as direct measures of the species' condition and vulnerability within the estuary. This work fills a monitoring and research information gap that the M&R Subcommittee has specifically identified under RES-1 (Biological Stressor Monitoring and Research), projects addressing species of special concern, a gap not currently addressed for birds in the Galveston Bay watershed. Under Meaningful and Effective Monitoring, the project establishes new, transferable monitoring capacity (a whole-genome

reference-based genomic assessment and a proof-of-concept acoustic density method) while complementing and extending the PI's existing federal and state black rail monitoring efforts in the same region. This proposal is intentionally structured as a collaboration spanning the NRU and M&R Subcommittees: it pairs species conservation of a listed species (NRU) with applied biological monitoring and research that generates transferable, management-relevant data (M&R). The genomic component is conducted in partnership with the U.S. Geological Survey Western Ecological Research Center, whose scientists published the black rail reference genome and have led black rail genomics in Colorado and California, contributing in-kind analytical time. The project further leverages the PI's ongoing regional black rail research funded by USFWS, TPWD, NOAA RESTORE, and the National Park Service, including outreach and stakeholder engagement conducted through the NOAA RESTORE ("Firebird") project, and an existing array of autonomous recording units provided as in-kind support. All resulting genomic and acoustic data will be deposited in approved public repositories for use by USFWS, TPWD, and other regional resource managers.

Does the Project align with any EPA Areas of Special Interest?

- ☐ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☐ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

This project pairs the first population-genomic assessment of Eastern Black Rails in the Galveston Bay watershed with a proof-of-concept acoustic method for estimating black rail density, delivering conservation-relevant information on the genetic status and abundance of this federally and state threatened species in one of its last strongholds.

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

Populations of the Eastern Black Rail (*Laterallus jamaicensis jamaicensis*) have declined dramatically in coastal and inland areas of the United States (Watts 2022), leading to its listing as Threatened by the U.S. Fish and Wildlife Service in 2020 and as Threatened in Texas. Despite increased effort since listing, it remains one of the most understudied North American birds. The Galveston Bay watershed is one of its last strongholds: surveys on the Texas mid-Coast National Wildlife Refuge Complex detected roughly 130 vocalizing individuals during 2021–2022, with additional birds around Galveston Island, the Bolivar Peninsula, and adjacent marshes. However, translating these detections into effective recovery strategies is hindered by two critical knowledge gaps. First, Black Rails are rarely captured, so little genetic data exist for the eastern subspecies and no phylogenetic comparisons have been made to other subspecies. Second, we lack efficient methods to estimate how many birds occupy a given area. This project addresses both gaps through complementary genomic and acoustic components, the first delivered in partnership with the U.S. Geological Survey (USGS).

Component 1: Population genomics. The proposed research will use genomic data to answer several questions relevant to conservation and recovery in the Galveston Bay watershed and more broadly along the Gulf Coast. Specifically, we will: (1) conduct a phylogenetic comparison between migratory and resident Black Rails of the eastern subspecies (*L. j. jamaicensis*) and the California subspecies (*L. j. coturniculus*); (2) evaluate patterns of population substructure and gene flow in Texas Black Rails; (3) estimate genetic effective size of the Galveston Bay Black Rail population; and (4) assess evidence for local adaptation in Texas Black Rails.

This collaborative component leverages skills and data from partners at the USGS Western Ecological Research Center (Dr. Susan De La Cruz, Dr. Amy Vandergast, and Dr. Laurie Hall), who have previously conducted genomics work on Black Rails in Colorado and California (Hall et al. 2023; Hall and Beissinger 2017). Rails will be captured at night during the non-breeding season using spotlights and lightly weighted drag lines to flush birds, which are taken with hand nets (Hall and Beissinger 2017; Tsao et al. 2009). Upon capture, all birds will be banded with USGS stainless steel bands, and morphometric and molt data will be collected. Approximately 20 µl of blood will be collected by venipuncture of the brachial vein and transferred to blood cards using capillary tubes. We will also collect a feather in a paper envelope from each bird for stable isotope analysis. Because Galveston Bay supports both resident breeders and possible migrants from interior populations, feather hydrogen isotope ($\delta^2\text{H}$) values, which record the isotopic signature of precipitation where the feather was grown (Hobson 2005; Bowen et al. 2005), will be used simply to screen sampled birds for residency, so that individuals used in population-genomic analyses can be confirmed as local rather than non-Gulf origin. Following methods developed by the PI (Butler et al., in prep.), birds inconsistent with a Gulf origin will be flagged using a two-standard-deviation criterion on laboratory-corrected $\delta^2\text{H}$.

Blood samples will be sent to the USGS Western Ecological Research Center San Diego Field Station Genetics Laboratory for DNA extraction and library preparation. We will generate a large set of single nucleotide polymorphisms (SNPs) for analysis using high-throughput sequencing (Toews et al. 2015). Population and phylogenetic analyses will be performed to (1) determine phylogenetic relationships of Black Rails (DeSaix et al. 2014); (2) estimate levels of genetic exchange among regions (Wang 2022); (3) estimate genetic effective size of the Galveston Bay Black Rail population (Waples et al. 2016); and (4) determine whether Texas Black Rails have unique genetic diversity associated with climatic and habitat conditions (Chambers et al. 2024). These data provide a baseline for measuring future population change and adaptive potential in Texas Black Rails. Upon completion of the study, any remaining tissue will be archived in an academic museum for future use by the scientific community.

Component 2: Acoustic density assessment. Standard autonomous recording units (ARUs) confirm Black Rail presence but cannot distinguish one calling bird from several, so they cannot produce abundance or density estimates. As a proof of concept, we will deploy a spatially coordinated grid of AudioMoth ARUs,

already owned by the project and contributed as in-kind support, at Black Rail sites in the watershed. Synchronized recordings, automated species identification (BirdNET; Kahl et al. 2021), and acoustic localization will let us distinguish and locate individual calling birds and generate call-rate-adjusted density estimates. Because management-induced vegetation change can alter calling behavior independently of true abundance, we will quantify call rates across sites so that density indices reflect bird numbers rather than differences in vocal activity. This tests whether affordable, non-invasive arrays can yield defensible density estimates for a threatened marsh bird; information presence/absence surveys cannot provide, and managers need to evaluate responses to marsh management.

Study area. Fieldwork will occur at Black Rail sites within and adjacent to the Galveston Bay watershed, including the Texas mid-Coast National Wildlife Refuge Complex (Brazoria, San Bernard, and Big Boggy NWRs) and nearby marshes where the PI has ongoing research and established land-manager relationships. USGS will perform genomic laboratory and bioinformatic work under a subaward and contribute in-kind analytical time; feather isotope analyses will be run at an established stable isotope laboratory under a service contract.

Deliverables and data access. The project will deliver population-genomic results addressing the four objectives above, a tested acoustic protocol with density estimates for Black Rails in the Galveston Bay area, a comprehensive final report, and at least one peer-reviewed publication. All genomic and acoustic data will be made available to the USFWS, Texas Parks and Wildlife Department, and other regional resource managers and the USGS will also provide a publicly-available data product. By pairing the first genomic assessment of Galveston Bay Black Rails with a scalable method for estimating their density, the project delivers science-based information essential to sustaining one of the last strongholds of this threatened species.

Project Urgency:

The Eastern Black Rail is federally and state threatened and continues to decline across its range. The Galveston Bay watershed supports one of the species' last population strongholds, yet no population-genetic baseline exists for these birds and no efficient density-estimation method is available to managers. Establishing this genomic baseline now, while a capturable population persists and while the project can leverage an existing USGS reference genome, established collaborations, and the PI's ongoing regional black rail fieldwork and equipment, maximizes scientific return and provides resource managers with information needed for timely conservation decisions.

Other Plans Implemented:

Texas Conservation Action Plan (the Eastern Black Rail is a Species of Greatest Conservation Need); U.S. Fish and Wildlife Service Eastern Black Rail listing and recovery activities under the Endangered Species Act.

Partners¹ and Their Roles:

Texas A&M University (Dr. Chris Butler, PI) — Lead implementer; project management, black rail capture, banding, blood-sample and acoustic data collection, ARU array deployment and analysis, and reporting.

USGS Western Ecological Research Center — Genomics subaward partner. Dr. Susan De La Cruz has more than 30 years of experience in avian ecology with a focus on migratory connectivity. Dr. Amy Vandergast is a research geneticist with extensive experience in rail genomics and will conduct the genomics laboratory work and bioinformatic analyses. Dr. Laurie Hall completed her doctoral research on California black rails and published the black rail reference genome (Hall et al. 2023). USGS will perform laboratory and bioinformatic work under a subaward and contribute in-kind analytical and writing time.

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

☐ Yes

☒ No

[TBD.]

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.

speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

☐ Yes

☒ No

[TBD.]

Latitude/Longitude (Optional):

Brazoria National Wildlife Refuge: 29°08'33.5"N, 95°14'06.7"W
Artist Boat Coastal Heritage Preserve: 29°13'21.6"N, 94°55'23.3"W
Virginia Point: 29°19'37.9"N, 94°54'28.7"W
Bolivar Flats Shorebird Sanctuary: 29°22'55.2"N, 94°43'58.8"W
Mundy Marsh Bird Sanctuary: 29°31'28.4"N, 94°28'51.3"W

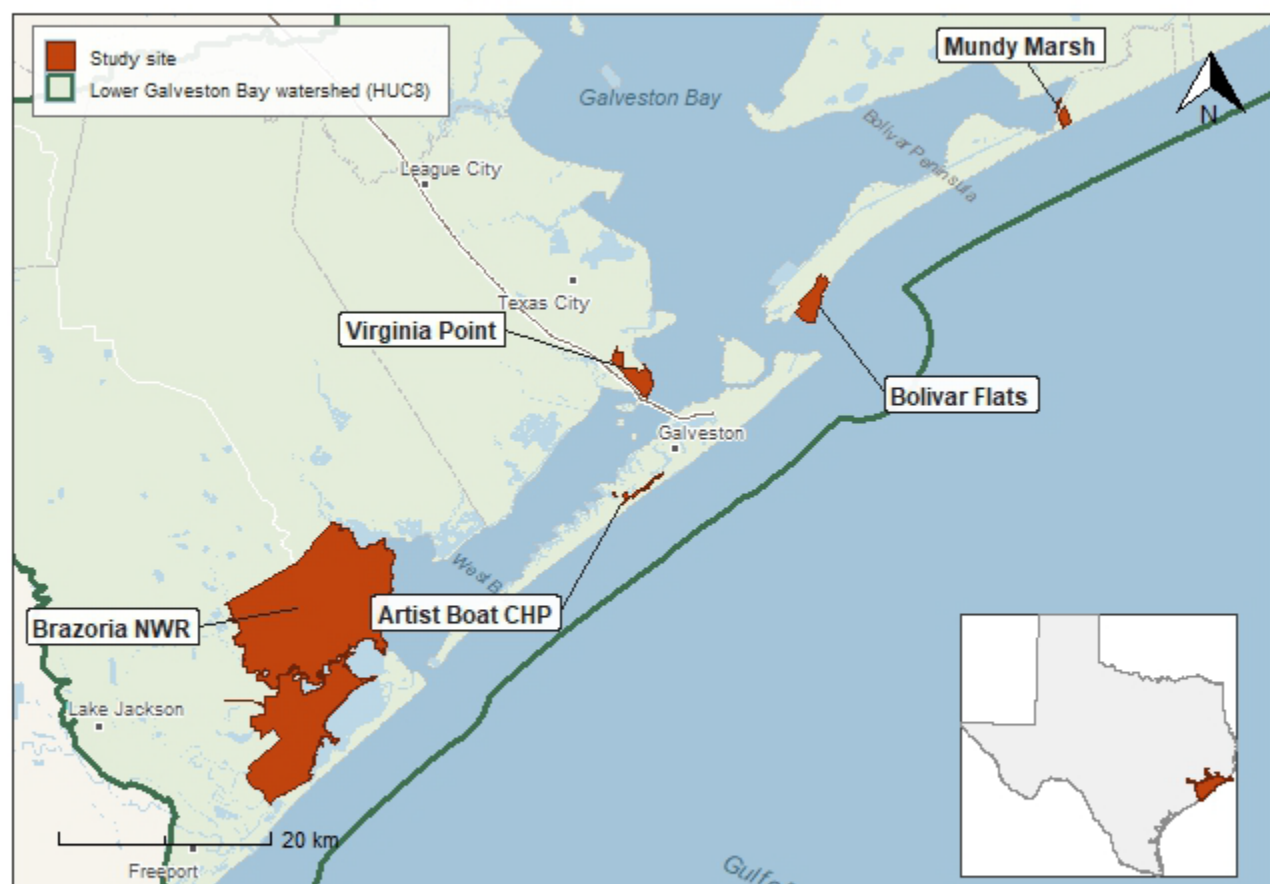
Location:

Fieldwork will be conducted at five high-marsh sites distributed around the lower bay and its barrier shorelines. Brazoria National Wildlife Refuge (U.S. Fish and Wildlife Service) lies on the western side of the lower bay system in Brazoria County. Virginia Point (Scenic Galveston, Inc.) occupies the mainland shore immediately north of the Galveston causeway, and Artist Boat Coastal Heritage Preserve (Artist Boat, Inc.) lies on the bay side of west Galveston Island. Bolivar Flats Shorebird Sanctuary and Mundy Marsh Bird Sanctuary, both managed by the Houston Audubon Society, are located on the Bolivar Peninsula on the eastern side of the bay mouth.

Together these sites encompass approximately 55,900 acres of conserved coastal marsh, prairie, and associated habitats, and span the range of high-marsh conditions in which Eastern Black Rails occur in the Galveston Bay system, from extensive refuge marsh on the western shore to smaller conserved parcels on the barrier peninsula and island. All five are managed by federal or non-governmental conservation partners with whom the PI has established working relationships, and all support or adjoin marsh habitat suitable for Eastern Black Rails.

Projects Map

Eastern Black Rail study sites, Lower Galveston Bay watershed



Watershed boundary: USGS Watershed Boundary Dataset (HUC8 12040202-12040205). Hydrography, roads, places and county boundaries: US Census Bureau TIGER/Line 2023. Protected area boundaries: USGS Protected Areas Database (PAD-US). Projection: NAD83 / Texas South Central (EPSG 32039).

Supplemental Photos/Graphics (Optional):

This Black Rail was banded at the Texas mid-Coast NWR by the PI as part of a previous project.



SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$43,771.00
Fringe Benefits (###%) ²	\$11,938.00
Travel	\$8,400.00
Supplies	\$24,827
Equipment	\$0.00
Contractual	\$73,721.00
Construction	\$0.00
Other	\$8,337.00
Total Direct Cost	\$170,994.00

b. Indirect Costs³

Distribution Base Amount (<i>identify Base type below</i>)	\$ 144,336
Indirect Cost Rate for Reimbursement	% 54
Total Indirect Costs	\$ 77,942

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$ 248,936
--	------------

Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☒ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

☒ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.

☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes

² If fringe is not a single rate, please attach calculation or explanation as an appendix.

³ Please attach Indirect Cost Agreement as an appendix if applicable

all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☐ **Other:** [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

[Description of costs associated with “Other” budget category.]

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting's time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.
- Unless otherwise communicated or implied, GBEP requires 1 (one) completed copy of your Project Proposal per corresponding Subcommittee Coordinator.
- Project Proposals must be received electronically, through the email address of the relevant Subcommittee Coordinator listed on this page, by the deadline listed on both this page and the first page of this Project Proposal document.

Submittal Process and Deadline [see 30 TAC § 14.7(8) and 30 TAC § 14.7(9)]:

Please Submit Project Proposals (Microsoft Word Only – No PDFs) by **July 24, 2026 to the relevant Subcommittee Coordinators below:**

WSQ Subcommittee: Christian.Rines@tceq.texas.gov
NRU Subcommittee: Lindsey.Lippert@tceq.texas.gov
PPE Subcommittee: Zoe.Gapayao@tceq.texas.gov
M&R Subcommittee: Jenelle.Estrada@tceq.texas.gov
Programmatic Projects: Lisa.Marshall@tceq.texas.gov



DEPARTMENT OF HEALTH & HUMAN SERVICES

Program Support Center
Financial Management Portfolio
Cost Allocation Services

1301 Young Street, Suite 1140
Dallas, TX 75202
PHONE: (214) 767-3261
FAX: (214) 767-3264
EMAIL: CAS-Dallas@psc.hhs.gov

September 2, 2022

Joseph Duron
Chief Administrative Officer
Texas A&M University – College Station
301 Tarrow, Suite 369
College Station, TX 77840-7896

Dear Mr. Duron:

A copy of an indirect cost rate agreement is being sent to you for signature. This provisional agreement reflects an understanding reached between your organization and a member of my staff concerning the rate(s) that may be used to support your claim for indirect costs on grants and contracts with the Federal Government.

Please have the agreement signed by an authorized representative of your organization and return to me by email, retaining the copy for your files. Our email address is CAS-Dallas@psc.hhs.gov. We will reproduce and distribute the agreement to the appropriate awarding organizations of the Federal Government for their use.

The Office of Management and Budget (OMB) has requested that we reach an agreement with each institution on components for the published F&A cost rates. The attached form(s) are provided for that purpose. Please sign the form(s) and return them with an agreement.

An indirect cost proposal, together with the supporting information, is required to substantiate your claim for indirect cost under grants and contracts awarded by the Federal Government. Thus, your next proposal based on actual costs for the fiscal year ending 08/31/2025 is due in our office by 02/28/2026. Please submit your next proposal electronically via email to CAS-Dallas@psc.hhs.gov. ✓

Sincerely,

Arif M. Karim - Digitally signed by Arif M. Karim -
Date: 2022.09.13 15:48:50 -05'00'

Arif Karim
Director
Division of Cost Allocation

Enclosures

PLEASE SIGN AND RETURN A COPY via email to CAS-Dallas@psc.hhs.gov

COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN: 1746000531A1

DATE:09/02/2022

ORGANIZATION:

Texas A & M University - College Station
200 Technology Way
A & M System Bldg, Suite 1281
College Station, TX 77845-3424

FILING REF.: The preceding
agreement was dated
08/07/2019

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: Facilities And Administrative Cost Rates

RATE TYPES: FIXED FINAL PROV. (PROVISIONAL) PRED. (PREDETERMINED)

EFFECTIVE PERIOD

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>RATE(%)</u>	<u>LOCATION</u>	<u>APPLICABLE TO</u>
PRED.	09/01/2022	08/31/2023	51.50	On Campus	Organized Research & Instruction
PRED.	09/01/2023	08/31/2025	52.50	On Campus	Organized Research & Instruction
PRED.	09/01/2025	08/31/2026	54.00	On Campus	Organized Research & Instruction
PRED.	09/01/2022	08/31/2026	32.00	On Campus	Other Sponsored Activities
PRED.	09/01/2022	08/31/2026	10.50	Off Campus	IPA Programs
PRED.	09/01/2022	08/31/2026	26.00	Off Campus	All Programs

ORGANIZATION: Texas A & M University - College Station

AGREEMENT DATE: 9/2/2022

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>RATE(%) LOCATION</u>	<u>APPLICABLE TO</u>
PROV.	09/01/2026	Until Amended		Use same rates and conditions as those cited for fiscal year ending August 31, 2026.

*BASE

Modified total direct costs, consisting of all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel and up to the first \$25,000 of each subaward (regardless of the period of performance of the subawards under the award). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, rental costs of off site facilities, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of \$25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

ORGANIZATION: Texas A & M University - College Station
AGREEMENT DATE: 9/2/2022

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

The fringe benefits are specifically identified to each employee and are charged individually as direct costs. The directly claimed fringe benefits are listed below.

TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

OFF-CAMPUS DEFINITION: OFF-CAMPUS DEFINITION: For all activities performed in facilities not owned by the institution and to which rent is directly allocated to the project(s) the off-campus rate will apply. Grants or contracts will not be subject to more than one F&A cost rate. If more than 50% of a project is performed off-campus, the off-campus rate will apply to the entire project.

FRINGE BENEFITS:

FICA, Retirement, Worker's Compensation, Life Insurance, Unemployment Insurance, Health Insurance, Accrued Compensated Absences

APPLICABILITY OF RATES: Texas A&M Research Foundation (EIN: 74-1238434), Texas Engineering Experiment Station (EIN: 74-1974733), Texas Engineering Extension Service (EIN: 74-2270626), Texas Agri-Life Research (FKA as Texas Agricultural Experiment Station) (EIN: 74-6000541), Texas Agri-Life Extension (FKA Texas cooperative Extension) (EIN: 74-6000537), Texas Transportation Institute, (EIN: 74-2270624), Texas A&M University at Galveston (EIN: 74-2125225), Texas A&M Health Science Center (EIN: 74-2907553), Texas Forest Service (EIN: 74-6014065), Texas A&M University System (EIN: 74-2648747), Texas Veterinary Medical Diagnostic Laboratory (EIN: 26-3850570), Shared Services Center Commercialization (EIN: 74-2648747), Texas Division of Emergency Management (TDEM), (EIN: 84-1876045).

Your next F&A proposal based on actual costs for the fiscal year ending 08/31/2025, is due in our office by 02/28/2026.

Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds \$5,000.

ORGANIZATION: Texas A & M University - College Station

AGREEMENT DATE: 9/2/2022

SECTION III: GENERAL

A. LIMITATIONS:

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted; such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Part 200 (2 CFR 200), and should be applied to grants, contracts and other agreements covered by 2 CFR 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. OTHER:

If any Federal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of facilities and administrative costs allocable to these programs.

BY THE INSTITUTION:

Texas A & M University - College Station

(INSTITUTION)


(SIGNATURE)
Joseph Duron

(NAME)
Chief Administrative Officer

(TITLE)
9-14-2022

(DATE)

ON BEHALF OF THE FEDERAL GOVERNMENT:

DEPARTMENT OF HEALTH AND HUMAN SERVICES

(AGENCY)
Arif M. Karim -S Digitally signed by Arif M. Karim -S
Date: 2022.09.13 13:48:14 -05'00'

(SIGNATURE)
Arif Karim

(NAME)
Director, Cost Allocation Services

(TITLE)
9/02/2022

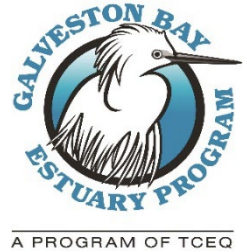
(DATE) 6554

HHS REPRESENTATIVE: Denise Shirlee

Telephone: (214) 767-3261

Texas A&M University reserves the right to further negotiate all terms and conditions of the agreement if an award is made, including but not limited to those terms and conditions that conflict with TAMU System Policy and the laws of the State of Texas applicable to TAMU as an agency of the State of Texas.

Galveston Bay Estuary Program Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

This Call for Project Proposals complies with 30 Texas Administrative Code (TAC) § 14.7, which lays out requirements for a competitive solicitation by TCEQ for grant awards. For convenience, specific citations to 30 TAC § 14.7 are identified in the text.

SECTION ONE: INTRODUCTION

Purpose [required by 30 TAC § 14.7(1)]: The purpose of the proposed grant from the Galveston Bay Estuary Program (GBEP), a program of the Texas Commission on Environmental Quality (TCEQ), is to implement *The Galveston Bay Plan, 2nd Edition* (the Plan), a comprehensive conservation and management plan falling under Section 320, of the Federal Water Pollution Control Act (33 U.S.C. Section 1330), for a designated national estuary in the State of Texas.

Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

Authority [see 30 TAC § 14.7(2)]: Grants issued by GBEP under this solicitation are authorized by: the Federal Water Pollution Control Act (Clean Water Act) § 320 (33 UNITED STATES CODE § 1330), commonly referred to as the National Estuary Program; TEX. WATER CODE § 5.124; and 30 TAC ch. 14.

Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

Task	Date Due
Release of Request for Proposals	June 22, 2026
Proposals Due	July 24, 2026
Send Proposals to Subcommittees Members for Review	August 12, 2026
Present Proposals to Subcommittees for Council Recommendation	September 2, 2026 (NRU and PPE) September 9, 2026 (M&R and WSQ)
Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Natural Resource Uses (NRU)
Secondary Subcommittee (if applicable): Monitoring and Research (M&R)
Tertiary Subcommittee (if applicable): Choose an item.

Project Name:

Mapping Green Sea Turtle Foraging Using Galveston Bay Estuary System Isoscapes

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Texas A&M University at Galveston

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

N/A

Unique Entity ID (UEI) Number:	G8Y3L8JV2588
Vendor Identification Number (VIN) or Tax ID:	74-2125225

Contact Information:

Project Representative Name	Christopher Marshall
Project Representative Phone	409-740-4884
Project Representative Email	marshalc@tamug.edu

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

09/01/2027-08/31/2029; 24 months

Amount Requested from GBEP:

[\$] 122,447

Federal ☐ State ☐ No Preference ☒

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$88,579.00
FY 2029 (09/01/2028-08/31/2029)	\$33,868.00
FY 2030 (09/01/2029-05/31/2030)	\$0.00
Total	\$122,447.00

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

\$122,447.00

Is this an estimate? ☒

Leveraging (in-kind and/or cash):

The Gulf Center for Sea Turtle Research receives donations that can be used for research. Such resources will be used to supplement the bulk and compound specific stable isotope processing and analyses to enable complete processing of all samples.

SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:

<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☐ NPS-3 ☐ NPS-4 ☐
PS-1 ☐ PS-2 ☐ PS-3 ☐
PHA-1 ☐ PHA-2 ☐ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☐ SPO-2 ☐ SPO-3 ☐ SPO-4 ☐
PEA-1 ☐ PEA-2 ☐ PEA-3 ☐

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:

The proposed research advances Galveston Bay's Priority Area Plan by directly supporting **Plan Priority 2: Protect and Sustain Living Resources** and **Plan Priority 4: Inform Science-based Decision Making**. Biogeochemical (bulk/compound-specific stable isotope analysis [SIA] and isotope isoscapes) and molecular (DNA Metabarcoding) tools will characterize new and existing hard structure habitats that green sea turtles and other marine organisms use for foraging. The use of compound-specific SIA will allow us to characterize green sea turtle movement throughout the bay. By identifying key foraging habitats, and spatial patterns of resource use, an ecological baseline can be created to guide adaptive management of native wildlife populations. These data will be synergistic with ongoing Gulf Center for Sea Turtle Research (GCSTR) and GBEP/TCEQ-funded projects and together will provide a broader, stronger evidence-based support for demographic and life-history data of species of greatest conservation need (SGCN). The proposed work will enhance ongoing conservation efforts for sea turtle populations that use all parts of the Galveston Bay Estuarine System (GBES), including a new focus on the beachfront, jetties, and other hard structures in the bay. In addition to understanding habitat use by sea turtles, the work will characterize new habitat used by many other marine species as well.

The project specifically implements FY2028 Priority Area Actions for **SC-1: Projects that sustain and restore native species populations**, **RES-1: Develop new and support existing efforts to conduct biological stressor monitoring and research**, **RES-2: Develop new and support existing efforts to conduct geochemical stressor monitoring and research**, and **RES-3: Develop new and support existing efforts to conduct physical stressor monitoring and research**. Sea turtles are keystone species and listed by the State of Texas as Species of Greatest Concern. They have significant impacts on the ecosystems they inhabit. However, despite their importance, and the increase of juvenile green sea turtle abundance in the GBES, relatively little is known about the habitats and food resources that support their growth and development. Using biogeochemical and molecular tools to understand the foraging behavior and movement of juvenile green sea turtles, and the emerging new hard benthic habitats provided by restoration work, will provide new insight into how biological (RES-1), geochemical (RES-2), and physical stressors (RES-3) impact their habitat utilization. This will be particularly true for areas of strong anthropogenic influence like jetties, dikes, and armored

shorelines and other hard structures produced through restoration efforts. As indicated in the Galveston Bay Plan, Priority Action Plans (SC-1) that conserve native species populations must also provide for, and support existing efforts, to conduct monitoring and research (RES-1, 2, and 3). This proposal fulfills that need and is a continuation of past GBEP funded work on physical stressors impacting GBES sea turtles that fulfilled those priorities.

Furthermore, this proposed research implements FY2028 Priority Area Actions for **ACS-1: Support tracking the status and trends of environmental and stressor indicators of Galveston Bay by ecosystem health** and **ACS-2: Expand the dissemination of easy-to-access Galveston Bay monitoring and research**. The use of isotopic maps, trophic data, and habitat-use information will expand monitoring capabilities and support existing research conducted by the GCSTR. These complementary biogeochemical and molecular tools have the potential to identify the past foraging history of stranded sea turtles, enabling long-term, widespread monitoring of sea turtle population behavior and the stressors they face as they grow and develop (ACS-1). Such information is critical for managers to identify sea turtle foraging "hotspots," enabling long-term monitoring efforts to protect vital resources for a growing sea turtle population at every life stage. These data will be shared with state (TPWD) and federal (USFWS, NOAA) partners that oversee management and conservation of these Species of Greatest Conservation Need. Additionally, data will be presented at the State of the Bay Symposium, national/international scientific meetings, and published in peer-reviewed journals.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☒ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☒ Adaptive management for previously completed projects; and
 - ☐ Projects that may have lost/delayed funding from other federal sources.
- ☒ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☐ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☐ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☐ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☐ PPE: Conservation and environmental workforce development.
- ☐ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☒ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☐ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☐ Legacy contaminants.

Subcommittee Priority Detail:

The proposed project directly addresses the priorities of the **Natural Resource Uses (NRU) and Monitoring & Research (M&R) Subcommittees** by generating information that supports the conservation and adaptive management of juvenile green sea turtles, a Species of Greatest Conservation Need. Using biogeochemical tools (stable isotope analyses [SIA]) that track and map carbon, nitrogen, and sulfur cycles in the GBES, paired with molecular tools (DNA metabarcoding), will identify critical foraging habitats and behaviors of sea turtles in the GBES and establish baseline stable isotope patterns throughout the bay. These baseline datasets will provide a framework for long-term monitoring of environmental change, allowing managers to understand how environmental and physical stressors like habitat restoration and coastal development influence sea turtles and other native species habitat use and food-web dynamics over time. It is likely these structures are increasing sea turtle foraging opportunities. Overall, this project contributes conservation efforts by providing vital habitat-use and life-history information in the GBES for a species of concern to the GBEP Subcommittees.

Does the Project align with any EPA Areas of Special Interest?

- ☐ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☒ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

This project directly supports the EPA's Area of Special Interest by making advancements that address coastal resiliency through improved understanding of habitat function within the Galveston Bay Estuary System (GBES). By investigating the foraging ecology and habitat use of sea turtles through biogeochemical (stable isotopes) and molecular (DNA metabarcoding) approaches, this research will identify vital new and existing foraging areas across the GBES (e.g., jetties, rocky armored shorelines, dikes, and other hard structured habitats) from restoration projects and have become valuable habitat within the estuary. These findings will provide resource managers with science-based information on how coastal infrastructure and restoration project may contribute to ecosystem function, biodiversity, and habitat connectivity in new and unpredictable ways. As coastal ecosystems continue to face increasing environmental pressures from development and climate change, understanding how native populations utilize these new formed hard, benthic habitats are becoming increasingly essential. It is likely these structures are increasing sea turtle foraging opportunities. With the datasets from this project, novel information will inform adaptive management strategies for restoration and conservation planning. Additionally, the project will provide opportunities for community engagement through volunteer participation in fieldwork and outreach, fostering stewardship, and increasing public awareness of the ecological value of resilient coastal habitats.

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

Existing and new hard, rocky habitats such as jetties, rocky armored shorelines, groins, and dikes that result from new restoration projects will be characterized as foraging habitats necessary for Galveston Bay Estuary System green sea turtles, a species of greatest conservation need, using DNA barcoding and stable isotope-based isoscapes, thereby providing spatiotemporally explicit ecological data to support habitat conservation and species management.

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

Globally, there are seven species of sea turtles, of which five reside off the coast of Texas; three are common in the GBES. All are recognized as Species of Greatest Conservation Need (SGCN; TPWD, 2023). Green sea turtles play an important ecological role by regulating macroalgal, seagrass, and invertebrate communities, enhancing nutrient cycling, and maintaining habitat quality for numerous estuarine organisms (Bjorndal, 1985; Christianen et al., 2019; Leemans et al., 2020; Scott et al., 2020). These same habitats provide nursery grounds for commercially and recreationally important fisheries, stabilize shorelines, and enhance overall ecosystem resilience (Carruthers et al., 2002).

The GBES is one of the most dynamic estuarine ecosystems in the Gulf of Mexico, comprising a mosaic of hard-bottom habitats, tidal marshes, seagrass meadows, oyster reefs, and man-made structures that juvenile green turtles increasingly use. Following an oceanic life stage where they associate with floating *Sargassum*, juvenile green turtles in Texas recruit to nearshore habitats at sizes <25cm SCL (Arthur et al.,

2008; Howell et al., 2016). Initially, they recruit to beachfront jetties, then expand into back-bay habitats, and eventually transition to seagrass-dominated foraging grounds as they mature (Witherington et al., 2012; Howell, 2012; Howell et al., 2016; Howell, 2021). Movement studies by the Gulf Center for Sea Turtle Research (GCSTR) demonstrate that rocky jetties and armored, rocky shorelines from restoration projects appear to function as critical recruitment habitats for juvenile green turtles (unpublished data). It is likely these structures are increasing sea turtle foraging opportunities that support a growing population. This is one example of how coastal development in the GBES has directly impacted native populations, creating new habitats that support their survival. However, foraging habitats of juvenile green sea turtles are still not well known, and these new hard, rocky habitat that supports thriving macroalgal communities are particularly understudied to date. Characterizing the biodiversity and distribution of new and existing hard, benthic habitats will fill in data gaps and add to our understanding of the role that habitats impact the ontogeny, trophic ecology, and movement of sea turtles, as well as other species. Creating an isoscape for the GBES that includes these new habitats is essential for future adaptive management of this recovering species. We hypothesize that this work will uncover another ontogenetic shift in diet as the GBES supports the growth of juvenile green sea turtles.

A novel component of this project is the application of amino acid compound-specific stable isotope analysis (AA-CSIA) to characterize macroalgal communities throughout the GBES. Traditional bulk stable isotope analyses cannot distinguish whether variation in sea turtle isotope values reflects differences in diet or differences in the isotopic composition of primary producers. Due to the combined effects of variable nutrient sources, freshwater inflow, and hydrodynamic conditions throughout the GBES, macroalgal isotope values differ substantially among locations (Finlay et al., 1999; Besser et al., 2022). AA-CSIA overcomes this limitation by separating baseline isotopic variation from trophic enrichment, allowing individual foraging habitats to be distinguished with substantially greater precision. This will represent one of the first applications of AA-CSIA to investigate the foraging ecology of sea turtles. The resulting habitat-specific isotope signatures will establish chemical baselines that can be incorporated into future monitoring programs and restoration assessments.

Building on this macroalgal work, this project will create the first sea turtle focused stable isotope isoscape that describe spatial variation in carbon, nitrogen, and sulfur cycles throughout the GBES. These spatially explicit maps will provide a biogeochemical framework for assigning sea turtle foraging locations. The use of compound specific SIA will provide movement data among shoreline jetties, to back-bay hard, rocky habitats, to seagrass meadows (which commonly also have macroalgae), and other coastal environments. By combining isoscapes with Bayesian MixSIAR models, we will identify habitat "hotspots" that disproportionately contribute to juvenile turtle growth and development, and therefore can be impacted by coastal development, while simultaneously evaluating how environmental variability influences habitat use across the estuary.

Although SIA provides powerful time-integrated information on assimilated diet, it cannot identify prey to fine taxonomic resolution. To overcome this limitation, gastrointestinal contents collected from opportunistic GCSTR sea turtle necropsies will be analyzed using DNA metabarcoding (Sarkis et al., 2022). Preliminary analyses show we can identify consumed prey with greater precision than standard visual gut content analyses. This will allow for the identification of easily digested soft-bodied species (e.g., gelatinous zooplankton-jellyfish) via the analysis of DNA remnants. Samples collected from hard, rocky habitats will also use DNA metabarcoding to characterize their biodiversity. Last, DNA metabarcoding will be used to complement isotope analyses by validating dietary estimates, refining source groups incorporated into MixSIAR models and can identify previously undocumented prey resources. Tissues collected during necropsies provide the sea turtle component of the SIA analyses, increasing the number of isotopic samples, and improve estimates of tissue-specific trophic discrimination factors, which are critical for isotope modeling (Vander Zanden et al., 2014; Vanderklift et al., 2020). The GCSTR responds to 250+ stranded sea turtles a year and is well positioned to collect samples from necropsies to support this work.

This project will provide the first estuary-wide characterization of sea turtle foraging ecology that integrates bulk SIA, ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{34}\text{S}$), AA-CSIA of macroalgae, and DNA metabarcoding of sea turtle stomach contents and from samples of hard, rocky habitats. These tools will also be used to characterize new and existing rocky habitats, which have been largely ignored, and will enable spatial modeling of habitats. The resulting habitat maps, isotope baselines, and dietary data will provide resource managers with science-based information needed to identify critical foraging habitats, evaluate habitat restoration, prioritize conservation investments, and monitor ecosystem responses to future environmental change. These products will then complement ongoing GBEP- and GCSTR-supported monitoring efforts while establishing a long-term ecological baseline that can be incorporated into adaptive management throughout the GBES.

Project Urgency:

This project is urgent since juvenile turtle populations are impacted by rapid environmental changes driven by coastal development, restoration activities, shifting freshwater inflows, and climate-related disturbances. Establishing ecological baselines during this period of population recovery is critical for evaluating how these changes affect habitat quality and the resources that support Species of Greatest Conservation Need (SGCN). By integrating bulk ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{34}\text{S}$), AA-CSIA, and DNA metabarcoding, this project will develop the first habitat-specific isotopic baselines and estuary-wide isoscapes for Galveston Bay sea turtles. These spatially explicit datasets will identify productive foraging hotspots like seagrass meadows, jetty communities and marsh habitats as well as benthic and pelagic food webs that help sustain other species of greatest concern such as the opossum pipefish (*Microphis brachyurus lineatus*), Texas diamondback terrapin (*Malaclemys terrapin littoralis*), and saltmarsh topminnow (*Fundulus jenkinsi*). Collecting this baseline data will provide TPWD, GBEP, and other resource managers with a long-term monitoring framework to inform future conservation actions.

Other Plans Implemented:

Texas Coastal Study (USFWS), Texas Conservation Plan (TPWD), Texas Coastal Management Plan (TXGLO), Texas Wetland Conservation Plan (via seagrasses and benthic habitat).

Partners¹ and Their Roles:

The Gulf Center for Sea Turtle Research is the federal and state permitted lead for sea turtle rescue, recovery, rehabilitation, and research on the upper Texas coast. The GCSTR responds to all sea turtle strandings, live or deceased, from the TX-LA border through Surfside, TX and points south. The GCSTR also is conducting a long-term movement study using satellite and acoustic tags to monitor sea turtle movement throughout the GBES. The stranding information, movement data, and prior bulk SIA data will be utilized to complement the proposed research in this project.

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

☐ Yes

☒ No

NA

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

☐ Yes

☒ No

NA

Latitude/Longitude (Optional):

Multiple sampling locations. See map below.

