RESPONDER COVER SHEET

Section A. Proposer Information

Legal Name: Anchor QEA, LLC	
Main Administrative Address: 614 Magnolia Avenue	
City & State: Ocean Springs, MS	Zip Code: 39564
Telephone Number: 228.818.9626	Fax Number: N/A
E-mail Address: wdinicola@anchorqea.com	Web Site: www.anchorqea.com
CEO/Executive Officer: John Verduin	Office Phone Number: 206.287.9130
Chief Financial Officer: N/A	Office Phone Number: N/A
Contact Person's Name: Renee Robertson, PE	Phone Number Including Area Code: 251.375.5275
Mailing Address, City, State, Zip Code, Email: 614 Magnolia Avenue, Ocean Springs, MS 39564 rrobertson@anchorqea.com	
Type of Entity (check all that apply): [X] Private-for-Profit Entity [ ] Nonprofit	

Section B. Certification of Accuracy and Compliance

I do hereby certify that all facts, figures, and representations made in the Proposal Response(s) are true and correct. Furthermore, all applicable statutes, terms, conditions, regulations, and procedures for program compliance and fiscal control, including but not limited to, those contained in the Proposal Package will be implemented to ensure proper accountability of contracts. I have been duly authorized to act as the representative for this Proposal.

Walter Dinicola, PE	Principal-in-Charge/Principal Engineer
Print Authorized Official's Name	Authorized Official's Title
Walter Dinicola	01/21/2021
Authorized Official's Signature	Date

Figure 1

614 Magnolia Avenue
Ocean Springs, Mississippi 39564
(228) 818-9626

ANCHOR QEA

January 21, 2021

University Lakes LLC
LSU Real Estate and Facilities Foundation
6767 Perkins Road, Suite 200
Baton Rouge, Louisiana 70808
Email: lakeinfor@csrsinc.com

Re: Response to Request for Qualifications for Flood Risk Reduction Design Services

Dear Selection Committee,

Nearly 100 years ago, a piece of land would be given to a school with a rich history, a passion for education, and a love for their community. This land has now become one of the most beautiful and vital parts of recreation and wildlife for the Baton Rouge community, creating a refuge for all that use it. However, the Anchor QEA team knows that over the years, the health of the University Lakes has been declining and the need for a more substantial and robust urban waterfront has increased. As our Anchor QEA team has multiple LSU alumni and Baton Rouge-area natives, we are proud of the impact the school has had on our lives and cannot think of a better way to give back than to use our expertise and experience to help execute the mission and vision established by the 2016 University Lakes Master Plan. Thus, it is Anchor QEA's pleasure to submit this Statement of Qualifications to the University Lakes LLC for Flood Risk Reduction Design services in support of the University Lakes Project.

We have assembled a team of Gulf Coast and Louisiana companies with unique qualifications for this grand revitalization project. Our key differentiators include the following:

- Unparalleled dredging and material handling experience
- Extensive experience developing hydrologic and hydraulic models for evaluating flood risk and designing stormwater drainage and control and aquatic habit features
- Experience working on multi-objective design teams involving the integration of in-water habitat and water quality enhancements with upland design in park settings
- Firsthand experience with the University Lakes Project and the lakes system
- The experience and ability to address and incorporate public, stakeholder, and regulatory agency feedback into the design

Our team has led more than 300 dredging projects and designed and permitted more than 50 beneficial use wetland restoration sites across North America over the last 12 years, including more than 70 dredging projects and 25 beneficial use sites along the Gulf Coast. In addition, our team has modeled more than 22,000 miles of channels across Louisiana and Texas, successfully completed numerous projects with flood mitigation and environmental habitat concerns, completed more than 25 ecological restoration projects within the last 5 years, and performed more than 450 wetland surveys nationwide. Anchor QEA staff have substantial experience in waterfront park design and restoration, having completed more than 65 waterfront park redevelopment projects across the West Coast, each involving the integration of in-water and upland design and design of low-impact stormwater features. Lastly, our team brings invaluable knowledge of the lakes system and University Lakes Project from past work in support of the 2016 Master Plan, as well as from recently being awarded the bathymetric and stump survey contract associated with this project.

