# RESTORE ACT Center of Excellence for Louisiana Research Grants Program
# FY2025 Annual Report to the RESTORE Council

## Executive Summary

In the 2025 financial year (FY25), the RESTORE ACT Center of Excellence for Louisiana (LA-COE) monitored the 12 projects ongoing in the third Request for Proposals cycle (RFP3 cycle) following their initiation in September 2024. This included soliciting two semi-annual progress reports (PPRs) and requiring two meetings between RFP3 primary investigators (PIs), team members, The Water Institute Technical Points of Contact (TPOCs), and Liaisons from the Coastal Protection and Restoration Authority (CPRA) following the submission of the PPRs. During FY25, LA-COE hosted its annual All-Hands and Executive Committee meetings on August 18, 2025, in which RFP3 award recipients and team members, CPRA Liaisons, TPOCs, and LA-COE Executive Committee members gathered for presentations on the progress of each of the 12 ongoing RFP3 projects. Additionally, the LA-COE Executive Committee members met to discuss potential updates to the LA-COE RFP timeline, among other topics.

The LA-COE continued ongoing program operations according to the standard operating procedures (SOPV4), which were updated in December 2023. The details of the RFP3 awards, as well as how this research can inform the Louisiana Coastal Protection and Restoration Authority Coastal Master Plan is routinely updated on the LA-COE RFP3 cycle webpage: https://thewaterinstitute.org/la-coe/funded-research-rfp3-cycle.

## Programmatic Elements

The provisions of the RESTORE Act requires that Centers of Excellence must focus efforts on a selected set of disciplines.[1] As such, LA-COE focuses on the following:

- Coastal and deltaic sustainability, restoration, and protection including solutions and technology that enable citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast region;
- Coastal fisheries and wildlife ecosystem research and monitoring in the Gulf Coast region;
- Sustainable and resilient growth, economic, and commercial development in the Gulf Coast region;
- Comprehensive observation, monitoring, and mapping of the Gulf.

Key accomplishments during the FY25 reporting period include: (1) managing 12 research subawards for RFP3, (2) reviewing subrecipients' performance progress reports (PPRs), (3) hosting a semi-annual webinar to provide training on data management requirements and best practices for subawardees, (4) data management coordination across Centers of Excellence at the

[1] https://www.treasury.gov/services/restore-act/Pages/COE/Centers-of-Excellence.aspx

Gulf of America All-Hands 2025 conference, (5) the presentation of four RFP3 projects during an LA-COE session at the State of the Coast Conference, (6) collaborating on an open-access article on the co-production of science to advance coastal restoration in the Gulf, (7) hosting a LA-COE All-Hands Meeting 2025 and an Executive Committee meeting in person, (8) emailing out quarterly newsletters, (9) assessing and reporting on progress using defined metrics that address federal reporting requirements, including reports to the U.S. Department of Treasury was also conducted, and (10) operating the LA-COE according to the Standard Operating Procedures (SOPs), including website management, data management, coordination with other Centers of Excellence, and dissemination of information.

During the RFP3 cycle, LA-COE has worked to administer and manage 9 research subawards and 3 graduate assistantship subawards. LA-COE requested semi-annual PPRs from subawardees. Following the submission of each PPR, LA-COE also requires The Water Institute Technical Points of Contact (TPOCs) to have check-in meetings with Principal Investigators (PIs) and CPRA Liaisons for individual projects within 30 days after PPR submission. LA-COE has been managing the 12 subawards by reviewing the semi-annual PPRs for technical content (via the TPOC) and to ensure research results will help implement the Louisiana Coastal Master Plan (via CPRA Liaisons). During this performance period, LA-COE reviewed and approved semi-annual PPR#1 (August 1, 2024–January 31, 2025) and PPR#2 (February 1, 2025–July 31, 2025).

LA-COE hosted the first semi-annual RFP3 webinar on April 16, 2025. The meeting provided information on data management and subaward invoicing reminders for PIs. The webinar also provided details on upcoming LA-COE events, including the 2025 All-Hands Meeting.

The Gulf of America All-Hands 2025 Conference took place in Biloxi, Mississippi, on May 5–8. The LA-COE team connected with RESTORE Act Centers of Excellence partners from across the Gulf. During the meeting, LA-COE Data Manager Brittany Jensen promoted a Gulf-wide Data Managers Forum to support data consistency and collaboration across the Gulf.