Location:

Research will be conducted throughout the Galveston Bay Estuary System (GBES), including West Bay, Christmas Bay, Galveston Bay, and East Bay, spanning Galveston, Brazoria, and Chambers Counties. Sampling will occur at established Sea Turtle Acoustic Receiver Stations (STARS) established by the GCSTR in 2020, TPWD monitoring areas, and jetty locations.

Projects Map

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.



Supplemental Photos/Graphics (Optional):
[\[Insert Here or Attach as an Appendix\]](#)

SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$46,447
Fringe Benefits (18%) ²	\$8,368
Travel	\$3,536
Supplies	\$4,660
Equipment	\$0.00
Contractual	\$5,300
Construction	\$0.00

² If fringe is not a single rate, please attach calculation or explanation as an appendix.

Budget Category	Cost for Work to be Performed
Other	\$16,438
Total Direct Cost	\$84,749

b. Indirect Costs³

Distribution Base Amount (<i>identify Base type below</i>)	\$ 69,811
Indirect Cost Rate for Reimbursement	54%
Total Indirect Costs	\$ 37,698

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$ 122,447
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Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☒ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

☐ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.

☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☒ **Other:** Provisional as of 9/1/26 [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

- Research Vessel Rental and Fuel: The Texas A&M University research vessel cost is \$250/day. We estimate a total of 12 boat days for a total cost of \$3,000 to collect the samples over the life of the project (\$1,500 in FY ‘28).
- Graduate Research Assistant Tuition and Fees: Tuition and fees are budgeted in accordance with TAMU policies and practices as support for GRA participation in research projects. Funds are calculated at the currently established rate for Texas A&M University at Galveston and are proportionate to proposed/committed effort for the student. An estimated 5% escalation is included in year 2.

³ Please attach Indirect Cost Agreement as an appendix if applicable

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting's time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

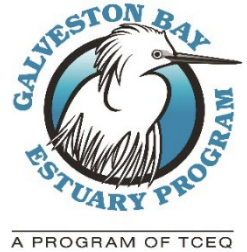
- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.
- Unless otherwise communicated or implied, GBEP requires 1 (one) completed copy of your Project Proposal per corresponding Subcommittee Coordinator.
- Project Proposals must be received electronically, through the email address of the relevant Subcommittee Coordinator listed on this page, by the deadline listed on both this page and the first page of this Project Proposal document.

Submittal Process and Deadline [see 30 TAC § 14.7(8) and 30 TAC § 14.7(9)]:

Please Submit Project Proposals (Microsoft Word Only – No PDFs) by July 24, 2026 to the relevant Subcommittee Coordinators below:

WSQ Subcommittee: Christian.Rines@tceq.texas.gov
NRU Subcommittee: Lindsey.Lippert@tceq.texas.gov
PPE Subcommittee: Zoe.Gapayao@tceq.texas.gov

Galveston Bay Estuary Program Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

This Call for Project Proposals complies with 30 Texas Administrative Code (TAC) § 14.7, which lays out requirements for a competitive solicitation by TCEQ for grant awards. For convenience, specific citations to 30 TAC § 14.7 are identified in the text.

SECTION ONE: INTRODUCTION

Purpose [required by 30 TAC § 14.7(1)]: The purpose of the proposed grant from the Galveston Bay Estuary Program (GBEP), a program of the Texas Commission on Environmental Quality (TCEQ), is to implement *The Galveston Bay Plan, 2nd Edition* (the Plan), a comprehensive conservation and management plan falling under Section 320, of the Federal Water Pollution Control Act (33 U.S.C. Section 1330), for a designated national estuary in the State of Texas.

Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

Authority [see 30 TAC § 14.7(2)]: Grants issued by GBEP under this solicitation are authorized by: the Federal Water Pollution Control Act (Clean Water Act) § 320 (33 UNITED STATES CODE § 1330), commonly referred to as the National Estuary Program; TEX. WATER CODE § 5.124; and 30 TAC ch. 14.

Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

Task	Date Due
Release of Request for Proposals	June 22, 2026
Proposals Due	July 24, 2026
Send Proposals to Subcommittees Members for Review	August 12, 2026
Present Proposals to Subcommittees for Council Recommendation	September 2, 2026 (NRU and PPE) September 9, 2026 (M&R and WSQ)
Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Monitoring and Research (M&R)
Secondary Subcommittee (if applicable): Natural Resource Uses (NRU)
Tertiary Subcommittee (if applicable): Public Participation and Education (PPE)

Project Name:

Building a Baseline for Sandy Beach Ecosystem Health: Monitoring the Ecological Effects of Beach Nourishment and Contaminant Exposure in Galveston Bay
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Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Texas A&M University at Galveston

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

[If other, please identify pass-through partner.]

Unique Entity ID (UEI) Number:	G8Y3L8JV2588
Vendor Identification Number (VIN) or Tax ID:	74-6000541

Contact Information:

Project Representative Name	Guilherme N. Corte
Project Representative Phone	409 261-7903
Project Representative Email	corte@tamug.edu

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

September 1, 2027 – May 31, 2030

Amount Requested from GBEP:

\$145,229

Federal ☐ State ☐ No Preference ☒

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$60,753
FY 2029 (09/01/2028-08/31/2029)	\$61,946
FY 2030 (09/01/2029-05/31/2030)	\$22,530
Total	\$145,229

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

\$145,229

Is this an estimate? ☐

Leveraging (in-kind and/or cash):

The proposed project will leverage complementary resources supporting field sampling, laboratory analyses, and ecological assessments of Texas sandy beaches. These resources, together with existing laboratory infrastructure, personnel, and ongoing biodiversity and beach nourishment monitoring, will expand the scope and value of the GBEP-funded activities by supporting contaminant analyses, eDNA characterization, and long-term ecological monitoring across the Galveston Bay Estuary System.
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SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:

<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☒ NPS-3 ☐ NPS-4 ☐
PS-1 ☐ PS-2 ☐ PS-3 ☐
PHA-1 ☐ PHA-2 ☒ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☒ SPO-2 ☒ SPO-3 ☒ SPO-4 ☒
PEA-1 ☒ PEA-2 ☐ PEA-3 ☐

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:

[Please identify action items and state how the project implements actions of the *Galveston Bay Plan, 2nd Edition* Action Plans.]

Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-2 Support Nonpoint Source Education and Outreach Campaigns:

The project will support locally relevant education and outreach connecting beach health, bay health, and human well-being. By documenting biodiversity across 11 sandy beaches along the Galveston coast and contaminant exposure in representative beach organisms, the project will provide locally relevant examples for public education on stormwater runoff, water quality, pollution, shoreline management, and the ecological importance of beaches beyond recreation. The project will quantify 54 polycyclic aromatic compounds (PAHs), including the 16 U.S. Environmental Protection Agency priority compounds, and 26 polychlorinated biphenyls (PCBs), including nine dioxin-like congeners, in sandy beach species such as ghost crabs and ghost shrimps. These organisms occupy different portions of the beach ecosystem, with ghost crabs representing terrestrial and supralittoral habitats and ghost shrimps representing intertidal and shallow marine habitats. This whole-ecosystem approach will help communicate how biodiversity, contaminant exposure, and processes occurring on land, along sandy shorelines, and in adjacent coastal waters are interconnected within the broader Galveston Bay Estuarine System, highlighting sandy beaches as an important ecological link among terrestrial, estuarine, and marine environments.

PHA-2 Improve Regional Contact Recreation Risk Awareness:

Sandy beaches are among the most heavily used recreational environments in the Galveston region. This project will provide information on biodiversity, habitat condition, and contaminant exposure in beach organisms across 11 beaches monitored from 2025 through 2028. The resulting dataset will complement existing programs such as Texas Beach Watch and the Galveston Bay Foundation's Water Monitoring Team by documenting ecological conditions, biological communities, and contaminant exposure in beach fauna

that are not routinely monitored. By examining contaminants in organisms occupying different ecological zones, including terrestrial ghost crabs and marine ghost shrimps, the project will improve understanding of how contaminants are incorporated into beach food webs and identify locations or biological groups with elevated exposure. Although the project will not conduct a formal human-health risk assessment, these findings will contribute to broader awareness of ecosystem health and environmental conditions at heavily used recreational beaches.

Priority 2: Protect and Sustain Living Resources

HC-2 Habitat Restoration:

Sandy beaches within the Galveston Bay Estuarine System face increasing pressure from chronic erosion, storms, sea-level rise, human use, and coastal development. Beach nourishment is widely used to restore eroded shorelines and protect coastal infrastructure, but its ecological outcomes are rarely evaluated. A 2026 nourishment project on Galveston's West Beach was completed through CAP 204. Our team conducted baseline ecological monitoring before nourishment and has continued post-construction monitoring at the nourished site and two adjacent control areas, documenting short-term changes in benthic communities and preliminary evidence of recovery within months. Two additional nourishment projects planned for 2027-2028 provide a rare opportunity to extend this framework across multiple events and improve understanding of ecological responses and recovery trajectories. Surveys will encompass organisms occupying different ecological zones, from terrestrial and supralittoral ghost crabs to intertidal and shallow marine ghost shrimps and other beach-associated fauna. Together, regional biodiversity monitoring across 11 beaches and focused before-and-after assessments of nourishment projects will provide management-relevant information to improve the ecological design, implementation, and monitoring of future beach nourishment projects.

HC-3 Habitat Enhancement:

The project will evaluate habitat quality and native biodiversity across the terrestrial-to-marine beach gradient at 11 Galveston-area beaches. Monitoring species occupying contrasting zones will provide an integrated assessment of ecological condition across terrestrial, intertidal, and shallow marine habitats. At one recently nourished beach (West Beach), existing pre-nourishment biodiversity data will allow targeted evaluation of ecological change and recovery following nourishment. Results will help identify management practices that support native invertebrates, preserve food resources for shorebirds and surf-zone fishes, and sustain the ecological functions of beaches. These findings will inform shoreline-management strategies that balance habitat quality, coastal protection, and public access.

SC-1 Native Species Management:

Sandy beaches support diverse native species, including ghost crabs, ghost shrimps, amphipods, mole crabs, insects, shorebirds, surf-zone fishes, and many other organisms that are often overlooked in coastal monitoring and management. Through repeated surveys across 11 Galveston-area beaches from 2025 through 2028, the project will establish regional and long-term monitoring data for native sandy beach communities. The inclusion of organisms occupying different ecological zones, from dunes to submerged zones, will allow biodiversity to be evaluated across the entire beach ecosystem rather than within a single habitat zone. At one recently nourished beach, pre-nourishment data will provide an additional opportunity to identify species and ecological groups that are sensitive to disturbance and to track recovery through time. These data will support future management decisions intended to sustain native beach biodiversity.

Priority 3: Engage Communities

SPO-1 Stewardship Programs and Volunteer Opportunities:

Because sandy beaches are familiar and publicly accessible, they provide effective settings for environmental stewardship and community participation. The project will create opportunities for students, volunteers, and community members to participate in beach surveys, biodiversity monitoring, field demonstrations, and public outreach. Participants will learn that sandy beaches extend ecologically from terrestrial and supralittoral habitats to intertidal and shallow marine environments and will observe representative organisms such as ghost crabs and ghost shrimps. The research program already engages local stakeholders through activities with organizations such as the Surfrider Foundation, where participants learn about sandy beach ecology and observe local biodiversity and ecological processes.

Findings from the 11-beach monitoring network will be incorporated into future community-science activities, volunteer monitoring, student training, and public demonstrations.

SPO-2 Workshops and Events:

Results from regional biodiversity monitoring and the targeted post-nourishment assessment will be shared through public events, workshops, agency meetings, and opportunities such as the State of the Bay Symposium. These activities will present sandy beaches as living ecosystems extending from terrestrial habitats to the adjacent marine environment and providing habitat, coastal protection, recreation, tourism value, and support for coastal food webs. Project findings will be used to engage coastal managers, educators, students, local governments, community organizations, and the public.

SPO-3 Support Regional Initiatives:

The project will address a major regional knowledge gap by documenting the ecological condition and management needs of sandy beach ecosystems along the Galveston coast and their role within the broader Galveston Bay Estuarine System. By integrating biodiversity information across 11 beaches and across terrestrial, intertidal, and shallow marine portions of the beach ecosystem, together with contaminant analyses in representative beach species such as ghost crabs and ghost shrimps, the project will strengthen regional conservation and resilience initiatives. These analyses will provide information on contaminant exposure in organisms occupying different ecological zones and help connect pollution with biological and ecosystem condition. The targeted before-and-after assessment at one recently nourished beach will add management-relevant information on ecological recovery following shoreline intervention. Together, these components will promote recognition of beaches, dunes, shorelines, and nearshore habitats as biologically connected components of the broader Galveston Bay coastal system.

SPO-4 Local Government Outreach:

Local governments play central roles in beach access, nourishment planning, erosion response, tourism management, and shoreline maintenance. Over the past two years, the research team has worked with the Galveston Park Board to better understand management priorities and identify information needed to support decision-making. Building on this relationship, the project will generate practical information from 11 beaches on biodiversity, ecological condition, and the responses of species occupying different beach zones, complemented by contaminant analyses in representative organisms such as ghost crabs and ghost shrimps. These analyses will provide information on contaminant exposure across terrestrial and marine components of the beach ecosystem. In addition, the recently nourished beach with existing pre-nourishment biodiversity data will provide a focused case study of ecological change and recovery following shoreline management. Results will be communicated through technical summaries, maps, presentations, and outreach materials developed for municipalities, county partners, park managers, and other coastal decision-makers.

PEA-1 Key Issue Engagement:

The project will promote public engagement with major issues affecting Galveston Bay and its coast, including erosion, beach nourishment, biodiversity loss, recreational use, and coastal resilience. By presenting sandy beaches as biologically active ecosystems extending from terrestrial habitats to the shallow marine environment, rather than only as recreational spaces, the project will encourage broader discussion of how human activities affect beach biodiversity and ecological function and how communities can contribute to protecting these habitats. Regional biodiversity findings and the focused evaluation of one recently nourished beach will provide direct local examples of ecological change and recovery.

Priority 4: Inform Science-Based Decision Making

RES-1 Conduct Biological Stressor Monitoring and Research:

The project will monitor biological responses of sandy beach communities to environmental and anthropogenic stressors, including erosion, human use, urbanization, storms, pollution, and other forms of habitat disturbance. Repeated biodiversity surveys across 11 Galveston-area beaches from 2025 through 2028 will provide a regional assessment of ecological condition and temporal variability. The project will explicitly examine organisms occupying different ecological zones, including terrestrial and supralittoral ghost crabs and intertidal to shallow marine ghost shrimps, together with broader beach-associated communities. Contaminant analyses in representative beach organisms, including ghost crabs and ghost shrimps, will complement biodiversity monitoring by providing information on biological exposure to PAHs and PCBs across different portions of the beach ecosystem. Within this regional network, our team has

already collected biodiversity samples before and after nourishment at a recently nourished Galveston beach, as well as at two adjacent control areas, providing a strong foundation for evaluating ecological change and post-nourishment recovery. Integrating biodiversity, organism-based contaminant exposure, and responses to disturbance will help identify biological indicators of ecosystem condition, stress, and recovery across the terrestrial-marine beach continuum.

RES-8 Complete Coastal Resiliency and Acclimation Studies:

The project will evaluate how sandy beach ecosystems respond to erosion, storms, human use, pollution, and other coastal stressors through repeated biodiversity monitoring across 11 Galveston-area beaches. Because nourishment is an important adaptation strategy for shoreline erosion, storm impacts, and sea-level rise, our team has already collected biodiversity samples before and after nourishment at a recently nourished Galveston beach and at two adjacent control areas, providing a strong foundation for evaluating ecological change and recovery following nourishment. Two additional nourishment projects planned for 2027–2028 provide an opportunity to extend this monitoring framework and improve understanding of ecological responses and recovery trajectories across multiple nourishment events. Biodiversity monitoring will be complemented by contaminant analyses in representative organisms such as ghost crabs and ghost shrimps, providing information on biological exposure across terrestrial and marine portions of the beach ecosystem. Together, these approaches will improve understanding of the multiple stressors affecting sandy beach ecosystems and support management practices that enhance the long-term ecological resilience of Galveston-area beaches.

ACS-1 Tracking Ecosystem Health Indicators:

Sandy beach ecosystems are underrepresented in existing coastal monitoring frameworks. This project will generate information that can support the development and tracking of biological indicators of sandy beach health, including species richness, abundance, community composition, eDNA-based biodiversity, occurrence and abundance of key indicator taxa, contaminant exposure in representative beach organisms, and temporal change. Repeated surveys across 11 beaches will provide regional context for interpreting these indicators. At a recently nourished Galveston beach, biodiversity samples have already been collected before and after nourishment, together with samples from two adjacent control areas, allowing ecological responses and recovery to be evaluated through time. Monitoring organisms from different ecological zones—including terrestrial ghost crabs and marine ghost shrimps—and measuring PAHs and PCBs in these organisms will provide complementary information on biodiversity, biological exposure, and ecosystem condition across the beach-nearshore continuum. These indicators can contribute to future assessments of the Galveston Bay Estuarine System and its adjacent coastal habitats.

ACS-2 Access to Monitoring and Research Data:

The project will produce biodiversity and organism-based contaminant datasets, maps, technical reports, outreach materials, and scientific publications for GBEP partners, local governments, coastal managers, educators, community organizations, and the public. Results from repeated field biodiversity surveys across 11 beaches, eDNA analyses, contaminant analyses in representative beach organisms, and before-and-after nourishment samples already collected at a recently nourished beach and two adjacent control areas will be translated into accessible products that support science-based decision-making, long-term biological monitoring, and public understanding of sandy beach ecosystems. By integrating biodiversity and contaminant exposure across organisms occupying terrestrial, intertidal, and shallow marine zones, the resulting datasets will provide a more comprehensive representation of beach ecosystem health and its connection to the broader Galveston Bay Estuarine System.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☒ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☒ Adaptive management for previously completed projects; and
 - ☐ Projects that may have lost/delayed funding from other federal sources.
- ☐ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☐ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☐ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☐ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☒ PPE: Conservation and environmental workforce development.
- ☐ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☒ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☐ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☒ Legacy contaminants.

Subcommittee Priority Detail:

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

M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information

This project directly addresses the M&R priority by establishing integrated ecological, physical, molecular, and organism-based contaminant baselines for sandy beaches along the Galveston coast. Building on standardized surveys conducted across 11 Galveston-area beaches in 2025 and 2026, the project provides the spatial coverage needed to compare biodiversity and ecosystem condition across gradients of human use, shoreline modification, and management history. Biodiversity sampling spans the entire beach ecosystem, from dunes and terrestrial habitats through the intertidal zone to shallow submerged habitats, and integrates community surveys, population-level assessments of key species, and molecular analyses using environmental DNA (eDNA). Representative beach organisms, including species occupying terrestrial and marine portions of the beach ecosystem, have also been collected for contaminant analyses. Together, these complementary approaches provide a comprehensive characterization of beach biodiversity and ecological condition and establish reference conditions for evaluating future effects of storms, hurricanes, oil spills, harmful algal blooms, nonpoint-source pollution, and other natural and human-driven disturbances within the broader Galveston Bay Estuarine System.

The project also incorporates a strong temporal framework through before-impact, post-impact, and recovery assessments of beach nourishment, one of the most extensive shoreline-management interventions along the Galveston coast. Although nourishment projects are routinely evaluated from an engineering perspective, their ecological effects on biodiversity, habitat condition, contaminant exposure, and ecosystem recovery are rarely assessed. Our team has already collected biological samples before and after a recently completed nourishment project at the nourished beach and two adjacent reference sites, providing a strong foundation for evaluating whether biological communities and populations return toward pre-disturbance conditions, remain altered, or follow different recovery trajectories. Organisms collected for contaminant analyses will also allow biological exposure to be evaluated within this temporal framework. Two additional nourishment projects planned for 2027–2028 provide an opportunity to extend this approach across multiple events and management contexts. Together, these spatial and temporal datasets will help managers identify vulnerable beaches and species, detect environmental change, evaluate ecological responses to nourishment and other disturbances, and improve habitat restoration, spill-response planning, and long-term coastal resilience.

