Louisiana's RESTORE Center of Excellence Research Grants Program FY2021 Annual Report to the RESTORE Council

Executive Summary

A Technical Memorandum (<u>Tech Memo</u>) for tracking the success metrics and federal reporting requirements, including reports to the U.S. Department of the Treasury from the first request for proposals (RFP1) was developed. LA-COE developed the Tech Memo for tracking the success metrics defined in Standard Operation Procedure Version 1 (SOP V1) to assess RFP1 project progress and performance based on information collected from proposals, final reports, and other deliverables. Success metrics were categorized into the following: (1) Competitive Grants Process, (2) Research Progress, (3) Research Accomplishments, and (4) Outcomes, and have been comprehensively evaluated using the methodology developed at the start of RFP1 grant. Further, key accomplishments and milestones (publications, presentations, and data published) from RFP1 projects are also summarized in this Tech Memo and have been posted on LA-COE website. A table of accomplishments and outcomes from RFP1 projects during this reporting period is included in the next section. RFP1 survey questions were designed and sent to principal investigators (PIs), TPOCs, and CPRA liaisons on September 18, 2020 to evaluate the performance of LA-COE operation during CEA1/RFP1, and their responses are also included in the Tech Memo.

The grant award for Phase 2 of the LA-COE was received from the U.S. Department of Treasury in June 2020. A Cooperative Endeavor Agreement between the Coastal Protection and Restoration Authority (CPRA) and The Water Institute of the Gulf was completed and approved by the Office of State Procurement in October 2020. Thus, activities related to this award did not occur before November 1st, 2021 due to delays in the approval and execution of a Cooperative Endeavor Agreement for Phase II (CEA2) of the RESTORE Act Center of Excellence for Louisiana (LA-COE). The planning for Request for Proposals (RFP2) started after November 1st, 2021.

The Request for Proposals for cycle 2 (<u>RFP2</u>) was released on February 15, 2021. CPRA and LA-COE developed more specific research activities under each of the five general and broad topical areas of the <u>Research Needs document</u> that also align with the RESTORE Act disciplines to obtain more targeted proposals. A total of 17 research activities were developed and included in section 3.0 of RFP2 document. In addition, the Collaborative Awards category was removed and only two categories were included RFP2, which are Graduate Student Awards and Research Awards. Letters of Intent (LOIs) were required for both award categories in RFP2. A live and recorded RFP2 question and answer webinar was held on February 26, 2021, which was posted to the <u>LA-COE website</u> after the webinar. LOIs were due on March 12, 2021 and a total of 36 LOIs were submitted, with eight in the Graduate Student Awards category and 28 in the Research Awards category. The LOI review comments were sent to PIs on April 5, 2021, with a total of 20 LOIs invited for full proposals. Full proposals were due on April 30, 2021.

To prepare for the full proposal review for RFP2, members of the Executive Committee (EC) for RFP2 were finalized in March including members from Louisiana State University, Tulane University, Nicholls State University, University of Louisiana at Lafayette, University of New

Orleans, Louisiana Universities Marine Consortium, Southeastern Louisiana, and Southern University. CPRA and LA-COE compiled a list of potential External Review Board (ERB) members based on the expertise that would support the 17 research activities for full proposal review. Based on recommendation from EC members, the LA-COE invited and contracted seven ERB members and hosted an ERB webinar on April 27, 2021. Meanwhile, four main subject matter experts were also invited and contracted for full proposal review.

The submitted 20 full proposals were assigned to independent reviewers in the LA-COE electronic review portal system including ERB members, SMEs, and SMEs from CPRA. Each proposal had four independent evaluations, which were submitted by reviewers on May 19, 2021. The LA-COE then coordinated with CPRA and ERB chair, conducting a two-day full proposal Review Panel Meeting (in virtual) to discuss the proposal review comments for each proposal with ERB members on June 9-10th, 2021. Finally, the ERB made final funding recommendations (based on a scale of 1-3) for each proposal at the end panel meeting based on review and discussion of the proposals, the SME reviews, and the CPRA reviews. A Recommendation Meeting was subsequently held on June 14th, 2021 with CPRA and LA-COE staff to discuss the ERB's recommendations and to develop a potential list of projects to fund, subject to concurrence by CPRA and LA-COE leadership. A Concurrence document was developed by the LA-COE and approved by CPRA to finalize which Graduate Student Awards and Research Awards would be granted. Lastly, principal investigators (PIs) were notified of the awards on July 15th, 2021 and then a public announcement was made via a joint LA-COE and CPRA press release on July 22nd, 2021. A total of eight awards were announced including four Graduate Student Awards, and four Research Awards. Contracting and research grants management procedures are being developed to help manage the funding process and subrecipients; with the funded projects expected to be executed in October 2021. The technical point of contact and CPRA Liaison were assigned to each project and approved by CPRA. The LA-COE RFP2 kickoff webinar is scheduled to be held virtually October 21st, 2021. All PIs are required to attend this kickoff meeting and co-PIs, TPOCs, and CPRA liaisons were also invited.