The 2025 State of the Coast Conference took place in New Orleans, Louisiana, on May 20–22. LA-COE hosted a session during the conference titled: RESTORE Act Center of Excellence for Louisiana: Using Novel Technologies to Advance Coastal Restoration and the Louisiana Coastal Master Plan. During the session, three RFP3 PIs and one RFP3 co-PI each presented on their research that aims to use novel technologies to advance coastal restoration science and implementation. These technologies include an automated tool for water quality assessment, custom-built sensors for determining vegetation establishment thresholds, instrumented settlement plates enhancement for marsh creation monitoring, and innovative methods to measure flotant marsh extend and stability.

The LA-COE collaborated with CPRA and former LA-COE members to publish an open-access article on the co-production of science to advance coastal restoration in the Gulf in a Special Issue

of Estuaries and Coasts. The paper, titled "Advancing the Implementation of Coastal Restoration in Louisiana Through a Co-Production of Science Framework," highlights how through co-production, the LA-COE works with CPRA to align researchers and state agencies in the face of complex coastal challenges. It was published on July 24, 2025.

The LA-COE 2025 All-Hands Meeting took place on August 18 at the Baton Rouge Area Chamber in Baton Rouge, Louisiana. This meeting is held annually with mandatory participation by at least one PI from each award as well as co-PIs and graduate students under RFP3 projects. The goal of this meeting is to promote collaboration and inform on research from RFP3-funded projects. The meeting included the LA-COE personnel, Executive Committee members, CPRA Liaisons, The Water Institute TPOCs, and RFP3 PIs, co-PIs, and graduate students. During the meeting, research progress and preliminary results from RFP3-funded projects were presented and discussed. Overall, evaluation results for this meeting from participants averaged a score of 4.73 out of 5, and 100% of survey respondents (22) felt the meeting achieved its purpose.

The Executive Committee Meeting occurred after the All-Hands Meeting on August 18, 2025. Meeting participants included senior research officials from Louisiana Universities and research organizations: Brain Roberts (Louisiana Universities Marine Consortium), John Sabo (Tulane University), John Doucet (Nicholls State University), Carol Tanya Lunn (University of New Orleans), Tammie Mayo (McNeese University), Florastina Payton-Stewart (Xavier University), and Robert Twilley (Louisiana State University). The Executive Committee Meeting involved open discussion with the research officials, LA-COE, and CPRA. The meeting's goal was to gain feedback about the LA-COE Research Needs, review progress on the success metrics targets of the RFP2 cycle, and review the grant process and timeline for past and future RFPs.

LA-COE quantifies the impacts of its research. Since 2016, LA-COE has supported 108 undergraduate students, graduate students, and post-docs, generated 14 theses and dissertations, 30 journal article publications, and 39 publicly available datasets. Additionally, LA-COE hosts a Google Scholar webpage noting all publications resulting from LA-COE-funded research and sends out quarterly newsletters by e-mail. The most recent issue was sent out in August 2025. Each issue provides updates on LA-COE activities and funded research projects.

LA-COE will continue to operate the Center according to the SOPV4, including regular meetings with CPRA (monthly and/or bi-monthly depending on schedules) and phone calls as needed, website maintenance, data management, coordination with other Centers of Excellence, and addressing federal reporting requirements, including reports to the U.S. Department of the Treasury and other dissemination of information.

Award Subrecipient(s) Funded under RFP3:

Graduate Assistantships

1. Louisiana State University, Dr. Matthew Hiatt
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: Salinity dynamics between the Mississippi River and adjacent estuaries.
    - Subaward executed in July 2024
    - Summary: The project aims to address river-estuarine hydrological connectivity from the Mississippi River, across coastal wetlands, to open water estuarine systems impacting porewater salinity dynamics in marshes. The work is intended to lay a foundation for understanding the extent of river-estuarine connectivity through multiple pathways, including surface-groundwater exchange, and the salinity dynamics of marsh porewater subject to hydrological perturbation.

2. Louisiana State University, Dr. Junhong Liang
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: Projecting future estuarine hypoxia and habitat in Louisiana.
    - Subaward executed in July 2024
    - Summary: This project will generate high-resolution hindcast and projection simulations of physical and oxygen conditions in Barataria Bay for the 21st century (2001 to 2100) using a coupled-hydrodynamic-biogeochemical model (Coastal and Regional Ocean Community Model). It will explore the use of an eco-physiological framework to map temperature-dependent hypoxic zones for selected species in Barataria Bay. The goal is to systematically characterize and map temperature-dependent hypoxic conditions over Barataria Bay for each decade under the context of climate warming.