M&R: Assessment, exposure, and response to stressors, including environmental parameters and legacy contaminants

This project will evaluate how sandy beach ecosystems respond to interacting physical, chemical, and biological stressors, including beach nourishment, erosion, human use, urbanization, freshwater and stormwater inputs, nutrient enrichment, oil-derived hydrocarbons, and other contaminants of concern. Biological responses will be evaluated across the full dune-to-submerged gradient using complementary community, population, and molecular approaches. Field surveys will characterize beach-associated communities and populations of key species, while eDNA analyses will provide a complementary molecular assessment of biodiversity, including organisms that may be missed by conventional sampling.

The project will quantify 54 polycyclic aromatic compounds (PAHs), including the 16 U.S. Environmental Protection Agency priority compounds, and 26 polychlorinated biphenyls (PCBs), including nine dioxin-like congeners, in representative sandy beach organisms. Organisms for these analyses have already been collected as part of the ongoing biodiversity monitoring. Exposure assessments will focus on key species occupying different ecological zones, particularly ghost crabs in terrestrial and supralittoral habitats and ghost shrimps in intertidal and shallow marine habitats. This design will provide complementary measures of biological exposure across the terrestrial-marine beach continuum. By integrating contaminant concentrations in organisms with community biodiversity, population-level responses, eDNA-based community composition, and environmental conditions, the project will identify areas and taxa with elevated exposure and evaluate how multiple stressors relate to beach ecosystem condition. This integrated approach will provide practical information for contaminant monitoring, ecological assessment, habitat conservation, and sustainable beach management throughout the Galveston Bay Estuarine System.

NRU: Enhancement of existing or ongoing restoration and conservation efforts, with emphasis on adaptive management for previously completed projects

This project directly addresses the NRU priority by strengthening beach nourishment, one of the most widespread shoreline restoration and conservation practices along the Galveston coast, through ecological

monitoring that supports adaptive management. With erosion reaching approximately 6.86 feet per year along portions of Galveston Island, nourishment has become a central coastal-management strategy. However, nourishment projects are generally evaluated primarily from an engineering perspective, and their effects on biodiversity, habitat condition, contaminant exposure, and ecosystem recovery remain poorly understood. This lack of ecological performance data limits the ability of managers to refine nourishment design, implementation, and biological monitoring. By addressing this gap, the project will enhance an ongoing restoration strategy rather than duplicate existing efforts.

The project specifically applies adaptive management to a previously completed nourishment project. A major nourishment project on West Beach was completed through CAP 204 using hundreds of thousands of cubic yards of sediment from the Galveston Ship Channel. Immediately before construction in September 2025, the research team collected biological samples and environmental data at the nourishment site and two adjacent reference sites. Biodiversity sampling extended from dune and terrestrial habitats through the intertidal zone to submerged habitats and incorporated community surveys, population-level assessments of representative species, and molecular biodiversity analyses using eDNA. Representative beach organisms, including species occupying terrestrial and marine portions of the beach ecosystem, were also collected for contaminant analyses to evaluate biological exposure to PAHs and PCBs. Sampling was repeated following construction and again approximately six months later. This before-impact, post-impact, and recovery framework provides a rare opportunity to evaluate responses across multiple components of the beach ecosystem and determine whether biological communities, populations, and contaminant exposure return toward pre-construction conditions, remain altered, or follow different recovery trajectories.

Two additional nourishment projects planned for 2027 and 2028, including projects involving the beneficial use of dredged material, will provide opportunities to extend this integrated ecological monitoring framework across additional nourishment events and management contexts. Together, these assessments will provide managers with recommendations for improving nourishment design, refining biological and contaminant monitoring protocols, and ensuring that nourishment supports both shoreline protection and ecological function.

PPE: Conservation and environmental workforce development

This project addresses the PPE priority by using sandy beach ecosystems as accessible, hands-on training environments for students, early-career scientists, educators, volunteers, and community participants. Trainees will gain practical experience in biodiversity sampling across the dune-to-submerged beach gradient, population surveys of key beach species, organism collection, eDNA and other molecular approaches, collection and preparation of organisms for contaminant analyses, data management, ecological analysis, and science communication. This integrated training will expose participants to complementary methods spanning individual populations, biological communities, molecular biodiversity, and contaminant exposure. Because sandy beaches are familiar and publicly accessible, they provide an effective setting for developing technical skills while helping participants recognize beaches as biologically active ecosystems connecting terrestrial, estuarine, and marine environments.

The project will prepare participants for careers in conservation, coastal management, environmental consulting, academic research, nonprofit organizations, and local government by providing training in methods directly relevant to the Galveston Bay Estuarine System. These methods include biodiversity and population monitoring, molecular biodiversity assessment using eDNA, assessment of ecological responses to beach nourishment, evaluation of contaminant exposure in coastal organisms, mapping ecological patterns, managing environmental data, and communicating findings to managers and the public. Project activities and outreach products will also support K-12 education, community science, public workshops, and stewardship programs, thereby strengthening both technical workforce capacity and broader environmental literacy.

Does the Project align with any EPA Areas of Special Interest?

- ☐ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☒ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

[If yes, please summarize how the proposal addresses EPA Areas of Special Interest.]

The proposed project addresses coastal resiliency by improving how sandy beach ecosystems are monitored, restored, and managed in response to erosion, storms, sea-level rise, shoreline modification, pollution, and other human-driven stressors. Sandy beaches provide shoreline protection for coastal

communities while supporting tourism, recreation, biodiversity, fisheries, and wildlife habitat. Building on biodiversity monitoring across 11 Galveston-area beaches, the project will assess ecological condition from dune and terrestrial habitats through the intertidal zone to shallow submerged habitats using complementary community surveys, population-level assessments of key species, and molecular biodiversity analyses using environmental DNA (eDNA). This integrated approach will provide a more complete understanding of the ecological condition and resilience of sandy beaches within the broader Galveston Bay Estuarine System.

The project will also evaluate ecological responses to beach nourishment, an increasingly important strategy for addressing shoreline erosion, storm impacts, and sea-level rise. Our team has already collected biological samples before and after a recently completed Galveston nourishment project at the nourished beach and two adjacent reference sites, providing a foundation for assessing ecological change and recovery. Two additional nourishment projects planned for 2027–2028 provide opportunities to extend this monitoring framework across additional restoration events and management contexts. These assessments will generate practical information for designing and managing nourishment projects that protect shorelines while maintaining biodiversity and ecological function.

The project will further strengthen coastal resiliency by establishing organism-based contaminant baselines that can support evaluation of future pollution events and other disturbances. The project will quantify 54 polycyclic aromatic compounds, including the 16 U.S. Environmental Protection Agency priority compounds, and 26 polychlorinated biphenyls, including nine dioxin-like congeners, in representative beach organisms such as ghost crabs and ghost shrimps. These species occupy different portions of the beach ecosystem, with ghost crabs representing terrestrial and supralittoral habitats and ghost shrimps representing intertidal and shallow marine habitats. These analyses will characterize biological exposure to contaminants and help identify locations or taxa with elevated exposure that may be particularly vulnerable to environmental disturbance.

By integrating regional biodiversity monitoring, population and eDNA-based assessments, organism-based contaminant analyses, environmental measurements, and before-and-after assessments of nourishment, the project will provide coastal managers with science-based information to identify vulnerable beaches and species, evaluate restoration effectiveness, improve future nourishment practices, detect ecological change, and prioritize investments that support shoreline protection, ecosystem health, and long-term resilience throughout the Galveston Bay Estuarine System.

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

Building on ongoing monitoring across 11 Galveston-area beaches, this project will integrate biodiversity assessments from dune to submerged habitats, population-level surveys, environmental DNA (eDNA), contaminant analyses in representative beach organisms, and before-and-after beach nourishment monitoring to evaluate the condition and resilience of sandy beach ecosystems within the Galveston Bay Estuarine System. The project will identify vulnerable beaches and species, characterize contaminant exposure, evaluate ecological responses and recovery following nourishment, and identify environmental drivers of ecosystem condition. Results will provide actionable information to support coastal resilience planning, habitat management, spill-response preparedness, and the science-based design, monitoring, and evaluation of shoreline restoration practices.

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

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

No coastal ecosystem is more present in daily life than sandy beaches. They comprise approximately one-third of the world's shorelines and support fisheries and tourism, buffer communities from storms and sea-level rise, provide habitat for wildlife, and sustain coastal food webs (Defeo and McLachlan 2025). Their socioeconomic importance is substantial: U.S. beaches attract nearly 200 million visitors annually and generate approximately \$240 billion in local economic activity (Houston 2024). In Galveston alone, more than 7 million annual visitors support a tourism economy exceeding \$1.3 billion (Visit Galveston). Yet Galveston's sandy beaches are exposed to interacting stressors, including erosion, urbanization, stormwater runoff, recreational use, nutrient inputs, oil-derived hydrocarbons, and other contaminants.

Despite their ecological and economic importance, sandy beaches remain underrepresented in coastal monitoring. Within the Galveston Bay Estuarine System, no integrated effort currently evaluates their biodiversity, contaminant exposure in resident organisms, and responses to major shoreline interventions. This gap limits the ability of managers to develop science-based strategies for coastal resilience, habitat protection, spill-response preparedness, and long-term shoreline management.

The project has three objectives: (1) document biodiversity and ecological condition across Galveston-area sandy beaches; (2) establish a baseline of contaminant exposure in representative beach organisms; and (3) evaluate ecological responses and recovery following beach nourishment.

Objective 1: Biodiversity and ecological condition. Our team sampled 11 Galveston-area sandy beaches in 2025 and 2026, spanning heavily modified and less developed sites. Sampling encompasses the full beach ecosystem, from dunes and terrestrial habitats through the intertidal zone to shallow submerged habitats. We integrate community-level biodiversity surveys, population assessments of representative species, and molecular biodiversity analyses using environmental DNA (eDNA). Key organisms include ghost crabs representing terrestrial and supralittoral habitats and ghost shrimps representing intertidal and shallow marine habitats. Environmental variables include beach slope, sediment grain size, salinity, and degree of human modification. With project support, we will complete taxonomic and eDNA analyses of samples already collected and repeat standardized sampling in summers 2027 and 2028. This multiyear framework will reveal how natural variability, human use, and shoreline management shape biodiversity and ecological condition across the Galveston coast.

Objective 2: Contaminant exposure and ecosystem health. We will analyze representative sandy beach organisms to establish spatial baselines of contaminant exposure. Analyses will include 54 polycyclic aromatic compounds (PAHs), including the 16 U.S. Environmental Protection Agency priority compounds, and 26 polychlorinated biphenyls (PCBs), including nine dioxin-like congeners. Organisms for these analyses have already been collected as part of ongoing biodiversity monitoring. Particular emphasis will be placed on ghost crabs and ghost shrimps, which occupy different ecological zones and provide complementary information on contaminant exposure across the terrestrial-marine continuum.

Measuring contaminants directly in resident organisms will provide information on biological exposure and potential incorporation into coastal food webs. By integrating contaminant concentrations with biodiversity, population-level data, eDNA-based community composition, and environmental characteristics, the project will identify areas and taxa with elevated exposure and establish reference conditions against which future spills or pollution events can be evaluated. These data will support long-term ecosystem assessment, habitat management, pollution-response planning, and public awareness of beach environmental health.

Objective 3: Beach nourishment and adaptive management. Beach nourishment has become an important response to erosion along the Galveston coast, where shoreline retreat reaches approximately 6.86 feet per year in some areas. However, nourishment projects are generally assessed from an engineering perspective, while their ecological effects remain poorly understood. A major nourishment project on West Beach was completed through CAP 204 using sediment from the Galveston Ship Channel. Immediately before construction in September 2025, our team collected biological samples and environmental data at the nourishment site and two adjacent reference sites. Sampling extended from dune habitats to submerged zones and included community surveys, population-level assessments, eDNA, and organisms for contaminant analyses. Sampling was repeated following construction and again approximately six months later.

This before-impact, post-impact, and recovery framework directly addresses the M&R priority for baseline assessment of large-scale human modifications and the NRU priority for adaptive management of completed restoration projects. It provides a rare opportunity to determine whether biological communities and populations return toward pre-construction conditions, remain altered, or follow different recovery trajectories. Two additional nourishment projects planned for 2027 and 2028 will provide opportunities to extend this framework across additional nourishment events and management contexts.

Community engagement, workforce development, and project readiness. The project will provide hands-on training for graduate and undergraduate students in biodiversity surveys, population monitoring, molecular ecology, organism collection for contaminant analyses, data management, ecological analysis, and science communication. It will also create opportunities for volunteers and community members to participate in biodiversity monitoring, field demonstrations, and outreach. Existing activities with organizations such as the Surfrider Foundation already engage local participants in sandy beach ecology. Maps, plain-language summaries, community-science activities, and technical products will make results accessible to managers, local governments, educators, community partners, and recreational users.

The project is ready for immediate implementation. The investigators have already completed extensive field surveys across 11 beaches and collected samples for biodiversity, population, eDNA, and contaminant

analyses, including samples collected before and after nourishment at a recently nourished beach and adjacent reference sites. GBEP support will accelerate sample processing, data integration, and continued monitoring through 2028.

This project advances all four priorities of The Galveston Bay Plan by **(1) ensuring safe human and aquatic life** use through organism-based contaminant baselines; **(2) protecting and sustaining living resources** through biodiversity and population monitoring; **(3) engaging communities** through training, outreach, and accessible data products; and **(4) informing science-based decision making** through integrated ecological, molecular, contaminant, and nourishment-response monitoring. Together, these efforts will provide actionable information to support coastal resilience, habitat management, pollution-response planning, and science-based shoreline restoration throughout the Galveston Bay Estuarine System.

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.]

Funding during this cycle is urgent because field samples have already been collected and the project has reached the stage when taxonomic identification, eDNA processing, contaminant analyses, reagent purchases, and other laboratory processing must be completed. The investigators have the samples, personnel, field capacity, and established analytical workflows in place, but additional support is needed to complete these analyses and maintain continuity in the monitoring program. Without timely funding, samples may remain unanalyzed, delaying management-relevant results and weakening the value of the existing dataset.

Timely support is also essential because standardized sampling will continue for two additional years, creating a four-year dataset for Galveston-area sandy beaches. This time series will provide a rare opportunity to document understudied coastal biodiversity, detect ecological changes associated with human activities and environmental variability, and evaluate ecological responses to shoreline-management actions. Two additional nourishment projects are anticipated in 2027 and 2028, and pre-construction biodiversity, environmental, and organism-based contaminant baselines must be collected before sand placement. Once construction occurs, these baseline conditions cannot be reconstructed. Similarly, ecological and contaminant baselines established before the next hurricane, oil spill, or other disturbance will greatly improve the ability to quantify impacts and recovery. Delayed funding could therefore result in the permanent loss of critical sampling opportunities.

The work is particularly urgent because standardized, multiyear datasets describing sandy beach biodiversity, contaminant exposure, and ecological responses to nourishment remain lacking for the Galveston Bay Estuarine System. Without pre-disturbance baselines, it is difficult to distinguish chronic background conditions from acute impacts, limiting impact assessment, recovery monitoring, and long-term management. The investigators have already completed extensive biodiversity surveys from dune to submerged habitats, collected samples for population and eDNA analyses, and collected representative beach organisms for contaminant analyses. Funding will therefore immediately advance taxonomic identification, molecular processing, chemical analyses, data integration, and continued field monitoring. The project will complement existing programs such as Texas Beach Watch while providing an integrated assessment of biodiversity, biological contaminant exposure, and ecological condition across Galveston-area sandy beaches.

Other Plans Implemented:

[Please identify any third-party conservation plans this project implements, such as the Texas Coastal Management Plan, Texas Coastal Resiliency Master Plan, watershed-based plans, etc.]

Partners¹ and Their Roles:

Dr. Guilherme N. Corte (Principal Investigator, Texas A&M University at Galveston)

Dr. Corte will lead the overall project, including project coordination, study design, field sampling, biodiversity surveys, environmental DNA (eDNA) analyses, beach nourishment monitoring, data integration, statistical analyses, reporting, and stakeholder outreach. He will oversee assessments of sandy beach

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.

biodiversity, ecosystem condition, ecological responses to nourishment, and the development of science-based recommendations for coastal management.

Dr. David Hala (Co-Principal Investigator, Texas A&M University at Galveston)

Dr. Hala will lead the environmental chemistry component of the project. He will oversee contaminant analyses in beach sediments and organisms, including the quantification of 54 polycyclic aromatic compounds (PACs), including the 16 U.S. EPA priority PACs, and 26 polychlorinated biphenyls (PCBs), including nine dioxin-like congeners. He will contribute to study design, quality assurance and quality control (QA/QC), contaminant data interpretation, ecological risk assessment, and the integration of contaminant and ecological datasets to support sustainable beach management.

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

☐ Yes

☒ No

[TBD.]

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

☐ Yes

☒ No

[TBD.]

Latitude/Longitude (Optional):

[degrees, minutes, and seconds format]

Location:

Galveston Bay shorelines

Projects Map

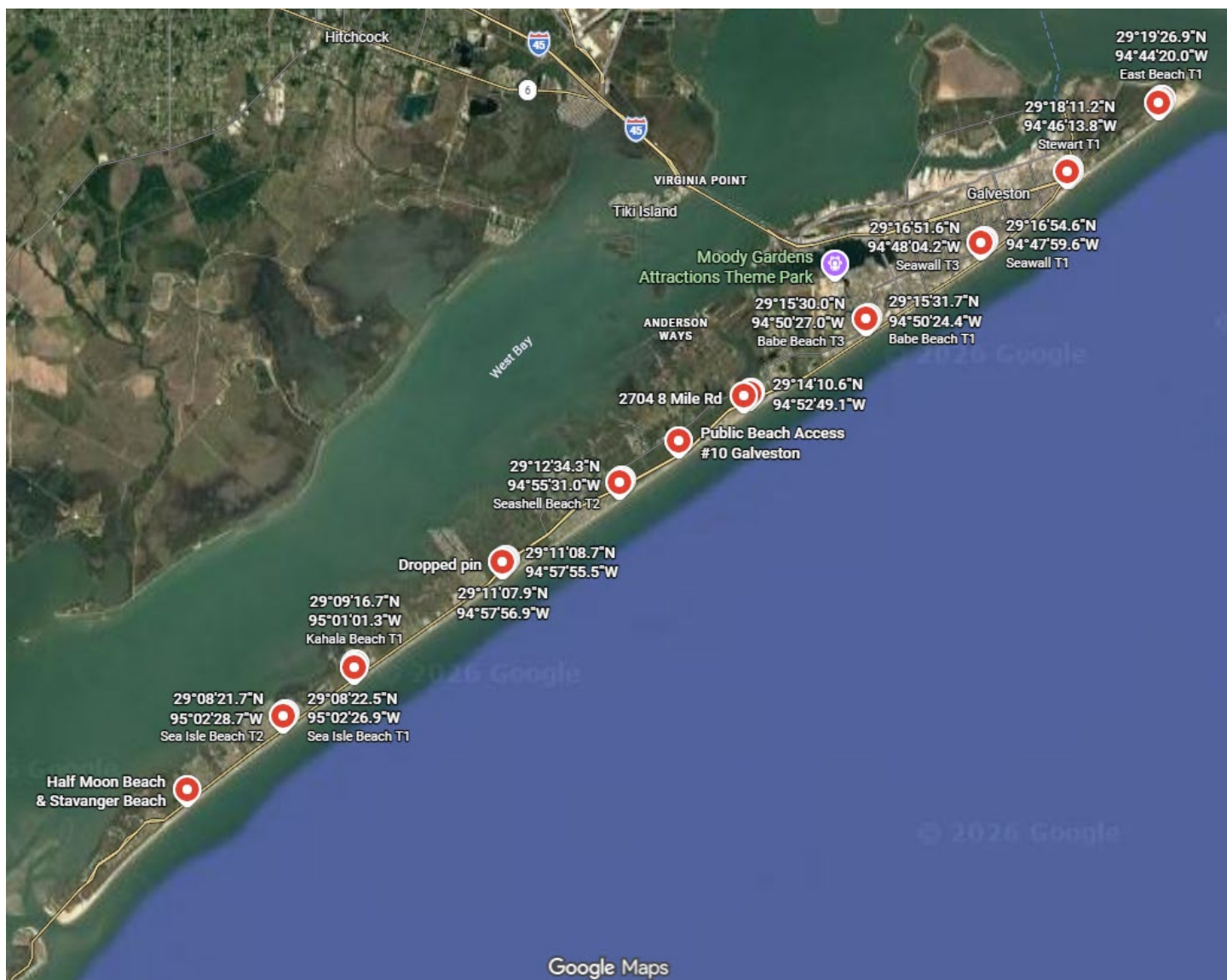


Figure 1. Locations of 11 Galveston-area sandy beaches sampled in both 2025 and 2026. Standardized biodiversity, eDNA, environmental, and contaminant monitoring will continue at these sites in 2027 and 2028 to support long-term assessment of ecological condition and change.