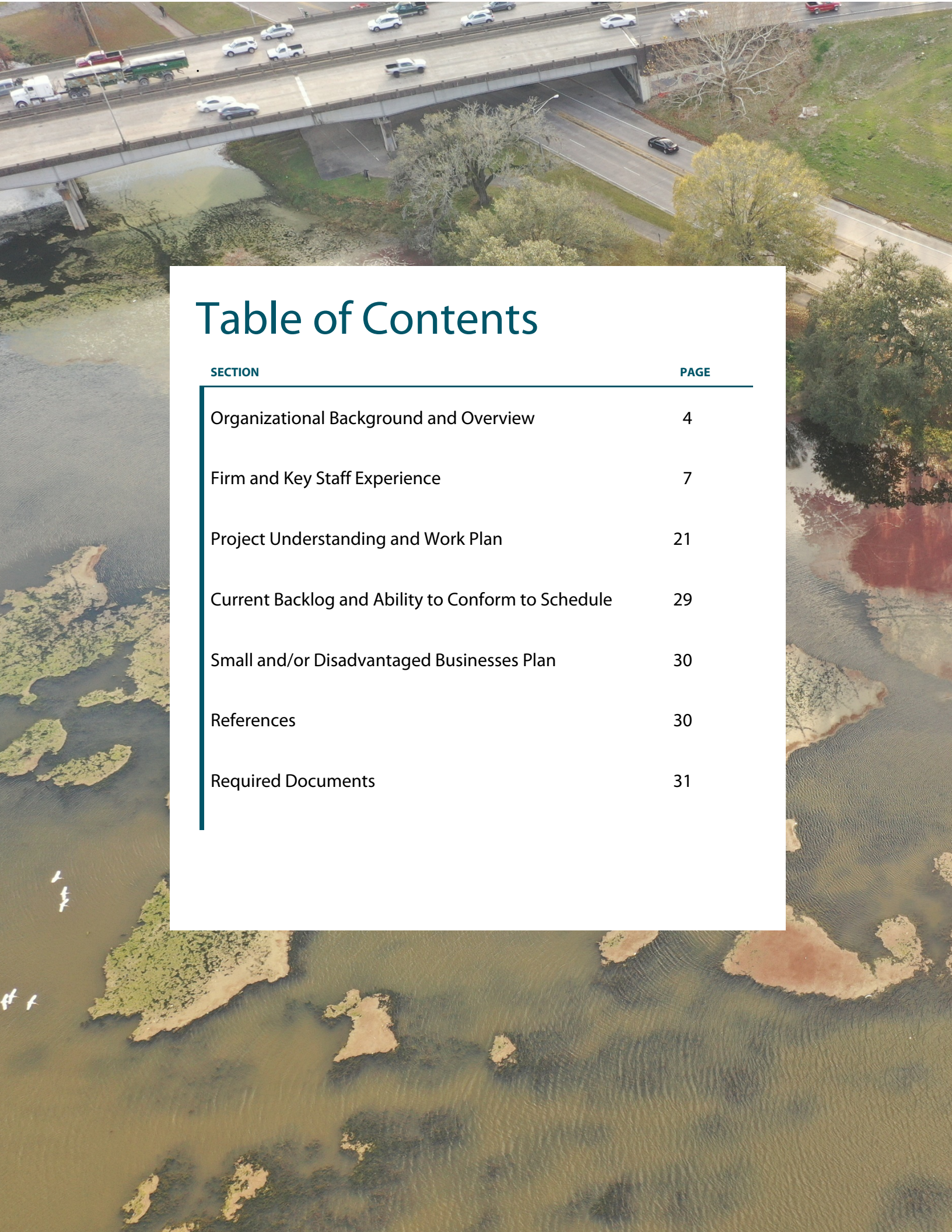
I will serve as the Project Manager. I take pride in helping to restore and enhance our waterbodies for recreational use and wildlife habitat. My career has focused on dredging, dredged material management, and sustainable design, including beneficial use projects for the U.S. Army Corps of Engineers, Mobile and Jacksonville districts; Mississippi Department of Marine Resources; Mississippi Department of Environmental Quality; and Ports of Gulfport and Pascagoula. I have successfully worked with numerous state and public agencies in the Gulf Coast region to plan, design, permit, and successfully construct dredging, beneficial use, and wetland restoration projects.