LA-COE has had regular meetings with CPRA (monthly and/or bi-monthly depending on schedules and quarantine), and phone calls as needed, and continues to be operated according to the Standard Operating Procedures Version 3 (SOP V3) including website maintenance, data management, coordination with other Centers of Excellence, and federal reporting requirements, including reports to the U.S. Department of the Treasury and other dissemination of information.

LA-COE moderated a State of Coast session titled "RESTORE Act Center of Excellence for Louisiana: Research to support Louisiana's Coastal Master Plan" with four presentations from RFP1 funded projects to highlight the LA-COE research findings on June 3, 2021. The LA-COE also collaborated with other Centers of Excellence on an article "Prospects for Gulf of Mexico Environmental Recovery and Restoration" released in June 2021 in the Oceanography magazine.

The LA-COE also has revamped its <u>website</u> by designing new pages for the dissemination of RFP1 results (e.g., final reports, publications, success metrics Tech Memo, and links for datasets) and for <u>RFP2</u>). Since 2016, LA-COE has released \$5.3M in research funding, supported 36 students, generated 7 theses and dissertations, 18 journal publications, and 8

publicly available datasets. LA-COE has created a <u>google scholar</u> account to track all publications and citations from projects funded through the LA-COE. As publications, data collected and other deliverables continue to emerge from the funded research, these will be posted on the LA-COE website as well as on newsletter/social media. The final reports for each of the completed studies includes lists of all publications and datasets completed to date or expected in the future, as well as presentations given at conferences and workshops to disseminate the results of the research.

Programmatic Elements

Award Recipient

Following a mandate by the U.S. Department of Treasury requiring that Centers of Excellence must focus efforts on a selected set of disciplines, the 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 of Mexico

The status of performance and annual accomplishments include: Coordinated the review of proposals by SMEs, CPRA, and the ERB. CPRA provided review of the relevance of the proposed research to implementation of Louisiana's Coastal Master Plan. Developed summary reviews and, subject to CPRA's concurrence, selected research projects for funding. Principal investigators were notified for selection of funding, and preparation for a project kick-off webinar with subrecipients is ongoing. The LA-COE was operated according to SOPV3 including development and maintenance of a website, coordination with other Centers of Excellence and additional outreach. Contracting and research grants management standards were developed and implemented to help manage subrecipients including quarterly performance progress reports from the subrecipients. Assessment and reporting on progress using defined metrics that address federal reporting requirements including reports to the U.S. Department of Treasury was also conducted.

Award Subrecipient(s) Selected for Funding:

Summary of CEA2/RFP2 projects:

The grant for CEA2/RFP2 was approved by the U.S. Department of the Treasury June 2020, and a Cooperative Endeavor Agreement between CPRA and The Water Institute of the Gulf was executed in October 2020. Announced in July 2021, eight projects were awarded with a total near \$2.3 million that included research collaborative awards as well as graduate student awards.

Graduate Student Awards

1. Tulane University, Dr. Torbjörn Törnqvist

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: Projecting 50 years of relative sea-level rise in coastal Louisiana
- Subaward expected to be executed in October 2021.
- Summary: This research will build on recent advances in the understanding of the drivers and rates of subsidence in coastal Louisiana by quantifying rates and their spatial variability as well as conducting an assessment of geocentric sea-level rise. The goal is to reduce uncertainties in estimates of present-day and future projections of relative sea-level rise.

2. Louisiana State University, Dr. John White

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Comprehensive observation, monitoring, and mapping of the Gulf of Mexico
- Research project undertaken: Dynamics of Nitrogen and Phosphorous cycling across Barataria Basin
- Subaward expected to be executed in October 2021.
- Summary: This project will assess the nitrogen and phosphorus cycling in Barataria Basin especially as it relates to various benthic substrates that have varying organic matter content, extractable nutrients and microbial activity that can affect surface water quality. Data from this research can improve ecosystem models that are being used for freshwater diversions and for proposed sediment diversions, specifically with water quality and nutrient loading predictions.

3. Louisiana State University, Dr. Celalettin Ozdemir

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: Improving the design and construction practice of marsh creation projects
- Subaward expected to be executed in October 2021.
- Summary: Marsh creation projects are prioritized in the 2023 Coastal Master Plan for Louisiana. The proposed study aims at addressing knowledge gaps in the design and construction practice of marsh creation projects by using integrated field data collection, laboratory experimentation, and numerical modeling to better understand consolidation and transport properties of the dredge material.