3. University of Louisiana at Lafayette, Dr. Robyn Zerebrecki
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: Quantifying small-scale genetic variation in *Spartina alterniflora*.
    - Subaward executed in August 2024

- Summary: This project will conduct field surveys across the Louisiana coastline to assess *Spartina* genetic diversity, plant production, sediment properties, and the associated plant and invertebrate community between restored and natural salt marshes. The project will also investigate how different restoration techniques influence diversity and ecosystem function. *Spartina* genetic diversity will be assessed using microsatellite markers that allow for the identification of individual genotypes, and statistical comparisons will include population and community response variables between restored and natural marshes.

Research Awards

4. Louisiana State University AgCenter, Dr. Ayat Al Assi
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Coastal and deltaic sustainability, restoration, and protection, including solutions and technology that enable citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast region.
    - Research project undertaken: Wind resilience in coastal Louisiana: a social equity approach to enhanced building code practices.
    - Subaward executed in July 2024
    - Summary: This project aims to incorporate wind risk assessment and risk reduction through enhanced code practices into the Louisiana Coastal Master Plan. The project will examine how various social equity factors influence individuals' direct experience of economic impacts from wind events, while also evaluating the effectiveness of enhanced building code practices in reducing wind risk. In doing so, it will establish a comprehensive library for wind-risk metrics, both before and after fortifying resilience efforts in Coastal Louisiana.

5. Louisiana State University, Dr. Corina Barbalata
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Sustainable and resilient growth, economic, and commercial development in the Gulf Coast region.
    - Research project undertaken: An automated tool for water quality assessment in Louisiana's watersheds and basins.
    - Subaward executed in July 2024
    - Summary: This project will develop autonomous water parameter data collection and analysis in watersheds and basins as new spillways and diversions are created. Using optical and environmental sensors integrated with an autonomous surface vehicle will allow the detection and tracking of Harmful Algal Blooms and will enable the design of predictive modelling techniques for water quality assessment. The goal is to create a set of affordable and accessible tools for large-scale water quality monitoring that can be widely used by project managers and the community to understand the impact of both natural and human factors on the environment.

6. Chenier Environmental Consulting, Patrick Bradley

- Researcher role: Help implement Louisiana's Coastal Master Plan.
- Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
- Research project undertaken: Reconnaissance geophysical and geotechnical investigations to characterize Ship Shoal
- Subaward executed in July 2024
- Summary: To better understand Ship Shoal's sediment characteristics, volume, and geomorphology, and address data gaps, this project will develop and conduct reconnaissance full-suite geophysical and geotechnical investigations across the entire shoal. Samples will be extracted from vibracores at irregular intervals to ground truth the subbottom data. The data will provide sediment characterization and an estimate of total available volume and accessible volume of restoration quality sediment. The data collected during the surveys will serve as baseline data for future shoal migration studies.

7. Louisiana State University, Dr. Muriel Brückner
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: An analysis of vegetation establishment and its feedback with coastal inundation via modeling.
    - Subaward executed in July 2024
    - Summary: The goal of this project is to create an exploratory eco-hydrodynamic delta model to spatially refine hydrodynamics and vegetation establishment. The project will identify establishment criteria for wetland vegetation on newly developed deltaic land, including water levels, inundation frequency and period, and flow velocities. This will be achieved with a straightforward and easy to implement Python code and framework implementation that is flexible and can be incorporated in a variety of models. The results will also include recommendations on where and how the approach can be applied to improve the estimation of hydrodynamic and ecological properties in various numerical models and coastal areas.

8. University of New Orleans, Dr. Madeline Foster-Martinez
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: Determining vegetation establishment thresholds with custom-built sensors.
    - Subaward executed in July 2024
    - Summary: This project aims to deploy a network of custom-built water level loggers across two deltaic wetland environments and one marsh creation site, all

with newly developed land, to directly measure the water level and enable an accurate calculation of inundation time. Studying land that originated in different manners allows researchers to assess a fuller range of establishment criteria relevant to the Louisiana coast. The project findings will be used to develop species-specific establishment thresholds based on inundation time, salinity, and any other factors determined from the analysis, that can be used as criteria for vegetation growth on newly developed land.

9. Comite Resources, Rachael Hunter
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
    - Research project undertaken: Measurement of greenhouse gas emissions and carbon dynamics across a hydrologic gradient in Louisiana coastal freshwater forested wetlands.
    - Subaward executed in July 2024
    - Summary: This project utilizes the extensive Coastwide Reference Monitoring System (CRMS) datasets and field measurements of carbon dynamics in coastal freshwater forested wetlands to quantify greenhouse gas emissions and carbon dynamics in wetlands converting to emergent marsh and open water. Carbon modelling will be carried out to quantify the potential carbon stock accruals and the resulting carbon sequestration and greenhouse gas emission rates. The sequestration rates can be applied to specific habitat types and/or restoration footprints to determine baseline and project carbon stock accrual rates for various Coastal Master Plan restoration scenarios.