We look forward to working with University Lakes LLC to create a successful project. Please contact me by phone at (251) 375-5275 or by email at rrobertson@anchorqea.com to discuss any aspect of our proposal and qualifications. Thank you for your consideration.

Sincerely,

Renee Robertson

Renee Robertson, PE
Project Manager



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ORGANIZATIONAL BACKGROUND AND OVERVIEW

At Anchor QEA, we are problem solvers. We are a collective of more than 370 enthusiastic and dedicated engineers, scientists, landscape architects, planners, and construction managers spread across the United States that enjoy working closely with our clients toward the common goal of restoring the environment and our communities. Our technical depth and diversity enable us to address complex issues involving multiple disciplines throughout every phase of project development and implementation, from initial planning through construction support. As a national leader in dredging, beneficial use and innovative reuse of dredged material, sediment remediation and capping, environmental investigation and modeling, and coastal restoration, Anchor QEA has the expertise to develop cost-effective, feasible solutions to the most challenging water resource problems that not only meet our clients' needs but also balance regulatory and stakeholder requirements.

With several of our staff being from the Baton Rouge area and graduates of LSU's Department of Civil and Environmental Engineering, we understand how high the stakes are for restoring this vital part of the Baton Rouge and LSU communities and want nothing more than to see the job done right. Along with our local partners—C.H. Fenstermaker & Associates, LLC (Fenstermaker), Gulf South Research Corporation (GSRC), and Bayou Tree Service (BTS)—each of whom have proven records in environmental investigation, engineering, hydrologic and hydraulic (H&H) modeling, and habitat restoration and are intimately close to the University Lakes Project (ULP), we bring unparalleled experience to the ULP design team.

Team Composition

Anchor QEA

Anchor QEA is an environmental science and engineering firm focused on the planning, design, and restoration of aquatic and coastal projects. Our staff have led dozens of similar water resource projects and designed more than 300 dredging projects over the last 12 years, including 70 along the Gulf Coast. We provide valuable insights into formulating practicable, permittable, and cost-effective dredging; dredged material management; and beneficial use and innovative reuse alternatives, which makes us an ideal participant for projects involving management or removal of sediment in lakes, reservoirs, and aquatic environments. Anchor QEA is home to three Western Dredging Association (WEDA) Dredger of the Year awards, two awards to individuals in 2004 and 2005 and one award to our entire firm in 2012, making us the only consulting/design firm to receive this prestigious award to date.

Subconsultants

To execute the Flood Risk Reduction Design (FRRD), we have established a streamlined project delivery team that leverages the full nationwide capacity of our staff and the local expertise of our partners to provide the specialized expertise required for this project. Joining Anchor QEA are Fenstermaker, GSRC, and BTS, who are local resources with institutional knowledge of the lakes system, watershed, and stakeholders.

C.H. Fenstermaker & Associates, LLC
Hydrologic and Hydraulic Modeling

Fenstermaker specializes in H&H modeling and will be leading Task 2 (Hydrologic Model Development). Having modeled more than 22,000 miles of channels across Louisiana and Texas and successfully completed numerous projects with flood mitigation and environmental habitat concerns, including the Chateau Mirage Project in Layfette, Louisiana, which was awarded the American Council of Engineering Companies (ACEC) Engineering Excellence award, they have the experience to execute the H&H modeling tasks. In addition, Fenstermaker has already been assigned as a key contributor to the success of the ULP by way of the Bathymetric and Stump Identification Survey contract they were recently awarded.

Gulf Southern Research Corporation
Aquatic Habitat Design and Permitting

GSRC, a certified economically disadvantaged woman-owned small business, specializes in aquatic ecosystem restoration planning and implementation, invasive species management, native species revegetation, and habitat monitoring and maintenance and will be supporting Task 3 (Water Quality Enhancement). GSRC has completed more than 25 ecological restoration projects within the last 5 years, including Zemurray Park Lake Feasibility Study and Aquatic Ecosystem Restoration in Hammond, Louisiana, and has performed 450 wetland surveys across the nation. In addition, GSRC has extensive experience preparing Sections 404 and 401 Clean Water Act (CWA) permit applications and preparing and implementing wetland mitigation plans and will provide permitting support under Task 6 (Construction and Implementation Plan).