Supplemental Photos/Graphics (Optional):



Figure 2. Beach Access #10 before and after nourishment under CAP204. The left panel shows the site prior to nourishment, and the right panel shows post-nourishment conditions following sand placement. These images illustrate the substantial physical changes in beach width, surface characteristics, and shoreline condition associated with the nourishment project.



Figure 3. Locations of the beach nourishment impact and control sites on Galveston Island. Hershey Beach, at Public Beach Access #10, served as the nourished impact site, while Seashell Beach and Sunny Beach served as nearby non-nourished control sites for evaluating ecological responses and recovery following nourishment.



1. Measuring beach elevation and vegetation at a sampling site.



2. Field station set up on the beach for biodiversity and environmental sampling.



3. Processing samples and recording field data at the beach station.



4. Sample of ghost crab collected for population and ecological analyses.



5. Collecting sediment cores for benthic community and contaminant analyses.



6. Macrobenthos collected (Polychaetes and crustaceans).

Figure 4. Representative field activities conducted during sandy beach monitoring in the Galveston Bay Estuary System.

SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$49,135
Fringe Benefits (###)% ²	\$11,232
Travel	\$0.00
Supplies	\$30,000
Equipment	\$0.00
Contractual	\$0.00
Construction	\$0.00
Other	\$6,064
Total Direct Cost	\$96,431

b. Indirect Costs³

² If fringe is not a single rate, please attach calculation or explanation as an appendix.

³ Please attach Indirect Cost Agreement as an appendix if applicable

Distribution Base Amount (<i>identify Base type below</i>)	\$
Indirect Cost Rate for Reimbursement	% 54
Total Indirect Costs	\$ 48,798

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$
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Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☒ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

☒ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.

☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☐ **Other:** [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

[Description of costs associated with “Other” budget category.]

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting's time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.
- Unless otherwise communicated or implied, GBEP requires 1 (one) completed copy of your Project Proposal per corresponding Subcommittee Coordinator.
- Project Proposals must be received electronically, through the email address of the relevant Subcommittee Coordinator listed on this page, by the deadline listed on both this page and the first page of this Project Proposal document.

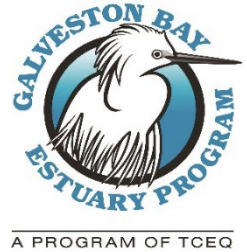
Submittal Process and Deadline [see 30 TAC § 14.7(8) and 30 TAC § 14.7(9)]:

Please Submit Project Proposals (Microsoft Word Only – No PDFs) by **July 24, 2026 to the relevant Subcommittee Coordinators below:**

WSQ Subcommittee: Christian.Rines@tceq.texas.gov
NRU Subcommittee: Lindsey.Lippert@tceq.texas.gov
PPE Subcommittee: Zoe.Gapayao@tceq.texas.gov
M&R Subcommittee: Jenelle.Estrada@tceq.texas.gov
Programmatic Projects: Lisa.Marshall@tceq.texas.gov

Galveston Bay Estuary Program

Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

This Call for Project Proposals complies with 30 Texas Administrative Code (TAC) § 14.7, which lays out requirements for a competitive solicitation by TCEQ for grant awards. For convenience, specific citations to 30 TAC § 14.7 are identified in the text.

SECTION ONE: INTRODUCTION

Purpose [required by 30 TAC § 14.7(1)]: The purpose of the proposed grant from the Galveston Bay Estuary Program (GBEP), a program of the Texas Commission on Environmental Quality (TCEQ), is to implement *The Galveston Bay Plan, 2nd Edition* (the Plan), a comprehensive conservation and management plan falling under Section 320, of the Federal Water Pollution Control Act (33 U.S.C. Section 1330), for a designated national estuary in the State of Texas.

Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

Authority [see 30 TAC § 14.7(2)]: Grants issued by GBEP under this solicitation are authorized by: the Federal Water Pollution Control Act (Clean Water Act) § 320 (33 UNITED STATES CODE § 1330), commonly referred to as the National Estuary Program; TEX. WATER CODE § 5.124; and 30 TAC ch. 14.

Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

Task	Date Due
Release of Request for Proposals	June 22, 2026
Proposals Due	July 24, 2026
Send Proposals to Subcommittees Members for Review	August 12, 2026
Present Proposals to Subcommittees for Council Recommendation	September 2, 2026 (NRU and PPE) September 9, 2026 (M&R and WSQ)
Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Monitoring and Research (M&R)
Secondary Subcommittee (if applicable): Natural Resource Uses (NRU)
Tertiary Subcommittee (if applicable): Choose an item.

Project Name:

A Coast of Thorns and Roses: Autonomous Detection and Treatment of Invasive Macartney Rose in the Coastal Prairies of the Lower Galveston Bay Watershed

Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Texas A&M University / Galveston – Institute for a Disaster Resilient Texas (IDRT)

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

[If other, please identify pass-through partner.]

Unique Entity ID (UED) Number: JF6XLNB4CDJ5

Vendor Identification Number (VIN) or Tax ID: 17460005311

Contact Information:

Project Representative Name	Nicholas Hoskins
Project Representative Phone	512-422-9491
Project Representative Email	hoskinsn@tamu.edu

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

24 months (September 1, 2027 – August 31, 2029)

Amount Requested from GBEP:

[\$] 240,845

Federal ☐ State ☐ No Preference ☒

Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$118,751.00
FY 2029 (09/01/2028-08/31/2029)	\$122,0940.00
FY 2030 (09/01/2029-05/31/2030)	\$0.00
Total	\$240,845.00

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

\$315,845.00

Is this an estimate? ☐

Leveraging (in-kind and/or cash):

In-kind project equipment provided by Texas A&M University's Disaster Data Reconnaissance Center (DDRC). The center will provide \$75,000 (based on asset replacement value and depreciation) via two cutting-edge, National Defense Authorization Act (NDAA)-compliant drone platforms. Platforms will be used to perform aerial mapping and monitoring as well as treat invasive plant species. Further leveraging this equipment enhances project scalability both during and beyond project timeline.

SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:
<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☐ NPS-3 ☐ NPS-4 ☐
PS-1 ☐ PS-2 ☐ PS-3 ☐
PHA-1 ☐ PHA-2 ☐ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☒ SPO-2 ☐ SPO-3 ☐ SPO-4 ☒
PEA-1 ☒ PEA-2 ☐ PEA-3 ☐

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:

This project implements the Galveston Bay Plan by advancing conservation of coastal habitats, supporting science-based decision making, and improving management strategies for invasive plant species. Through drone-based remote sensing, artificial intelligence (AI), field validation, and ecological monitoring, this project will generate actionable spatial data and management tools to support restoration practitioners and resource managers. The project directly contributes to protecting coastal prairie habitats, enhancing biodiversity, and developing innovative approaches for long-term ecosystem resilience within the Galveston Bay watershed.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☒ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☐ Adaptive management for previously completed projects; and
 - ☐ Projects that may have lost/delayed funding from other federal sources.
- ☒ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☒ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☒ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☒ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☒ PPE: Conservation and environmental workforce development.
- ☒ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☒ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☒ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☐ Legacy contaminants.

Subcommittee Priority Detail:

This project addresses Monitoring and Research (M&R) priorities by establishing baseline assessments of Macartney rose distribution, developing innovative detect and treat methods, and evaluating management effectiveness through field validation and long-term monitoring. The project supports Natural Resource Uses (NRU) priorities by enhancing ongoing coastal prairie restoration efforts at Artist Boat's Coastal Heritage Preserve and protecting native habitats from invasive species encroachment. Existing programs at the Institute for a Disaster Resilient Texas (IDRT) and Artist Boat will also be leveraged to engage communities and provide technical assistance supporting priorities of the public participation and engagement (PPE). The resulting automated detection framework and spatial datasets will provide transferable tools for conservation practitioners throughout the Galveston Bay watershed.

Does the Project align with any EPA Areas of Special Interest?

- ☒ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☒ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

This project supports coastal resiliency by protecting and restoring coastal prairie ecosystems that provide wildlife habitat, improve ecosystem function, and contribute to natural coastal defenses. By developing improved invasive species detection and management strategies, this project will strengthen the ability of

conservation partners to maintain healthy and resilient coastal landscapes within the Galveston Bay watershed.

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

This project seeks to develop and evaluate an AI-assisted drone mapping and management framework to detect, prioritize, and treat invasive Macartney rose (*Rosa bracteata*) in the Galveston Bay watershed. Macartney rose has the ability to rapidly colonize coastal prairies, forming dense monocultures that displace native plant communities, reduce biodiversity, and impact restoration efforts. While not replacing traditional treatment approaches, rather a combined enhancing approach through emerging technologies such as drones and AI. By leveraging more autonomous platforms and software, increased targeted management and ecological monitoring efficiency and effectiveness of invasive species management occurs, reducing costs and improving prioritization of limited restoration resources.

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

This project will develop and evaluate an innovative, technology-driven approach for detecting, mapping, and managing invasive Macartney rose (*Rosa bracteata*) across the Houston-Galveston Coastal Prairie region. Macartney rose is a highly invasive woody shrub that forms dense, thorny thickets, reduces native plant diversity, alters habitat structure, and threatens the ecological integrity of coastal prairie and adjacent wetland ecosystems within the Galveston Bay watershed. Effective management of this species is challenging due to its rapid spread, difficult field detection, and the substantial labor required for traditional monitoring and treatment methods. This project will address these challenges by combining and comparing traditional treatment and drone-based artificial intelligence (AI) approaches through field validation, and targeted management.

The project will compare traditional field-based invasive species management approaches with an AI-assisted workflow that uses unmanned aerial systems (UAS/drone imagery) to identify and prioritize infestations. By combining high-resolution aerial imagery with machine learning techniques and ecological field assessments, this project will establish a repeatable methodology for identifying invasive vegetation across coastal prairie landscapes and guiding targeted management actions. An open-source, sharable AI-assisted analysis will improve the speed and accuracy of invasive species detection, allowing land managers to prioritize treatment efforts, allocate resources more efficiently, and improve restoration outcomes.

The project will be conducted through a paired-site approach using two comparable coastal prairie areas within Artist Boat managed lands, representative of the Houston-Galveston coastal prairie landscape. One site will serve as a traditional management comparison, utilizing existing manual and mechanical treatment approaches, while the second site will incorporate the AI-assisted drone detection workflow to guide treatment prioritization and implementation. Baseline assessments will document existing Macartney rose distribution, vegetation conditions, and habitat characteristics. Drone imagery and field surveys will then be used to train and refine an AI model capable of auto-identifying Macartney rose locations and producing spatially plot management maps.

Following model development, targeted management treatments will be implemented based on infestation severity and accessibility. Treatment areas will be monitored over time to evaluate effectiveness, reductions in invasive cover, vegetation recovery, and differences in management efficiency between traditional and technology-assisted approaches. All these field methods and testing result in a best management practices (BMP) containing management recommendations, and a decision-support framework that can be adapted by land managers, conservation organizations, and resource agencies throughout the Galveston Bay watershed. Additional outcomes include an open-source, base code AI model that can be adapted to other plant species or drone platforms, raw high-resolution geospatial data for future time-series workflows, and geospatial information system (GIS)-based maps of invasive species distributions.

This project directly addresses GBEP priorities by advancing invasive species management, protecting coastal habitats, and supporting science-based conservation practices. Coastal prairies are among the most threatened ecosystems in Texas, providing critical wildlife habitat, supporting biodiversity, improving watershed function, and contributing to coastal resilience. Invasive plant species such as Macartney rose threaten these ecosystems by displacing native vegetation and reducing habitat quality. Improving early detection and targeted treatment methods is essential for maintaining healthy coastal landscapes and preventing further degradation.

Additionally, this project supports GBEP's emphasis on collaborative, innovative, and transferable solutions. The project team will work with regional conservation partners to ensure that research outcomes are directly applicable to land management needs. Simultaneous to sharing managing practices, Artist Boat and IDRT programs will be leveraged to amplify the sharing of the project key issue and findings, mapping products, and management recommendations with local residents, under resourced communities, conservation organizations, land managers, and restoration practitioners to enhance participation and public engagement (PPE) and support broader adoption of invasive species management strategies.

By combining emerging technologies with ecological expertise and on-the-ground restoration practices, this project will demonstrate a scalable approach for addressing invasive species challenges across the Galveston Bay watershed. The outcomes will strengthen regional capacity for invasive species monitoring, enhance coastal prairie restoration efforts, and provide a foundation for integrating more autonomous workflows, such as AI and drones, into future conservation and natural resource management initiatives.

Project Urgency:

Coastal Prairies often are neglected compared to other surrounding natural resources. To the general public there is nothing eye-catching about these spaces. However, these fragmented lands provide so many natural benefits. Invasive plant species, such as Macartney rose, continue to expand throughout coastal prairie and adjacent habitats within the Galveston Bay watershed, threatening native plant communities, habitat quality, and ongoing restoration efforts. Ongoing traditional approaches are laborious and costly with limited capacity, especially confined to a seasonal treatment timeframe. Timely investment is needed to develop improved detection and management strategies before infestations become unmanageable. Current management approaches rely heavily on manual surveys and treatment methods that are difficult to scale across large landscapes. Funding during this cycle will provide a critical opportunity to develop and evaluate an AI-assisted monitoring and management framework during an active period of coastal habitat restoration and invasive species response. The project will generate transferable tools and management recommendations that can immediately support conservation partners, land managers, and resource agencies throughout the Galveston Bay watershed.

Other Plans Implemented:

This project supports and implements priorities identified in the Texas Coastal Management Program (CMP), the Texas Coastal Resiliency Master Plan, and regional coastal habitat conservation initiatives by addressing invasive species management, coastal habitat protection, and ecosystem resilience. By improving the detection, mapping, and management of Macartney rose (*Rosa bracteata*) within the Galveston Bay watershed, this project directly supports efforts to conserve native coastal prairie communities, maintain biodiversity, and enhance the resilience of coastal ecosystems. The project also aligns with watershed-based conservation goals by providing science-based tools and spatial data products that can support land managers, restoration practitioners, and conservation partners in prioritizing invasive species response and habitat restoration actions.

Partners¹ and Their Roles:

Texas A&M University – Institute for a Disaster Resilient Texas (IDRT), Disaster Data Reconnaissance Center (DDRC): Texas A&M University will serve as the lead organization for project implementation, providing project management, research coordination, remote sensing and GIS expertise, AI model development, data analysis, and evaluation of project outcomes. The DDRC team will oversee drone-based data collection, spatial analysis, field validation efforts, and development of the AI-assisted decision-support framework for Macartney rose detection and management.

Artist Boat: Artist Boat will serve as a project partner and sub awardee, providing regional conservation expertise, coastal prairie knowledge, field implementation support, and stakeholder engagement. Artist Boat will assist with identifying priority management areas, supporting field assessments and restoration activities, and helping ensure project outcomes are applicable to local conservation needs. Artist Boat's experience with coastal ecosystem restoration and community-based conservation will support translation of project findings into practical management strategies for the Galveston Bay watershed.

Regional Conservation and Land Management Partners: Additional collaboration with regional conservation organizations, land managers, and resource agencies will support knowledge exchange, dissemination of project outcomes, and adoption of project tools and recommendations. These partnerships will help ensure that the resulting AI-assisted monitoring framework and management

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.

recommendations can be applied broadly to invasive species management and coastal habitat restoration efforts throughout the Galveston Bay watershed.

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

- ☒ Yes
☐ No

Yes. This project builds upon collaboration between Texas A&M University and Artist Boat, a regional nonprofit conservation organization. The partnership expands technical capacity by connecting advanced remote sensing and artificial intelligence tools with on-the-ground restoration expertise. This collaboration will support smaller conservation organizations by providing improved tools, data products, and management approaches that can be applied to coastal habitat restoration efforts. **Appendix A – Artist Boat Letter of Commitment – shown after Section Ten.**

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

- ☐ Yes
☒ No

The project is not anticipated to meet Title VI language access requirements because activities are focused on research, monitoring, habitat management, and technical implementation rather than direct public services or statewide outreach.