4. University of Louisiana at Lafayette, Dr. Jorge Villa

• Researcher role: Help implement Louisiana's Coastal Master Plan

- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: Patch-scale effects of acute saltwater intrusion on carbon fluxes in a simulated coastal freshwater marsh environment
- Subaward expected to be executed in October 2021.
- Summary: This project aims to evaluate the effects of acute saltwater intrusion events on carbon fluxes and elevation in wetland areas dominated by two common upper estuary freshwater plants. Results of this work could help inform the morphology model used in Integrated Compartment Model (ICM), and suggest how these wetland species are influencing carbon cycling, which can be used in evaluating strategies in the Coastal Master Plan.

Research Awards

5. Nicholls State University, Dr. Jonathan Willis

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: From Adapting in Place to Adaptive Migration: Designing and Facilitating an Equitable Relocation Strategy
- Subaward expected to be executed in October 2021.
- Summary: This project will develop data-driven models for ecological roles, processes, and trajectories of restored ridges, natural ridges, and spoil banks as well as examine relevant socio-ecological dynamics of ridge landforms in coastal zone of the Barataria-Terrebonne estuary of southeastern Louisiana. The human dimensions portion of the work will include examining the impact of event-driven environmental changes such as storms on communities' stability and sustainability. The goal is to determine physical/habitat characteristics and dynamics of natural and restored ridges and assess the human activity dynamics of ridge communities.

6. Louisiana State University, Dr. Giulio Mariotti

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: Quantifying marsh edge erodibility as a function of salinity and water chemistry, and assessing possible effects of the Gulf Intracoastal Waterway in Barataria Bay
- Subaward expected to be executed in October 2021.
- Summary: The research will use a combination of hydrodynamic and biochemistry modeling, intensive field studies, and landscape modeling to evaluate the role of salinity and river inputs in influencing marsh edge erosion. Results will include a marsh edge erosion model to predict marsh loss 50 to 100

years in the future under different salinity and water chemistry scenarios, with emphasis on nutrient loading from the Gulf Intracoastal Waterway.

7. Louisiana State University, Dr. Carol Wilson

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast
- Research project undertaken: Subsurface stratigraphic controls on subsidence and carbon sequestration in Mississippi Delta diversion receiving basins
- Subaward expected to be executed in October 2021.
- Summary: This work will investigate and improve understanding of the heterogeneous geological framework that drives differential consolidation rates, and thus subsidence and organic matter sequestration in the delta. These geological conditions will be added to future modeling and mitigation work using a suite of observational field and laboratory analyses. Research will include analyses within marsh, bay, and paleochannel sub-environments in Barataria Basin of southeast

8. The Data Center of Southeast Louisiana, Dr. Robert Habans

- Researcher role: Help implement Louisiana's Coastal Master Plan
- Eligible discipline: Coastal and deltaic sustainability, restoration and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf Coast & Comprehensive observation, monitoring, and mapping of the Gulf of Mexico
- Research project undertaken: Past and future migration in coastal Louisiana: Modeling the impact of flood exposure and economic change with microdata on households and businesses
- Subaward expected to be executed in October 2021.
- Summary: This study will explore the relationship between discrete flood events and cumulative risk, changing locations of jobs and businesses, and household migration in coastal Louisiana. The team will develop a modeling approach to assess storm and flood-related migration that leverages new sources of business and residential microdata to support population and asset growth scenarios associated with the Coastal Louisiana Risk

Financial Elements

Award Recipient

The RESTORE Act Center of Excellence Research Grant Program award from U.S. Department of Treasury to CPRA for RFP2 was issued on May 01, 2020 and is funded for \$3,209,063. A Cooperative Endeavor Agreement was executed between CPRA and The Water Institute of the Gulf (The Water Institute) on October 20, 2020 to administer the award with a current contract

value of \$3,109,063. Invoices from The Water Institute for RFP2 total \$230,573.85 through August 31, 2021.

Award Subrecipient(s)

RFP2: As a result of a competitive and peer-reviewed request for proposal process, subrecipients of research awards were selected. All subawards are expected to be executed by October 2021. The subrecipients and associated subaward amounts are provided below:

Number	Subrecipient	Subaward Amount
1	Tulane University	\$99,909.68
2	Louisiana State University	\$91,798.00
3	Louisiana State University	\$95,760.00
4	University of Louisiana at Lafayette	\$86,318.79
5	Nicholls State University, The Coastal Center	\$495,368.00
6	Louisiana State University	\$497,849.00
7	Louisiana State University	\$499,675.00
8	The Data Center of Southeast Louisiana	\$426,544.00

Gulf Coast Ecosystem Restoration Council Elements

Leveraging Multipliers

The LA-COE and CPRA participate in bimonthly conference calls of the Gulf of Mexico Restoration and Science Programs Coordination Forum that allows for funding organizations in the Gulf region to discuss their programs, share ideas, and promote collaborations.