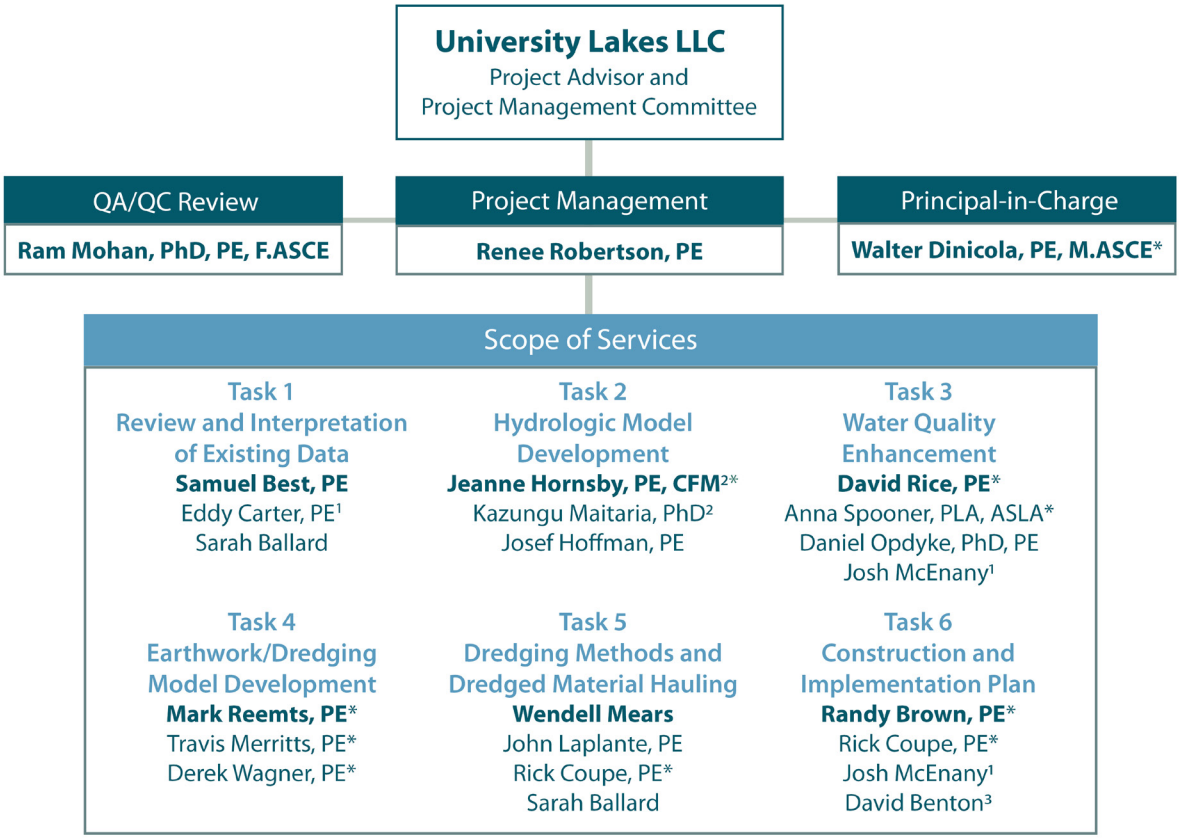
Bayou Tree Service
Tree Protection

BTS specializes in tree preservation and protection and will be developing the tree protection plan under Task 6 (Construction and Implementation Plan). BTS has provided tree preservation services throughout Louisiana and Mississippi since 1980 and was instrumental in beautifying the City of New Orleans and Jefferson Parish after Hurricane Katrina. BTS currently holds annual tree contracts with the City of Baton Rouge and LSU, plus many other large universities, municipalities, and commercial entities, and is intimately familiar with Live Oak and Bald Cypress tree preservation and protection in and around LSU. BTS currently has more than 16 licensed Louisiana Arborists, Certified Tree Care Safety Specialists, and International Society of Arboriculture (ISA) certified arborists on staff. They are currently the only tree care firm in the State of Louisiana with two Tree Care Industry Association (TCIA)-accredited offices.