10. Louisiana State University, Dr. Celalettin Ozdemir
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Sustainable and resilient growth, economic, and commercial development in the Gulf Coast region.
    - Research project undertaken: Instrumented settlement plates enhancement for marsh creation monitoring.
    - Subaward executed in July 2024
    - Summary: This project aims to develop sensor technology to track the mudline at Instrumented Settlement Plates (ISPs) and facilitate *in-situ* effective stress estimates, which are crucial for construction monitoring. Research tasks will involve synergistic lab experiments, field demonstrations, and computational validations. The focus will be on compiling and evaluating post-construction ISP data from marsh creation projects to develop best-available science guidance and protocols for ISPs in tracking long-term marsh slurry geotechnical properties and improving marsh fill consolidation estimates for future projects.

11. Nicholls State University, Dr. Gary LaFleur

- Researcher role: Help implement Louisiana's Coastal Master Plan.
- Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf.
- Research project undertaken: Developing methods to measure flotant marsh extent and stability in the Barataria-Terrebonne estuary system.
- Subaward executed in July 2024
- Summary: The project will develop remote sensing-based, non-invasive methods for assessing mat cohesiveness in a range of flotant sites. Geospatial analysis and vegetative assessment from aerial imagery, conventional vegetative sampling, and eDNA analysis will be used to determine plant identification and composition within flotant mats. Researchers will score marshes on whether the flotant mat is stable, threatened, or unstable, allowing better predictions on whether sites are in danger of mat separation.

12. Louisiana State University AgCenter, Dr. Jeffrey Plumlee
    - Researcher role: Help implement Louisiana's Coastal Master Plan.
    - Eligible discipline: Coastal fisheries and wildlife ecosystem research and monitoring in the Gulf Coast region.
    - Research project undertaken: Does propagation of Roseau cane alter the efficacy of restoration to enhance saltmarsh fisheries production?
    - Subaward executed in July 2024
    - Summary: The research team will use a hypothesis-driven approach to: 1) investigate long-term changes in the distribution of Phragmites across the southwestern Terrebonne Basin; 2) compare long-term fish production in the southwest Terrebonne Basin in restored areas vs. non-restored areas; and 3) sample fish communities adjacent to marsh-edge across. The goal of this project is to identify Phragmites propagation and enable prediction for future Phragmites expansion or loss in southwest Terrebonne Basin. This will enable large-scale and fine-scale prediction of changes to estuarine secondary production of ecologically and economically important fishes and invertebrates.

Financial Elements

Award Recipient

The RESTORE Act Center of Excellence Research Grant Program award to CPRA was amended in July 2023. A Cooperative Endeavor Agreement dated January 10, 2024, was executed between CPRA and The Water Institute (the Institute) to administer the RFP3 award with a current contract value of $5,800,000. Invoices from the Institute total $1,200,280.17 through the period ending June 30, 2025, including subaward expenditures.

Award Subrecipient(s)

As a result of a competitive and peer-reviewed request for proposal process, subrecipients of research awards were selected. The subrecipients and associated subaward amounts are provided below:

| Number | Subrecipient | Subaward Amount |
|---|---|---|
| 1 | Louisiana State University | $131,588 |
| 2 | Louisiana State University | $135,684 |
| 3 | University of Louisiana at Lafayette | $100,260 |
| 4 | University of Louisiana AgCenter | $349,995 |
| 5 | Louisiana State University | $341,597 |
| 6 | Chenier Environmental Consulting | $667,258 |
| 7 | Louisiana State University | $344,917 |
| 8 | University of New Orleans | $345,194 |
| 9 | Comite Resources | $346,243 |
| 10 | Louisiana State University | $348,810 |
| 11 | Nicholls State University | $521,837 |
| 12 | Louisiana State University AgCenter | $345,011 |

Gulf Coast Ecosystem Restoration Council Elements

Leveraging Multipliers

LA-COE participates in bimonthly conference calls with the Gulf Restoration and Science Programs Coordination Forum that allows for funding organizations in the Gulf region to discuss their programs, share ideas, and promote collaborations. In addition, the LA-COE participates in bimonthly calls with the Directors and Administrators of the five additional Centers of Excellence across the Gulf. These meetings help with coordination across programs and facilitate discussions about leveraging resources.