Latitude/Longitude (Optional):

29° 13' 22" N, 94° 55' 56" W

Location:

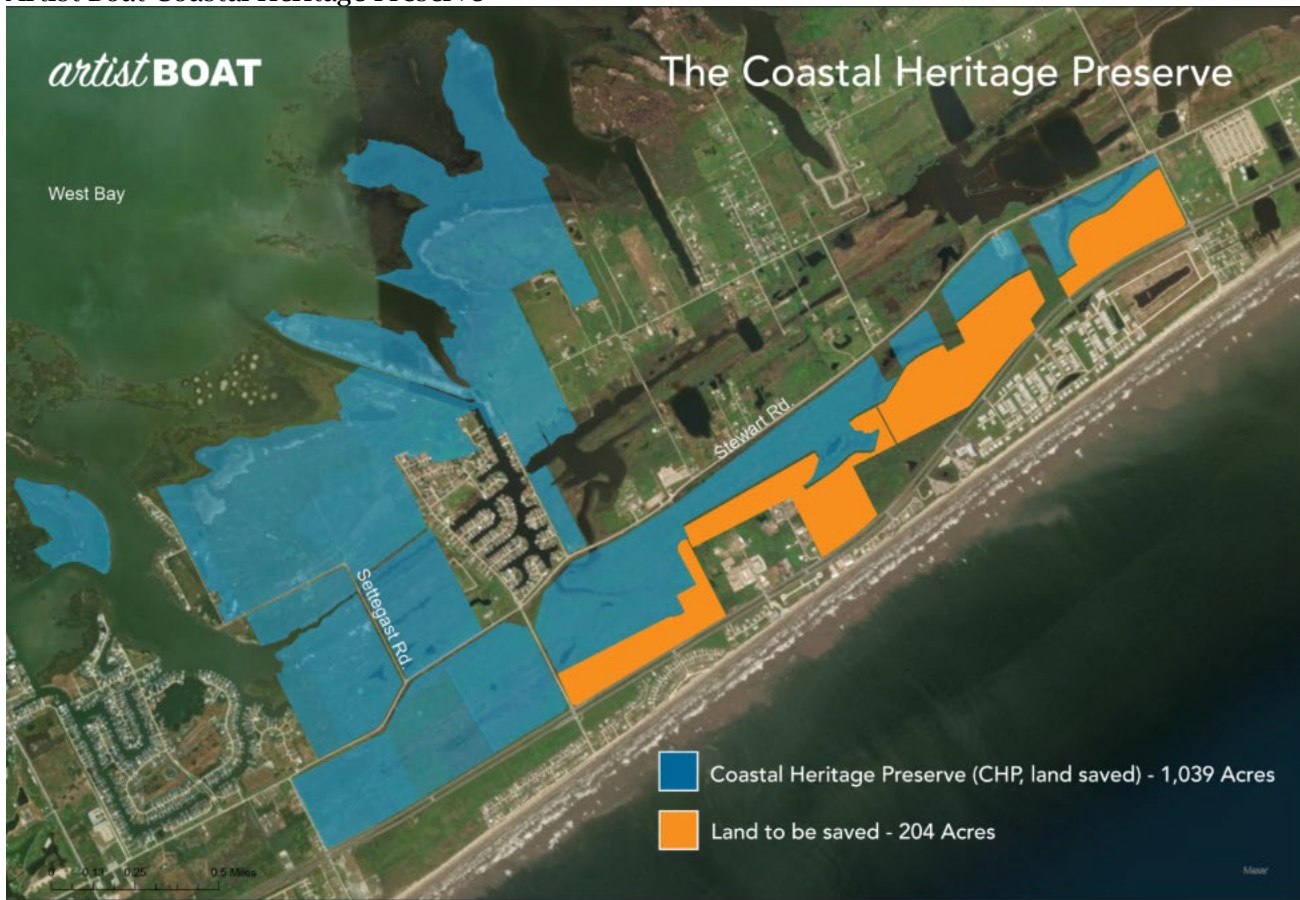
This project will be conducted within the Houston-Galveston Coastal Prairie region of the Galveston Bay watershed, with primary implementation occurring at Artist Boat's Coastal Heritage Preserve on Galveston Island, Texas. The project area encompasses coastal prairie habitats and adjacent wetland systems that provide important ecological functions, including wildlife habitat, biodiversity support, storm resilience, and watershed protection. The Coastal Heritage Preserve represents a critical example of remaining coastal prairie habitat within the Galveston Bay watershed and provides an ideal landscape for evaluating innovative invasive species detection and management strategies. Project activities will focus on identifying, mapping, and managing Macartney rose (*Rosa bracteata*) infestations while developing tools and approaches that can be applied throughout similar coastal prairie and conservation areas across the Galveston Bay region.

Projects Map

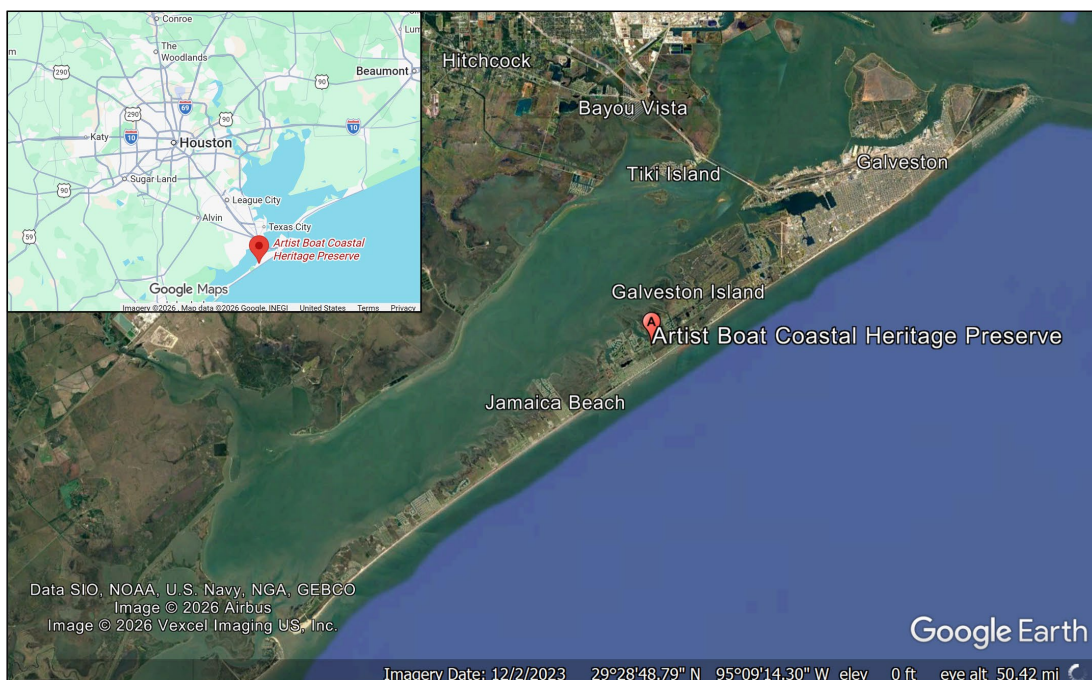
Project is located within the Lower Galveston Bay Watershed. 29.22402785998953, -94.9279485903564

Supplemental Photos/Graphics (Optional):

Artist Boat Coastal Heritage Preserve

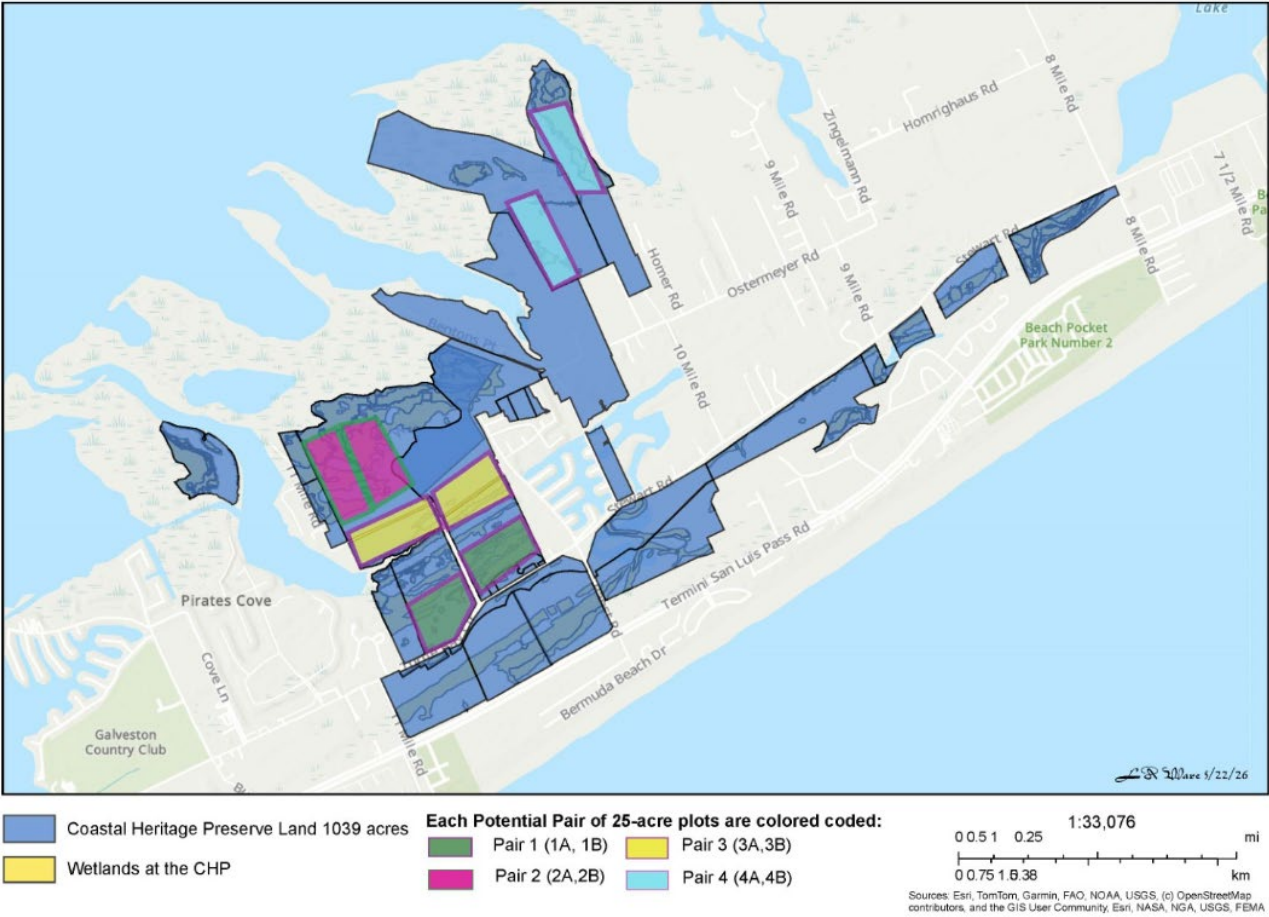


Artist Boat's Coastal Heritage Preserve, located on Galveston Island, is a Texas Coastal Resiliency Master Plan (TCRMP) Tier 1 project (#240) supporting the Preserve's formation and land acquisition. The entire Preserve is designated as Coastal Natural Resource Areas (CNRAs) — including coastal barrier, coastal wetlands, and special hazard areas — and falls within FEMA FIRM Special Flood Hazard Areas (Zones AE and VE), which Texas also recognizes as CNRAs.



Potential plots to be considered for mapping, monitoring, and treatment of Macartney Rose and fulfill project goals.

Macartney Rose Trials at Artist Boat's Coastal Heritage Preserve



Images of Macartney Rose at Artist Boat’s Coastal Heritage Preserve on proposed research trial plots.



L.A. Ware - 2026

Images above demonstrate that Macartney Rose exhibits an average of 60% density distribution with stands exceeding 9 feet in several spaces throughout the two 25-acre plots and nearby parcels.



Images above show where Macartney Rose exhibits an overall average density of 55% and inhibits the growth of essential coastal prairie species. Additionally, these plots border salt grass marshes that the Macartney Rose will dominate in the next 1-2 years if not addressed properly.



Images above show where Macartney Rose has been treated previously but not consistently and/or treated inaccurately resulting in increased resistance and inadequate competition. The stands here are 10 feet tall and covering 2-4 acres exhibiting above 65% density distribution. Perhaps due to resistance built up or simply being on the island, many of the Macartney Rose throughout these 50+ acres exhibit early bloom stages during December (when expected to be ending their fruiting stages).



Images above show encroaching Macartney Rose on a Peninsula where Density distribution averages 50% only on the acres that were most often grazed by cattle in previous years (according to a third-generation cattle rancher nearby). The stands can be found mostly along fencelines and in what would have been deemed highly grazable acres (once mostly salt grass).

SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$57,137.00
Fringe Benefits (###%) ²	\$21,070.00
Travel	\$8,440.00
Supplies	\$4000.00
Equipment	\$0.00
Contractual	\$99,000.00

² If fringe is not a single rate, please attach calculation or explanation as an appendix. **Appendix C**

Budget Category	Cost for Work to be Performed
Construction	\$0.00
Other	\$1,500.00
Total Direct Cost	\$191,147.00

b. Indirect Costs³

Distribution Base Amount (<i>identify Base type below</i>)	\$ 191,147.00
Indirect Cost Rate for Reimbursement	% 26
Total Indirect Costs	\$ 49,698.00

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$ 240,845.00
--	---------------

Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☒ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

☒ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.

☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☐ **Other:** [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

[Description of costs associated with “Other” budget category.]

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

³ Please attach Indirect Cost Agreement as an appendix if applicable. **Appendix D**

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

Appendices after Section Ten.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting's time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.
- Unless otherwise communicated or implied, GBEP requires 1 (one) completed copy of your Project Proposal per corresponding Subcommittee Coordinator.
- Project Proposals must be received electronically, through the email address of the relevant Subcommittee Coordinator listed on this page, by the deadline listed on both this page and the first page of this Project Proposal document.

Submittal Process and Deadline [see 30 TAC § 14.7(8) and 30 TAC § 14.7(9)]:

Please Submit Project Proposals (Microsoft Word Only – No PDFs) by **July 24, 2026 to the relevant Subcommittee Coordinators below:**

WSQ Subcommittee: Christian.Rines@tceq.texas.gov
NRU Subcommittee: Lindsey.Lippert@tceq.texas.gov
PPE Subcommittee: Zoe.Gapayao@tceq.texas.gov
M&R Subcommittee: Jenelle.Estrada@tceq.texas.gov
Programmatic Projects: Lisa.Marshall@tceq.texas.gov

APPENDIX A

ARTIST BOAT LETTER OF COMMITMENT



13330 Settegast Road | Galveston, Texas 77554
artistboat.org | info@artistboat.org | 409-632-0388

Inspiration and education through unique coastal experiences

July 23, 2026

Galveston Bay Estuary Program (GBEP)
17041 El Camino Real, Suite 210
Houston, TX 77058

RE: Letter of Commitment for project proposal 'A Coast of Thorns and Roses: Autonomous Detection and Treatment of Invasive Macartney Rose in the Coastal Prairies of the Lower Galveston Bay Watershed'.

Dear GBEP Review Committee:

On behalf of Artist Boat and our Coastal Heritage Preserve (the Preserve), I write to confirm our collaboration with Texas A&M University on the above-referenced proposal, led by Dr. Nicholas Hoskins, Assistant Research Scientist and Director of the Disaster Data Reconnaissance Center (DDRC), Institute for a Disaster Resilient Texas.

Artist Boat has reviewed the project proposal and budget. As Executive Director, I confirm Artist Boat is committed to the successful completion of this project and to the long-term stewardship goals it advances at the Preserve.

We strongly support this proposal and look forward to its implementation upon award. If you have any questions, feel free to contact me at 409-632-0388 or at executive.director@artistboat.org.

Sincerely,

Karla Klay, Executive Director

WORK PLAN AND CONCEPT BEST PRACTICES MANUAL (BMP)

Method Workflow: AI-Assisted Drone Management of Macartney Rose

Study site: Artist Boat Coastal Heritage Preserve (ABCHP)



STUDY DESIGN OVERVIEW

Control Plot (25–50 acres)



Conventional management:
manual + mechanical removal

Treatment Plot (25–50 acres)



AI-assisted drone detection +
targeted herbicide application

Outcomes compared: treatment efficacy, cost, labor, and ecological response

1



1. Baseline Data Collection

- Vegetation surveys: Macartney rose density + native plant composition
- Establish permanent monitoring plots
- Collect high-resolution drone imagery across both sites
- Standardized field and remote sensing methods



Months
1–3

2



2. AI Model Development

- Train AI model using geospatial drone imagery
- Detect individual Macartney rose plants
- Create density and distribution maps
- Estimate biomass and guide herbicide rates



Months
4–8

3



≥75°F



3. Treatment Implementation

- Seasonal application window: mid-February to end of May
- Apply during emergent growth stage, before fruit set
- Delay application until soils reach ≥75°F if needed
- Control plot: conventional management continues
- Treatment plot: AI-guided heavy-lift drone herbicide application



Months
9–14

4



4. Record Operational Inputs

- Track labor, time, and operational effort
- Record equipment and treatment inputs for both approaches



During
treatment

5



5. Monitoring and Evaluation

- Repeat vegetation surveys
- Measure invasive species cover reduction
- Measure native plant recovery and habitat structure
- Assess possible hydrology and stormwater infiltration effects



Months
15–18

6



6. Data Analysis + Deliverables

Primary metrics compared:

- % reduction in invasive species
- Total cost (labor, time, equipment)
- Ecological outcomes and native species recovery
- Cost-benefit analysis for scalability

Deliverables



BMP
manual



Cost-benefit
analysis



Geospatial
datasets



Replicable
drone-management
framework

PROJECT TIMELINE (MONTHS 1–18)

1

1–3 Baseline

4–8 AI model

9–14 Treatment

15–18 Monitoring + analysis

18



This study compares conventional vs. AI-assisted drone management to deliver effective, efficient, and scalable solutions for controlling Macartney rose and restoring healthy coastal prairie ecosystems.

Goal: Inform best management practices that protect biodiversity, reduce costs, and enhance climate resilience.



Best Management Practices Manual

AI-Assisted Drone Management of Macartney Rose in Texas Coastal Prairies

Draft Concept for Galveston Bay Estuary Program (GBEP)
Artist Boat Coastal Heritage Preserve



CONVENTIONAL FIELD MANAGEMENT

DRONE-ASSISTED TARGETED TREATMENT

Science-driven. Technology-enabled. Habitat-focused.

Restoring Coastal Prairies for Future Generations.



DETECTION

AI-powered mapping identifies Macartney rose with high precision.



TARGETED TREATMENT

Drone-delivered herbicide applications reduce non-target impacts.



MONITORING

Multi-temporal imagery tracks treatment effectiveness and habitat response.



SCALABILITY

Data-driven planning enables efficient, large-scale invasive species management.

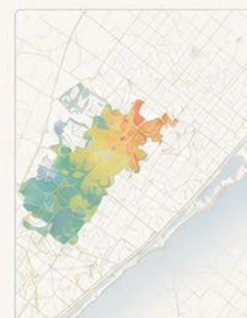
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Best Management Practices Manual

AI-Assisted Drone Management of Macartney Rose in Texas Coastal Prairies

Draft Concept for Galveston Bay Estuary Program (GBEP)

Artist Boat Coastal Heritage Preserve



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A practical guide for detection, treatment, monitoring,
and scalable coastal prairie management.

APPENDIX C

INDIRECT COST (IDC) AND FRINGE BENEFITS EXPLANATION

TEXAS A&M UNIVERSITY

Indirect Costs: Indirect Costs, also known as Facilities & Administrative (F&A) costs, are costs incurred by TAMU to support research activities but are not directly tied to a specific project expense. These costs are recovered through a federally negotiated rate and are applied to eligible direct costs.

Indirect costs cover administrative support, facility use, utilities, IT, compliance, and other shared services required to support research activities.

Indirect = infrastructure and administrative support costs required to conduct research

At TAMU, indirect costs support:

- Facilities (labs, buildings, utilities, maintenance)
- Administrative services (grant management, compliance, HR, IT)
- Institutional infrastructure required for research

Indirect Costs (F&A) breakdown

Indirect Costs (also called F&A – Facilities & Administrative costs): A percentage of the grant budget that the university charges to support the infrastructure behind the research. Indirect costs represent the portion of the grant used to support the university infrastructure required to conduct research. At Texas A&M, these include facilities (labs, utilities, maintenance) and administrative services (grant management, compliance, HR, and IT support). The indirect cost is federally negotiated and applied to direct project expenses. These funds do not go directly to the research project but ensure that the university can provide the resources necessary to support the work.

- *Direct costs = Money spent on the project itself*
- *Indirect costs = Money spent to support the environment that makes the project possible*
- Texas A&M uses indirect costs to cover shared institutional resources, including:

Facilities

- Buildings and lab space
- Utilities (electricity, water, HVAC)
- Maintenance and repairs

Security

- Example: Even if a project pays for equipment, it still needs a building, electricity, and maintenance.

Administrative support

- Grant administration (pre-award & post-award teams)
- Compliance offices (IRB, animal care, safety)
- HR and payroll processing
- IT and systems support

Support services

- Libraries and subscriptions
- Data storage systems
- Research compliance systems
- Shared equipment infrastructure
- Institutional overhead obligations
- Audit and reporting requirements
- Legal and regulatory compliance
- Risk management

Fringe benefits were calculated for TAMU personnel only through Sponsored Research Services (SRS) considering below:

Benefits: Benefits represent employer-paid costs associated with personnel expenses. At Texas A&M University (TAMU), benefits are calculated as part of total compensation and include costs beyond salary that support employees. These are automatically applied to salary expenses based on institutional rates.