Management Structure

Our team will be led by Renee Robertson, as project manager. Ms. Robertson has more than 15 years of experience managing large coastal restoration and engineering design projects in the southeast, including 10 along the Gulf Coast shoreline. The challenges of these projects are similar to this project—balancing the project goals with the engineering, ecology, and construction feasibility and costs. Ms. Robertson will oversee all technical aspects of this project, including developing and applying project and task schedules and milestones and ensuring consistent quality assurance/quality control (QA/QC) procedures. She will be the direct point of contact for the Project Advisor (PA) and Project Management Committee (PMC) and will provide consistent project communication and ensure capacity and availability of staff. Additional task managers have been assigned to each task based on specific expertise and project requirements to ensure that our most highly qualified staff are leading each task. Like all our projects, our approach here is to leverage the full nationwide capacity of our staff to provide the specialized expertise required for the project.

Ms. Robertson will be supported by Walter Dinicola, Principal-in-Charge, and Dr. Ram Mohan, QA/QC Review. Mr. Dinicola will provide engineering review, strategic planning, risk management, and financial and schedule reviews. His 25 years of technical expertise in dredging and coastal engineering projects includes lake capacity and navigational dredging design for both hydraulic and mechanical dredging, dredge prism development for freshwater and coastal projects, remedial dredging of contaminated sediments, dredging and site engineering for confined disposal facilities, and contaminated sediment assessment and management. Dr. Mohan has more than 30 years of experience and is an expert in the field of sediment management, beneficial use, and sediment remediation. Dr. Mohan serves on the Editorial Board of the U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center's (ERDC's) "Engineering with Nature" committee developing guidance for prioritizing, designing, and implementing nationwide beneficial use projects, and frequently serves as the QA/QC reviewer and manager for complex dredging projects. In addition, Dr. Mohan is an adjunct professor at Texas A&M and runs the annual Dredging Short Course hosted at the university.



Legend:
Bold: Task Leads
*: Licensed in a state other than Louisiana
1: Gulf Southern Research Corporation 2: C.H. Fenstermaker & Associates, LLC 3: Bayou Tree Service

FIRM AND KEY STAFF EXPERIENCE

Our team has a deep knowledge of dredging means and methods, extensive experience with complex dredge prism and material placement design and dredged material handling, and experience working in difficult environments. We also have developed simple and complex H&H models for the purposes of understanding flood risk and supporting design of stormwater and habitat features; have a long history of water quality data analysis and modeling for rivers, lakes, and reservoirs; have experience working on multi-object design projects involving integration of in-water habitat and water quality enhancements with upland design in park settings; and have the experience and the ability to address and incorporate public, stakeholder, and regulatory agency feedback into the design. The following sections provide an overview of our team's experience with the FRRD scope of services, as well as our experience integrating in-water design with upland design.

Experience with the Scope of Services

Review and Interpretation of Existing Data

Anchor QEA staff routinely conduct field and laboratory studies to assess sediments and aquatic systems as part of pre-design investigations. Anchor QEA has completed numerous environmental monitoring projects requiring water, sediment, and biota sampling as an integral part of the project scope—collecting tens of thousands of samples from some of the most complex sites across the United States. A great example of this is the Onondaga Lake Dredging and Restoration Project featured later in this Statement of Qualifications, where we lead the investigation, design, and construction management for this high-profile sediment cleanup project.

In addition, Eddy Carter of GSRC brings institutional knowledge of the ULP and lakes system to the Anchor QEA team. In recent past employment with another consulting firm, Mr. Carter served as project manager for the USACE Aquatic Ecosystem Restoration Plan, conducted in 2006 to 2008, that recommended deepening the lakes and other sustainable improvements. Mr. Carter also served as senior project manager when the firm was contracted in 2014 by the Baton Rouge Area Foundation to perform data collection as a preliminary phase to the development of the Baton Rouge Lakes Master Plan. Additional topographic and bathymetric data, along with geotechnical data, were collected, analyzed, and summarized for integration into the Master Plan of solutions and infrastructure improvements for the lakes. Mr. Carter provided engineering support through the Baton Rouge Area Foundation during development of the Master Plan, including public/stakeholder involvement. His experience and knowledge of the lakes system and the Baton Rouge and LSU communities will be invaluable to the execution of the FRRD.

The experience the Anchor QEA team brings to the ULP in data collection will allow us to efficiently assess available data and work with the PA and PMC to develop a list of potential additional work that may be needed to assist in performing the scope of work. In addition, having Fenstermaker on the FRRD team will provide a simplified means of accessing bathymetric and stump survey data and requesting additional site visits to gather supplementary information, such as water levels, culverts, and weirs, that may be necessary to complete an accurate existing conditions model.

Hydrologic Model Development

Our teaming partner Fenstermaker is a recognized leader in Louisiana as an expert in H&H modeling, including both inland and coastal systems. With more than 20 years of experience working with various federal, state, and local agencies and having modeled more than 22,000 miles of channels across Louisiana and Texas, Fenstermaker has a proven record in developing 1D, 2D, and 3D steady and unsteady numerical H&H models. These models have been used on various projects ranging from coastal engineering projects aimed at managing water levels and the control of saltwater intrusion into marsh environments, to developing both regional and local flood inundation models. Fenstermaker has been involved in the development of key models that the State of Louisiana uses for decision-making purposes, such as the Mississippi River Hydro Model that has been used for assessing sediment diversions along the river, the Southwest Coastal Model of the Chenier Plain, and the intercompartmental model developed as part of the State's Coastal Master Plan. Fenstermaker is skilled in taking projects from the modeling and feasibility stage and carrying the project through to implementation. This has been proven through Fenstermaker's past successful projects such as Chateau Mirage Regional Detention and Channel Improvement and Queen Bess Island Restoration.

Many of Fenstermaker's successfully completed projects have not only taken into consideration flood mitigation, but also environmental habitat concerns, as well as the incorporation of park settings. Such examples include the Louisiana Avenue Regional Detention Facility Project in Lake Charles, the West Village Regional Detention Project in the City of Scott, and Chateau Mirage Regional Detention and Channel Improvement Project in Lafayette.

Water Quality Enhancement

Anchor QEA has a long history of water quality data analysis and modeling for rivers, lakes, and reservoirs, including along the Gulf Coast and nationally. Regional studies include watershed and water quality modeling for a system of reservoirs, data analysis, modeling, and strategy development for two eutrophic rivers, and a nutrient budget for an estuary. We have developed simple spreadsheet calculations to coding and calibrating 3D water quality models that have included innovations such as the ability to model the effects of zebra mussels (an exotic species that can have profound impacts on water quality), sediment nutrient cycling, and harmful algal blooms. Using these tools, we have been able to identify the root causes of water quality concerns, evaluate and implement management strategies to improve water quality, and monitor outcomes to promote adaptive management. Our scientific understanding is matched by our engineering design and landscape architecture qualifications.

Our multidisciplinary team has led numerous stormwater infrastructure planning, evaluation, design, and implementation projects, including low-impact development techniques (e.g., Onondaga Lake Dredging and Restoration [Syracuse, NY]; Meydenbauer Bay Waterfront Park Development [Bellevue, WA]; Percival Landing Rehabilitation [Seattle, WA]). Our engineers, scientists, and landscape architecture professionals have an in-depth understanding of the CWA regulatory

framework, and we develop applications with strong supporting data and reports that provide the technical basis for an effective design solution. We have used low-impact development techniques in more than 20 projects to use natural processes such as wetland features, bioretention, and infiltration to capture and treat runoff. Most of these projects were located within shoreline parks and elegantly integrated the stormwater features into the landscape of the parks.

Earthwork/Dredging Model Development

Anchor QEA's experience in dredging and dredge design includes all phases of dredging, dredged material transport, offloading, dewatering and stabilization, and final reuse or placement options, including placement in on-site dredged material containment facilities, off-site disposal, beach renourishment, and innovative reuse and beneficial uses. We perform investigations of alternate sediment control schemes such as sediment traps, which could be viewed as an "optimized forebay concept" and can be easily constructed as part of the dredging operation and integrated into the dredging model. We provide extensive modeling capabilities for slope and berm stability, dike-bearing capacity, dredge cut slope design, dredged material bulking and consolidation, and bulkhead and bank stability. By integrating our marine construction experience into the design process, we not only minimize the potential for construction impacts to the area associated with access but also assist in developing a high-quality bid package for potential contractors.