Benefits = additional cost on top of salary paid by the institution

Examples:

- Health insurance
- Retirement contributions
- Payroll taxes (FICA, Medicare, etc.)

APPENDIX D

INDIRECT COST (IDC) RATE AGREEMENT

COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN: 1746000531A1

DATE:09/02/2022

ORGANIZATION:

FILING REF.: The preceding
agreement was dated
08/07/2019

Texas A & M University - College Station
200 Technology Way
A & M System Bldg, Suite 1281
College Station, TX 77845-3424

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: Facilities And Administrative Cost Rates

RATE TYPES: FIXED FINAL PROV. (PROVISIONAL) PRED. (PREDETERMINED)

EFFECTIVE PERIOD

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>RATE (%)</u>	<u>LOCATION</u>	<u>APPLICABLE TO</u>
PRED.	09/01/2022	08/31/2023	51.50	On Campus	Organized Research & Instruction
PRED.	09/01/2023	08/31/2025	52.50	On Campus	Organized Research & Instruction
PRED.	09/01/2025	08/31/2026	54.00	On Campus	Organized Research & Instruction
PRED.	09/01/2022	08/31/2026	32.00	On Campus	Other Sponsored Activities
PRED.	09/01/2022	08/31/2026	10.50	Off Campus	IPA Programs
PRED.	09/01/2022	08/31/2026	26.00	Off Campus	All Programs

ORGANIZATION: Texas A & M University - College Station

AGREEMENT DATE: 9/2/2022

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>RATE (%)</u>	<u>LOCATION</u>	<u>APPLICABLE TO</u>
PROV.	09/01/2026	Until Amended			Use same rates and conditions as those cited for fiscal year ending August 31, 2026.

*BASE

Modified total direct costs, consisting of all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel and up to the first \$25,000 of each subaward (regardless of the period of performance of the subawards under the award). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, rental costs of off site facilities, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of \$25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

ORGANIZATION: Texas A & M University - College Station

AGREEMENT DATE: 9/2/2022

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

The fringe benefits are specifically identified to each employee and are charged individually as direct costs. The directly claimed fringe benefits are listed below.

TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

OFF-CAMPUS DEFINITION: OFF-CAMPUS DEFINITION: For all activities performed in facilities not owned by the institution and to which rent is directly allocated to the project(s) the off-campus rate will apply. Grants or contracts will not be subject to more than one F&A cost rate. If more than 50% of a project is performed off-campus, the off-campus rate will apply to the entire project.

FRINGE BENEFITS:

FICA, Retirement, Worker's Compensation, Life Insurance, Unemployment Insurance, Health Insurance, Accrued Compensated Absences

APPLICABILITY OF RATES: Texas A&M Research Foundation (EIN: 74-1238434), Texas Engineering Experiment Station (EIN: 74-1974733), Texas Engineering Extension Service (EIN: 74-2270626), Texas Agri-Life Research (FKA as Texas Agricultural Experiment Station) (EIN: 74-6000541), Texas Agri-Life Extension (FKA Texas cooperative Extension) (EIN: 74-6000537), Texas Transportation Institute, (EIN: 74-2270624), Texas A&M University at Galveston (EIN: 74-2125225), Texas A&M Health Science Center (EIN: 74-2907553), Texas Forest Service (EIN: 74-6014065), Texas A&M University System (EIN: 74-2648747), Texas Veterinary Medical Diagnostic Laboratory (EIN: 26-3850570), Shared Services Center Commercialization (EIN: 74-2648747), Texas Division of Emergency Management (TDEM), (EIN: 84-1876045).

Your next F&A proposal based on actual costs for the fiscal year ending 08/31/2025, is due in our office by 02/28/2026.

Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds \$5,000.

ORGANIZATION: Texas A & M University - College Station

AGREEMENT DATE: 9/2/2022

SECTION III: GENERAL

A. LIMITATIONS:

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted: such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Part 200 (2 CFR 200), and should be applied to grants, contracts and other agreements covered by 2 CFR 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. OTHER:

If any Federal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of facilities and administrative costs allocable to these programs.

BY THE INSTITUTION:

Texas A & M University - College Station

(INSTITUTION)

(SIGNATURE)

(NAME)

(TITLE)

(DATE)

ON BEHALF OF THE FEDERAL GOVERNMENT:

DEPARTMENT OF HEALTH AND HUMAN SERVICES

(AGENCY)

Arif M. Karim -S Digitally signed by Arif M. Karim -S
Date: 2022.09.13 13:48:14 -05'00'

(SIGNATURE)

Arif Karim

(NAME)

Director, Cost Allocation Services

(TITLE)

9/02/2022

(DATE) 6554

HHS REPRESENTATIVE:

Denise Shirlee

Telephone:

(214) 767-3261

COMPONENTS OF PUBLISHED F&A COST RATE

INSTITUTION: **Texas A&M University - College Station**

FY COVERED BY RATE: **September 1, 2022 - August 31, 2026**

APPLICABLE TO: **ORGANIZED RESEARCH**

RATE COMPONENT:	ORGANIZED RESEARCH & INSTRUCTION FY 23 ON CAMPUS	ORGANIZED RESEARCH & INSTRUCTION FY 24-25 ON CAMPUS	ORGANIZED RESEARCH & INSTRUCTION FY 26 ON CAMPUS	OTHER SPONSORED ACTIVITIES FY 23-26 ON CAMPUS	ALL PROGRAMS FY 23-26 OFF CAMPUS
Building Depreciation	6.6	6.9	7.3	1.0	
Equipment Depreciation	4.4	4.6	4.9	4.0	
Interest	2.7	2.8	3.0	0.1	
Operation & Maintenance	10.3	10.7	11.3	0.9	
Library	1.5	1.5	1.5		
Administration*	26.0	26.0	26.0	26.0	26.0
TOTAL	51.5	52.5	54.0	32.0	26.0

* Reflects provisions of Appendix III to Part 200 of Uniform Guidance—Indirect (F&A) Costs Identification and Assignment, and Rate Determination for Institutions of Higher Education (IHEs), C.8. dated December 26, 2013.

CONCURRENCE:

Texas A&M University - College Station

(Institution)

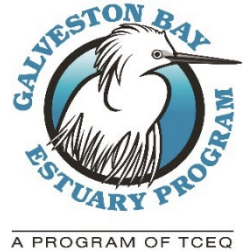
(Signature)

(Name)

(Title)

(Date)

Galveston Bay Estuary Program Fiscal 2028 Project Proposal



Please complete this proposal form and submit to the appropriate Subcommittee Coordinator (end of form) by **July 24, 2026**. No late submittals will be considered for funding.

This Call for Project Proposals complies with 30 Texas Administrative Code (TAC) § 14.7, which lays out requirements for a competitive solicitation by TCEQ for grant awards. For convenience, specific citations to 30 TAC § 14.7 are identified in the text.

SECTION ONE: INTRODUCTION

Purpose [required by 30 TAC § 14.7(1)]: The purpose of the proposed grant from the Galveston Bay Estuary Program (GBEP), a program of the Texas Commission on Environmental Quality (TCEQ), is to implement *The Galveston Bay Plan, 2nd Edition* (the Plan), a comprehensive conservation and management plan falling under Section 320, of the Federal Water Pollution Control Act (33 U.S.C. Section 1330), for a designated national estuary in the State of Texas.

Objective and Allowable Activities [see 30 TAC § 14.7(4)]: The objective of this grant is to implement the GBEP stakeholder developed priorities for fiscal 2028 (FY 2028) Priority Area Actions that were developed by GBEP subcommittees for FY 2028 at the June 2026 meetings. Any proposal implementing the Plan may be submitted, but proposals implementing the FY 2028 Priority Area Actions will be considered above others.

Authority [see 30 TAC § 14.7(2)]: Grants issued by GBEP under this solicitation are authorized by: the Federal Water Pollution Control Act (Clean Water Act) § 320 (33 UNITED STATES CODE § 1330), commonly referred to as the National Estuary Program; TEX. WATER CODE § 5.124; and 30 TAC ch. 14.

Match Requirement [see 30 TAC § 14.7(10) and 30 TAC § 14.7(11)]: No matching funds are required. Therefore, there is no need to adjust or waive any matching funds requirement.

Multiple Awards [see 30 TAC § 14.7(7)]: GBEP anticipates awarding funds for multiple proposals. GBEP intends to award grants to that combination of proposals which best implements the Plan, factoring in all criteria identified in this Call for Project Proposals, the availability of funds, and the most effective division of funds between awards.

Timeline of Proposals:

Task	Date Due
Release of Request for Proposals	June 22, 2026
Proposals Due	July 24, 2026
Send Proposals to Subcommittees Members for Review	August 12, 2026
Present Proposals to Subcommittees for Council Recommendation	September 2, 2026 (NRU and PPE) September 9, 2026 (M&R and WSQ)
Present Proposals to B&P Subcommittee for Final Recommendation	September 30, 2026
Present Proposals to Galveston Bay Council for Approval	October 14, 2026

SECTION TWO: SUBMITTAL – GENERAL INFORMATION

Primary Subcommittee: Monitoring and Research (M&R)
Secondary Subcommittee (if applicable): Natural Resource Uses (NRU)
Tertiary Subcommittee (if applicable): Choose an item.

Project Name:

Post-Restoration Terrapin Nesting Habitat Surveys at Galveston Island State Park
Project Previously Funded by GBEP? Yes ☐ No ☒

Lead Implementer / Categories of Eligible Recipients [see 30 TAC § 14.7(3)]:

Public University: University of Houston-Clear Lake (UHCL); Environmental Institute of Houston (EIH)

The lead implementer must be in one of the following categories of eligible recipients. Please indicate which category applies to your entity. If the proposing party is not already paired with a lead implementer in one of the categories listed below, the proposing party will need to partner with an eligible recipient in one of these categories to be selected for funding. Please reach out to GBEP staff with any questions.

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

[If other, please identify pass-through partner.]

Unique Entity ID (UEI) Number:	RD74AUNCTZJ1
Vendor Identification Number (VIN) or Tax ID:	State: 3-75975-9759-2; Federal: 74-6001399

Contact Information:

Project Representative Name	Mandi Gordon
Project Representative Phone	281-283-3794
Project Representative Email	gordon@uhcl.edu

Project Dates / Duration (beginning no earlier than September 1, 2027 – ending no later than May 31, 2030) [see 30 TAC § 14.7(5)]:

September 1, 2027 – August 31, 2029 (24 months)

Amount Requested from GBEP:

\$132,243 *See notes about scalability in the Total Project Cost section below
Federal ☐ State ☒ No Preference ☐
Is the project scalable? ☒

Amount Requested per year (if applicable):

FY 2028 (09/01/2027-08/31/2028)	\$ 64,998
FY 2029 (09/01/2028-08/31/2029)	\$ 67,245
FY 2030 (09/01/2029-05/31/2030)	\$ 0.00
Total	\$ 132,243

Total Project Cost (including Leveraging Amounts, if any; provide leveraging information where indicated below):

Requested funds:	\$ 132,243 (28% of the total project cost)
Pending funds (USFWS):	\$ 48,000 (contract pending)
Pending funds (GOAA):	\$ 40,000 (funds applied for; response pending)
Awarded funds (TPWD and UHCC):	\$ 250,000 (GBEP funds approved for FY27)
Total project costs:	\$ 470,243 (if funds secured from all sources)

**Notes about scalability:*
The primary costs for the proposed project expansion are in salary and fringe, especially related to student participation (currently included at 100% support for two years of graduate thesis work and includes a stipend for the graduate student). Should the project be scaled down or costs reduced, student participation can be reduced or removed completely. **If removed completely, the total requested funds are reduced to**

\$54,608, assuming that the other leveraged funds are fully realized. Below are updated calculations for the minimum cost of the project expansion. Note that if GBEP or the related subcommittees would still like to prioritize student support and/or workforce development in some capacity, estimated amounts can be provided for partial support of a student(s) in the project.

Requested funds:	\$ 54,608 (14% of total if scaled down and other funds realized)
Pending funds (USFWS):	\$ 48,000 (contract pending)
Pending funds (GOAA):	\$ 40,000 (funds applied for; response pending)
Awarded funds (TPWD and UHCC):	\$ 250,000 (GBEP funds approved for FY27)
Total project costs:	\$ 392,608 (if funds secured from all sources)

If reduced the proposed project funding is reduced to the minimum, and one or more of the other leveraged funding opportunities is not realized, then changes may need to be made to the study design to accommodate the reduced funds.

Is this an estimate? ☒

Leveraging (in-kind and/or cash):

The proposed project directly supplements a GBEP funded restoration project at Galveston Island State Park (GISP; \$250,000), coordinated through the Texas Parks and Wildlife Department (TPWD) and University of Houston Coastal Center (UHCC).

Additional leverage funds (\$48,000) are pending from the U.S. Fish and Wildlife Service (USFWS) Coastal Program for supplemental terrapin nesting surveys within the Galveston Bay estuary. Should the proposed study not be funded, USFWS funds may be used to cover some of the proposed tasks but are not sufficient for completing the full scope of the proposed work at GISP. These USFWS funds are anticipated to start on October 1, 2026.

Additionally, \$40,000 in funds have been requested from the Gulf of America Alliance (GOAA) for supplemental surveys in the Galveston Bay estuary. Should these funds be awarded, they are intended to expand survey efforts in spatial coverage, frequency, and duration. As of this proposal, these funds have not been awarded, and award notifications are planned for mid-fall 2026.

If all funds are awarded, these leveraged funds represent 72% of the total project budget.

In addition to these leveraged funds, EIH at UHCL maintains the longest, consistently running Terrapin Monitoring Program in the state. While GISP is not part of routine monitoring activities, general Terrapin Monitoring Program costs are ~\$10-20K per year for bi-annual surveys (depending on frequency and available time; estimate includes staff/student salary, vessel and vehicle use rates, and supplies). Costs for the proposed study are minimized based on existing supplies and personnel expertise from our Terrapin Monitoring Program activities. These costs are not calculated into the total leverage amount but are relevant and necessary for keeping costs for the proposed project at a minimum.

SECTION THREE: GALVESTON BAY PLAN, 2ND EDITION IMPLEMENTATION

Grant recipient activities to be funded must implement the Plan, but proposals implementing the FY 2028 Subcommittee Priorities (Section Four) will be considered above others. This selection criteria provides for the selection of multiple recipients as needed.

The *Galveston Bay Plan, 2nd Edition* Action Plans are found at:

<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/>

Galveston Bay Plan Priority Area Actions Addressed:

Plan Priority 1: Ensure Safe Human and Aquatic Life Use

NPS-1 ☐ NPS-2 ☐ NPS-3 ☐ NPS-4 ☐

PS-1 ☐ PS-2 ☐ PS-3 ☐

PHA-1 ☐ PHA-2 ☐ PHA-3 ☐ PHA-4 ☐ PHA-5 ☐

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 3: Engage Communities

SPO-1 ☐ SPO-2 ☐ SPO-3 ☐ SPO-4 ☐
PEA-1 ☐ PEA-2 ☐ PEA-3 ☐

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:

The proposed project directly supplements a GBEP funded restoration project at Galveston Island State Park, coordinated through TPWD and UHCC. The partner project addresses priorities NPS-1, NPS-3, NPS-4, HC-2, HC-3, SC-1, SC-2, SPO-1, SPO-2, and SPO-3. The work included in the current proposal supplements these priorities in the following ways:

HC-2 (Habitat Restoration) and HC-3 (Habitat Enhancement): The proposed study supports this priority by compiling necessary post-construction monitoring data for the GBEP-funded restoration project. While terrapin are known to prefer shell hash and sandy beaches in areas along the Texas coast, actual use of available nesting habitat within GISP is largely unknown. Post-restoration nesting surveys will be critical in understanding how efforts may have changed or affected nesting site selection by female terrapin.

SC-1 (Native Species Management): As a Species of Greatest Conservation Need in Texas, better understanding of preferred nesting habitats for terrapin is needed by conservation managers. In Texas, formal nesting surveys have been documented only in the grey literature. The proposed work will fill knowledge gaps in terrapin nesting habitat preference and structure post-habitat restoration, and will represent the first formal nesting survey conducted in GISP.

RES-3 (Conduct Physical Stressor Monitoring and Research) and RES-8 (Complete Coastal Resiliency and Acclimation Studies): Physical stressors (such as coastal erosion or shoreline hardening) directly impact nesting habitats utilized by terrapin and other coastal wildlife. For conservation or resource managers to make informed decisions about habitat restoration, alteration, or management strategies, a better understanding of how these habitats are utilized by nesting terrapins is needed. The proposed study directly informs physical stressor monitoring and coastal resiliency decisions for preserving our native wildlife.

SECTION FOUR: SUBCOMMITTEE PRIORITIES / FACTORS TO BE USED TO SELECT AWARDS [see 30 TAC § 14.7(6)]

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority. This selection criteria provides for the selection of multiple recipients as needed.

Subcommittee Identified Priorities:

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

- ☐ WSQ: Supporting management measures and watershed-based plans through adaptive management, workforce development, and technical assistance.
- ☐ WSQ: Improve knowledge and accessibility of pollution reporting tools to empower the community.
- ☐ WSQ: Implementation and/or evaluation of best management practices that address point and nonpoint source pollution.
- ☐ NRU: Habitat Acquisition.
- ☐ NRU: Enhancement of existing or ongoing restoration-conservation efforts. Special emphasis on:
 - ☐ Adaptive management for previously completed projects; and

- ☐ Projects that may have lost/delayed funding from other federal sources.
- ☒ NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife.
- ☐ NRU: Project urgency: Project must be completed in next 24 months or opportunity is lost.
- ☐ PPE: Connecting new audiences to existing/completed on-the-ground projects in the watershed.
- ☐ PPE: Empowering K-12 students and/or adults to positively impact their local environment through increased scientific literacy and community projects.
- ☐ PPE: Opportunities to host workshops/networking events to provide technical assistance for local leadership (local governments, MUDs, schoolboards, the public) on key topics.
- ☐ PPE: Conservation and environmental workforce development.
- ☒ M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management projects, WSQ, PPE).
- ☐ M&R: Baseline assessments for large-scale, man-made changes to Galveston Bay at an adequate timeline and spatial range to provide useful information.
- ☒ M&R: Assessment, Exposure, and Response to stressors, including but not limited to:
 - ☒ Species of greatest conservation need;
 - ☐ Contact recreation standards;
 - ☐ Environmental parameters;
 - ☐ Emerging contaminants; and
 - ☐ Legacy contaminants.

Subcommittee Priority Detail:

The proposed project directly supplements a GBEP funded restoration project at Galveston Island State Park, coordinated through TPWD and UHCC. In addition to the subcommittee priorities addressed by the funded project, the proposed project also addresses the following FY28 subcommittee priorities:

NRU: Benefit to native fish and wildlife, including federal and state listed species, Species of Greatest Conservation Need, or nongame wildlife. The proposed study will compile needed information about nesting habitat preference and availability at GISP for this Species of Greatest Conservation Need as well as provide necessary post-construction monitoring data for the GBEP-funded restoration project.

M&R: Meaningful and effective monitoring of existing, past, and new projects (NRU: especially research and monitoring for diamondback terrapin and best management practices). As a species of greatest conservation need in Texas, limited information about the nesting habitat preferences for the diamondback terrapin have constrained resource managers from making informed decisions related to conservation decisions. Additionally, the proposed study will provide data which can be used to develop Best Management Practices (BMPs) for future restoration efforts, such as those planned at Giraffe Head and in association with the Coastal Spine.

M&R: Assessment, exposure, and response to stressors, including Species of Greatest Conservation Need. Coastal and shoreline erosion, habitat loss, and sea level fluctuations have a direct effect on terrapin nesting habitat availability and selection. The proposed study will compile much needed information about preferred nesting habitats and how mitigation (e.g., restoration) efforts may improve habitat distribution.