Anchor QEA's philosophy is to work as a partner with our clients, providing innovative ideas and engineering expertise to support every facet of managing the project, including the following:

- Comprehensive programmatic and project-specific dredged material planning
- Problem formulation, design, and dredging alternatives development and analysis
- Dredge prism design, alternatives optimization, and constructability analysis
- Determining shoreline protection options, including wetland creation, shoreline stabilization, and erosion control
- Sediment dewatering and consolidation evaluation and design to maximize placement capacity
- Identifying beneficial use options for dredged material and opportunities to incorporate into design
- Optimizing the dredging prism for constructability, equipment limitations, and efficiencies
- Integrating public and stakeholder feedback into the design and construction and implementation plans

Our past success with the execution of numerous dredging and dredged material management projects throughout the United States illustrates our ability to establish close relationships with local regulators and contractors, which enables us to effectively meet our clients' goals and objectives in a timely and cost-efficient manner. An example of this is the work we have done for the Maryland Department of Transportation Maryland Port Administration, where we have worked with Maryland Department of Environment closely to establish guidance for the State's Innovative Reuse and Beneficial Use of Dredged Material Program. In addition, our staff have led dozens of similar water resource projects (e.g., Colorado Lagoon Restoration; Montgomery Lakes Dredging and Dam Repairs) and designed more than 300 dredging projects over the last 12 years, including 70 along the Gulf Coast (e.g., Hancock County Marsh Living Shoreline Design and Beneficial Use [MS]; Port of Gulfport Dredging and Beneficial Use [Gulfport, MS, and St. Bernard Parish, LA]). Anchor QEA has also proven that we can meet complicated, fast-track schedules, as evidenced by our performance on projects for many ports, USACE, industries, and private clients.

Dredging Methods and Dredged Material Hauling

As part of Anchor QEA's in-water experience, we have performed many alternative analyses to evaluate dredging and dredged material handling technologies nationwide. Selection of the proper method of dredging has several key considerations for overall project success. The various components of these alternatives can be summarized into the following major elements: dredging methodology (hydraulic versus mechanical removal including removal in the dry), disposal location (disposal off site or within the existing lake or adjacent land), and staging location, and considerations for modifying lake water levels and forebay design.

Anchor QEA is regarded as a national leader in dredging design and has overseen numerous dredging-related construction projects, including several high-profile maintenance, site improvement, and sediment cleanup projects including Onondaga Lake Dredging and Restoration, Colorado Lagoon Restoration, and Montgomery Lakes Dredging and Dam Repair projects. Our key staff serve as board members for WEDA; co-represent the United States (alongside USACE) in the World Association for Waterborne Transport Infrastructure (PIANC) subcommittee on dredging best practices; support the Dredged Material Management Programs in the Northeast, San Francisco Bay Area, and Los Angeles; and provide expert witness support to the U.S. Department of Justice. This interaction with the dredging contractor community has allowed us to be on the forefront of dredging and dredge material management technologies.

Construction and Implementation Plan

Anchor QEA has prepared design documents for many of the largest dredging projects in the country, including the Fox River, Onondaga Lake, Grasse River, and Hudson River remedial investigation and feasibility study projects. Each of these projects required more than 1 million cy of dredging and heavy contractor, stakeholder, and regulatory coordination to meet the complex project requirements. We have also prepared many Basis of Design Reports (BODRs) that typically include: design investigation assessments, design calculations, model calibration and results, and an alternatives analysis to further the design from preliminary through final.

On many of our design projects, Anchor QEA engages with contractors early in the design process to coordinate the construction approach and required areas to conduct or stage work, and identify high-risk items specifically for the contractor. This allows the design to be more flexible and ultimately saves costs by contractor bids coming in alignment with the engineer's cost estimate. This early interaction is pivotal in developing construction contract drawings, specifications, and engineer's cost estimates, as well as the construction schedule. Our involvement in contractor and technical organizations, such as WEDA, PIANC, ASCE, and National Research Council's Marine Board, provides us with innovative and up-to-date knowledge on construction equipment, technology, and approach that make the design more efficient and effective.