Does the Project align with any EPA Areas of Special Interest?

- ☐ Reduce Nutrient Pollution to Protect Water Quality and Public Health
- ☐ Make Investments that Address Coastal Resiliency
- ☐ Reduce Trash

While the proposed project does not directly address EPA Areas of Special Interest, the GBEP funded partner project coordinated by TPWD and UHCC addresses investments in Coastal Resiliency. These include consistencies with the Texas Coastal Resilience Master Plan (Degraded or Lost Habitat, Bay Shoreline Change, and Inland Flooding), alignments with the EPA's goals for enhancing coastal resiliency, shoreline stabilization, and native coastal habitat restoration.

SECTION FIVE: PROPOSAL DETAILS

Grant recipient activities must implement the Plan. Additional recipient selection criteria includes whether a project addresses a subcommittee priority.

Project Summary:

The proposed project directly supplements a GBEP funded restoration project at Galveston Island State Park, coordinated through TPWD and UHCC. Due to the paucity of information about preferred terrapin nesting habitat in GISP and the uncertainty of the impact that the shoreline restoration efforts by TPWD and UHCC may have on terrapin nesting habitat, we will conduct post-restoration nesting habitat surveys in restored and un-restored areas of GISP. By synergizing these projects, recommendations will be provided to resource and conservation managers to make informed decisions on future habitat restoration efforts.

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

In coastal areas, sea level fluctuations and anthropogenic development have a major impact on shoreline structure and composition. Marine and estuarine turtles rely on beaches and their associated marshes as critical nesting areas. The Diamondback Terrapin (*Malaclemys terrapin*; “terrapin”) is a species of greatest conservation need (SGCN) in Texas and has experienced declining distributions coast-wide from habitat loss (M. Gordon, *unpublished data*). Along the middle Texas coast, formal nesting surveys have been conducted in the Nueces Estuary (Halbrook, 2003; Baxter, 2015), Mission-Aransas Estuary (Baxter, 2017), and within the Aransas National Wildlife Refuge (Koza, 2006). Within Galveston Bay, little is known about preferred nesting habitats with most reports of nesting activity limited to grey literature (Hogan, 2002; George, 2014). While these formal surveys resulted in valuable information about potential nesting habitat preferences, none were successful in documenting actively nesting females except for one female observed on South Deer Island in Galveston Bay (Hogan, 2003). Potential nesting habitat types documented through these surveys include shell hash beaches, a mixture of shell and sandy shorelines, and areas adjacent to low-lying saltmarsh habitat. In May 2025, a nesting female was documented on the beach side of Galveston Island (Morris et al., *in review*). While terrapin show a propensity for nesting in beach dune systems in other parts of the species’ range, this observation in Galveston marked a novel report of preference specifically for sandy substrate. The lack of clarity in preferred nesting habitat type for terrapin in Texas is due to limitations in shoreline accessibility through private lands, anthropogenic impacts to historically utilized habitats, and limited funding for time intensive field surveys.

The nearly 2,000 acres of protected habitat within GISP serves as a refuge for nesting shorebirds, and potentially terrapin (<https://tpwd.texas.gov/state-parks/galveston-island/nature>). While no terrapin nesting activity has been reported within the park in recent years, terrapin observations have been reported through citizen scientists, anecdotal accounts, and iNaturalist (M. Gordon, *unpublished data*). Because the park spans the width of Galveston Island, a large amount of potential terrapin nesting habitat (e.g., saltmarsh, shell hash shorelines, sandy shorelines) are present. This variety in potential nesting habitat types provides a unique opportunity for researchers to better document the use of this park as protected nesting habitat. Project partners at TPWD and UHCC are planning to restore shoreline habitats in Dana Cove at GISP through relocation of oyster shell materials from UHCC’s coastal prairie property. The goal of this restoration project is to restore eroding shorelines within this part of GISP, but it is unclear if this effort will also improve nesting habitat availability for terrapin.

Due to the paucity of information about preferred terrapin nesting habitat in Galveston Bay and the uncertainty of the impact that the impending shoreline restoration efforts by TPWD and UHCC may have on terrapin nesting habitat, **we are requesting funds to support nesting surveys within GISP, including post-restoration nesting habitat surveys at Dana Cove.**

During nesting surveys, game cameras will be installed at strategically placed locations to passively monitor nesting activities (similarly to Baxter 2015, 2017). Shoreline habitats will be surveyed by foot at least once per week during nesting season (April-June) (see Guillen et al., 2015 for detailed transect survey methods). These surveys include access to areas of GISP by boat or by vehicle. If terrapin are encountered, habitat and morphometric data will be recorded for each individual captured following standardized protocols (see Guillen et al., 2015 for detailed methods). Individuals will be marked externally (e.g., notching) and internally (e.g., PIT tag) for identification in future survey efforts.

During nesting surveys, *in situ* habitat data (including sediment size, vegetation, elevation, etc.; outlined in George, 2014), will be collected in multiple locations throughout the park to best establish priority nesting area(s). These habitat data will be paired with landscape scale geospatial data (e.g., [USGS The National Map](#) digital elevation model [DEM], the [USGS National Land Cover Dataset](#) [NLCD], the [NOAA Coastal-Change Analysis Program](#) [C-CAP] dataset, the [NRCS Soil Survey Geographic Database](#) [SSURGO], etc.) in an ArcGIS Pro geospatial database and/or model to determine trends in preferred habitat location within GISP. Nesting survey results and subsequent geospatial maps will be shared with TPWD and UHCC so that best practice for future management decisions may be made within the park. Post-restoration surveys will be conducted along the restored shorelines of Dana Cove and other areas of priority habitat to assess potential changes in

nesting habitat use. Results of nesting surveys will also be submitted to the TXNDD for use by conservation managers in decision making for this Species of Greatest Conservation Need.

In addition to supporting post-restoration surveys as part of the GISP restoration project, data will also be shared with partners conducting restoration efforts in other parts of Galveston Bay, including The Nature Conservancy and TPWD for the impending Giraffe Head restoration project and as needed for development of other restoration projects, such as the Coastal Spine. By synergizing these projects, recommendations will be provided to resource and conservation managers to make informed decisions on improving terrapin nesting habitat in the future.

Literature Cited:

Baxter, 2015. CBBEP Report; **Baxter, 2017.** CBBEP Report; **George, 2014.** M.S. Thesis (UHCL); **Guillen et al., 2015.** UHCL Report #15-001; **Halbrook, 2003.** M.S. Thesis (TAMUCC); **Hogan, 2002.** USGS Report; **Koza, 2006.** M.S. Thesis (TAMUCC); **Morris et al., in review.** Herpetological Review.

Project Urgency:

This proposal is being submitted as a supplement to a GBEP-funded project coordinated by Texas Parks and Wildlife Department (TPWD) and the University of Houston Coastal Center (UHCC). The funded project is expected to break ground at the UHCC and Galveston Island State Park (GISP) in summer of 2027. If the proposed study is funded, then funds from the USFWS grant (previously mentioned in the leverage section) may be used for pre-restoration surveys at GISP in the Spring of 2027. Because of the funding timeline for the proposed study, GBEP funds would be used solely for post-construction surveys at GISP, but if restoration activities at GISP are delayed, the proposed project timeline may be able to accommodate pre-restoration survey efforts.

In addition to the urgency in timing with the paired TPWD/UHCC project, no formal terrapin nesting surveys have been conducted in GISP within the past decade, though terrapin have been documented through informal reports and anecdotal observations. Therefore, actual use of the associated habitat(s) as viable nesting areas is largely unknown. If funded, these pre-restoration survey efforts are critical to better understanding the nesting habitat use of terrapin within GISP.

Other Plans Implemented:

In addition to Actions addressed in the Galveston Bay Plan, the proposed study also addresses aspects of other state and Gulf-wide plans and strategies.

The proposed study addresses concerns and data deficiencies outlined in the [Gulf of Mexico Diamondback Terrapin Conservation Action Plan](#) developed by The Nature Conservancy and partnering Gulf states (including members from the proposed project team).

As part of the [Texas State Wildlife Action Plan](#) (SWAP), terrapin are recognized as a Species of Greatest Conservation Need. Resulting data from the proposed study will be provided to TPWD for inclusion in their species status reviews and ongoing monitoring database (the Texas Natural Diversity Database) to fill knowledge gaps which are integral in the development of management strategies.

Goals of the Gulf of America Alliance's Water Resources and Wildlife and Fisheries Teams (outlined in the [Gulf of Mexico Alliance's Governor's Action Plan IV](#)) include multiple actions related to interagency collaborative efforts to prioritize research on threats to species of conservation need, with multiple studies focused on impacts to terrapin already funded Gulf-wide through different incentive programs.

Partners¹ and Their Roles:

Mandi Gordon, Lead PI – gordon@uhcl.edu; Environmental Institute of Houston (EIH), University of Houston-Clear Lake (UHCL); Associate Director, Research Programs

Ms. Gordon will provide administrative oversight, assist with project design and implementation, manage contractual obligations, conduct data analyses, and reporting.

Danielle DeChellis, Co-PI – dechellis@uhcl.edu; EIH, UHCL; Research Technician

¹ If partners are subgrantees completing work reimbursable under GBEP funding, a letter of commitment from the partner must be submitted as an appendix with the application.

Ms. DeChellis will provide day-to-day project management, coordination with project partners, facilitate sample processing, conduct field surveys, and be responsible for data management, statistical analysis, and report development..

Savannah Horton, Project Partner - savannah.horton@tpwd.texas.gov; TPWD; Coastal Ecologist, Restoration and Artificial Reefs

As PI for the GBEP funded restoration project, Savannah will act as a liaison between the two projects to ensure continuity and communication. Additionally, Savannah will assist with coordination of site access within GISP and synergy of project timelines between the two related studies.

Matthew Abernathy, Project Partner (msaberna@central.uh.edu); UHCC Texas Institute for Coastal Prairie Research and Education; Program Director

As Co-PI for the GBEP funded restoration project, Matthew UHCC liaison between the two projects to ensure continuity and communication. UHCC will participate in project meetings and provide input on the process, design, and monitoring of the project to ensure a successful output. Additionally, UHCC will facilitate media outreach related to the TPWD project, which may include details about the current project proposal through UHCL.

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

☐ Yes

☒ No

N/A

Is the project subject to Title VI requirements?

To meet federal nondiscrimination guidance and laws (Title VI), TCEQ requires information and services to be provided in languages other than English when significant numbers of beneficiaries are of limited English-speaking ability (LEP). If 5% or more of the population within your project area is LEP and share a common language, then you are required to provide outreach in the alternative language. For statewide projects, Spanish language outreach is required. As Title VI compliance could impact the project budget, please reach out to the primary subcommittee coordinator for this application with questions on determining applicability.

☐ Yes

☒ No

N/A

Latitude/Longitude (Optional):

29.21354, -94.95737 (Dana Cove Project Site for TPWD/UHCC Project)

Location:

Gulf Coast Prairie and Marshes Ecoregion → San Jacinto-Brazos Coastal Basin → Lower Galveston Bay Watershed → West Galveston Bay; entirely within lower Galveston Bay watershed

Projects Map



Figure 1 Galveston Island State Park boundary (yellow polygon) with Dana Cove noted. Dana Cove is the primary area of interest for the GBEP funded TPWD and UHCC shoreline restoration project. Proposed terrapin nesting surveys will be conducted throughout the state park in areas of preferred habitat (e.g., shell hash shorelines, sandy shorelines, low-lying marsh areas, etc.), including post-construction in areas where restoration activities occurred.

Supplemental Photos/Graphics (Optional):

N/A

SECTION SIX: BUDGET DETAILS

Grant Payments [see 30 TAC § 14.7(12)]: All grant payments will be made on the basis of reimbursement for allowable costs (as defined in 2 CFR Part 200, Subpart E). All payments for awarded proposals will be reimbursements of allowable costs incurred after both parties have entered (signed) a grant agreement for the project.

Budget. Authorized budgeted expenditures for work performed are as follows:

a. Direct Costs

Budget Category	Cost for Work to be Performed
Salary / Wages	\$ 81,899
Fringe Benefits (###)% ²	\$ 18,522
Travel	\$ 1,300
Supplies	\$ 1,308
Equipment	\$ 0
Contractual	\$ 0
Construction	\$ 0
Other	\$ 12,077
Total Direct Cost	\$ 115,106

b. Indirect Costs³

Distribution Base Amount (<i>identify Base type below</i>)	\$ 107,106
Indirect Cost Rate for Reimbursement	16%
Total Indirect Costs	\$ 17,137

c. Maximum Authorized Reimbursement

Maximum Authorized Reimbursement (Direct and Indirect Costs)	\$ 132,243
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Indirect Cost Distribution Base. The Distribution Base above is (check one):

- ☐ direct salary/wages and fringe benefits
☒ modified total direct costs
☐ other direct cost Base

If other direct cost Base, identify:

The indirect cost rate is (check one):

☒ **Predetermined Rate**— an indirect rate that is negotiated between the Performing Party and its federal cognizant agency and supported by a current Negotiated Indirect Cost Rate Agreement (NICRA) letter. A Predetermined Rate is not subject to adjustment except as provided by 2 Code of Federal Regulations (CFR) § 200.411.

☐ **De Minimis Rate**— if Performing Party does not have a current negotiated indirect rate, Performing Party may use a standard rate of 15 percent of Modified Total Direct Costs (MTDC) in lieu of determining the actual indirect costs of the service. Costs must be consistently charged as either indirect or direct costs.

☐ **Partial Reimbursement Rate** — a reimbursement rate agreed to between TCEQ and Performing Party that is less than the rate authorized under TxGMS or, where applicable, 2 CFR Part 200. Performing Party contributes

² If fringe is not a single rate, please attach calculation or explanation as an appendix.

³ Please attach Indirect Cost Agreement as an appendix if applicable

all of its unreimbursed indirect costs to the successful performance of the project or projects funded under this Contract, in accordance with Article 9 of this section.

☐ **Other:** [Examples: De Minimis Rate with a base of direct salary and wages (less than or equal to actual indirect costs) or Provisional Rate. If this is a Provisional Rate, include the following language: Provisional Rate: The subsequent adjustment of the indirect cost rate is subject to the requirements of Article 9 of this (Cost Budget) section.]

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

[Description of costs associated with “Other” budget category.]

Travel. In order to be reimbursable, travel costs must be specifically authorized in advance of the travel. Travel costs will be reimbursed only in the amount of actual costs, up to the maximum allowed by law for employees of the State of Texas at the time the cost is incurred.

Budget Categories. The Budget Categories above are representative of the items of cost found in TxGMS and 2 CFR Part 200, and have the definitions, requirements, and limitations found therein. Construction costs are not reimbursable without prior, specific written authorization from TCEQ.

SECTION SEVEN: CONTRACT REQUIREMENT [see 30 TAC § 14.7(15)]:

- By submitting this Project Proposal, you acknowledge that, if you become a successful grant recipient selected for a grant award, you must enter into a signed grant agreement or contract with TCEQ following the announcement of that award.

SECTION EIGHT: ACKNOWLEDGMENTS

Please read and understand the following:

- By submitting this Project Proposal, you acknowledge that information on how grant payments will be made is contained in the Budget Details section describing direct and possibly indirect costs. You further acknowledge that grant payments will be reimbursements on the basis of allowable costs incurred and that selected recipients will receive contract documents addressing allowable costs, unallowable costs, and reimbursement.
- By submitting this Project Proposal, you acknowledge your understanding that Project Proposals do not require matching funds and that a TCEQ director does not need to adjust or waive any matching funds requirement.
- By submitting this Project Proposal, you acknowledge that, if GBEP elects to hold a pre-submittal meeting relating to this Project Proposal, GBEP will post notification of the meeting’s time and location indicating whether attendance is mandatory.

SECTION NINE: QUESTIONS AND PRE-SUBMITTAL MEETINGS [see 30 TAC § 14.7(13) and 30 TAC § 14.7(14)]:

- There are no pre-submittal meetings scheduled.
- For requests for additional, pre-submittal information [see 30 TAC § 14.7(13)], please contact the corresponding Subcommittee Coordinator listed on this page.

SECTION TEN: ADDITIONAL INSTRUCTIONS

In submitting your Project Proposal, please refer and adhere to the following instructions and guidelines concerning materials and information required to be submitted by potential grant recipients:

- GBEP intends to accept only complete Projected Proposals in a layout and format constituting a filled version of this proposal document with all applicable sections therein addressed; however, GBEP may, in its sole discretion, consider and accept nonconforming Project Proposals in the best interest of the state.
- Unless otherwise specified by GBEP, formal signatures are not required on Project Proposals.



July 20, 2026

Lisa M. Marshall
Program Manager
Galveston Bay Estuary Program
Texas Commission on Environmental Quality
1002 Gemini Street, Suite 214
Houston, Texas 77058

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Chairman-Emeritus
Houston

David Yoskowitz, Ph.D.
Executive Director

Re: Support Letter for Environmental Institute of Houston's Application to the
NRU Subcommittee Grant

Dear Ms. Marshall:

Texas Parks and Wildlife Department (TPWD) is pleased to support The Environmental Institute of Houston's application to conduct shoreline and marsh surveys in habitats that are in varying stages of restoration execution or recovery. The goal of these surveys is to inform best practices to maximize ecosystem benefit for planned restoration efforts in relation to wildlife conservation. This project will utilize multiple TPWD restoration sites to perform diamondback terrapin nesting surveys and provide important information on how critical wildlife are utilizing habitats within the restoration sites before and after implementation.

The output of the project will inform TPWD's current and future restoration designs to implement nature-based solutions that support nesting coastal species and communities. The information will further TPWD's ability to protect and maintain a complete coastal complex that can provide critical environmental services and benefits, including the provision of fish and wildlife habitat for a species of greatest conservation need in Texas.

Texas Parks and Wildlife Department endorses the application of the Environmental Institute of Houston to the Natural Resource Uses Subcommittee for Terrapin Nesting Surveys at Restoration Sites and respectfully requests your support for this proposal.

Sincerely,

Zachary Olsen, PhD
Ecosystem Resources Program Director
Texas Parks and Wildlife Department, Coastal Fisheries Division
Email: zachary.olsen@tpwd.texas.gov
Phone: 361-694-0226



Division of Energy and Innovation
UNIVERSITY OF HOUSTON

July 22, 2026

Dear Selection Committee,

On behalf of the University of Houston Institute for Ecological Resilience (UH IER), I am pleased to confirm our support and intent to collaborate with **the University of Houston-Clear Lake (UHCL) and the Environmental Institute of Houston** on the proposed project, Post-Restoration Terrapin Nesting Habitat Surveys at Galveston Island State Park if funding is granted. We are excited by the opportunity to support this project to evaluate the restoration areas as potential terrapin nesting areas.

UH IER is committed to advancing research, education, and community engagement that strengthen ecological resilience through nature-based solutions. This project addresses multiple gaps in research and monitoring by evaluating both Diamondback Terrapin nesting in Galveston Bay and comparing nesting in unrestored and recently restored areas.

As part of this collaboration, UH IER anticipates contributing in several ways, including:

- Participating in project meetings and providing communication between the oyster reef restoration project and the terrapin monitoring project;
- Providing input on the monitoring process and design;
- Sharing information and conducting outreach about the oyster reef restoration and terrapin monitoring projects with the support of UH IER communications and at community events and presentations.

This partnership not only enhances partnerships throughout the region but helps to address research gaps in the nesting habits of terrapins and monitor the benefits and wildlife uses of restored oyster reefs. Data collected from this project is essential in supporting future restoration efforts throughout the Galveston Bay system.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Matthew Abernathy
Program Director, UH Coastal Center
University of Houston
msabernathy@uh.edu