Experience Integrating In-Water Design with Upland Park Settings

Complementing Anchor QEA's engineers and scientists are our landscape architects that focus on creating places where people and the environment mutually benefit. Our emphasis on shoreline and water resource projects provides diverse opportunities to integrate landscape architecture, shoreline public access, and habitat restoration. Anchor QEA's landscape architects work in all project phases, from initial stakeholder and public involvement through master planning and conceptual design development, and on through permitting, final design, construction documents, cost estimating, bidding, and construction administration. Our project experience includes habitat restoration/mitigation design for wetlands, streams, estuaries, and lake and marine shorelines; shoreline public access design; and parks and recreation facilities design. Our range of knowledge and experience allows our clients to use landscape architecture as a tool to help untangle and resolve seemingly conflicting goals, such as habitat restoration and recreational access, on shoreline and sediment cleanup projects. With a resume of more than 65 waterfront design projects, our landscape architects are well versed in park and recreation facility design guidelines, including Crime Prevention through Environmental Design, Leadership in Energy and Environmental Design (LEED), and Americans with Disabilities Act design standards for outdoor recreation.

Similar Project Experience

The following table illustrates our team's combined project experience conducting similar types of services to be covered under this contract. Detailed descriptions and client references for select projects are provided on the following pages.

Projects (City, ST)	Review and Interpretation of Existing Data	Hydrologic Model Development	Water Quality Enhancement	Earthwork/Dredging Model Development	Dredging Methods and Dredged Material Hauling	Construction and Implementation Plan
Onondaga Lake Dredging and Restoration (Syracuse, NY)*	●	●	●	●	●	●
Colorado Lagoon Dredging and Restoration (Long Beach, CA)*	●	●	●	●	●	●
Montgomery County Lakes Dredging and Dewatering (MD)*	●	●	●	●	●	●
False River Watershed and Nitrogen Studies (New Roads, LA)*[1]	●	●	●	●	●	
Community Lakes Dredging and Dam Repairs (Columbia, MD)	●	●	●	●	●	●
Georgetown Lake Sediment Removal and Reuse (Georgetown, NC)			●	●	●	●
Lake Linganore Dredging (Frederick, MD)	●		●	●	●	●
Lake Adger Dredging (Polk County, NC)	●	●	●	●	●	●
Hudson River Dredging and Restoration (Upstate NY)	●	●	●	●	●	●
Buffalo River Area of Concern Remediation and Restoration (Buffalo, NY)	●		●	●	●	●
Torch Lake Time-Critical Removal Action (Lake Linden, MI)	●		●	●	●	●
Whatcom Waterway Dredging and Waterfront Redevelopment (Bellingham, WA)	●		●	●	●	●
Bayou d'Inde Dredging and Restoration (Lake Charles, LA)	●		●	●	●	●
Hancock County Marsh Living Shoreline Design and Beneficial Use (MS)	●		●	●	●	●
Port of Gulfport Dredging and Beneficial Use (Gulfport, MS, and St. Bernard Parish, LA)	●			●	●	●
Port of Pascagoula Dredging (Pascagoula, MS)	●		●	●	●	●
Deer Island Wetland Restoration (Biloxi, MS)	●			●	●	●
Little Lake Ship Channel Maintenance Dredging (St. Tammany Parish, LA)	●			●	●	●
Habitat Development and Hurricane Ike Recovery (TX)	●		●	●	●	●
Houston, Galveston, and Texas City Navigation Channels (TX)	●			●	●	●
Queen Bess Island Restoration (Jefferson Parish, LA)[1]	●	●	●	●	●	●
Laredo Ecosystem Restoration (Laredo, TX)*[2]	●		●	●	●	●
Zemurray Park Lake Ecosystem Restoration (Hammond, LA)*[2]	●		●	●	●	
Chateau Mirage Regional Detention and Channel Improvement (Lafayette, LA)*[1]	●	●	●	●	●	
Calcasieu Parish Regional Watershed Plan (Calcasieu Parish, LA)*[1]	●	●			●	
Louisiana Avenue Regional Detention Facility (Lake Charles, LA)[1]	●	●	●	●	●	
Marais des Cannes Regional Detention and Floodplain Analysis (Scott, LA)[1]	●	●	●	●	●	
Meydenbauer Bay Waterfront Park Development (Bellevue, WA)	●		●			●
Percival Landing Rehabilitation (Olympia, WA)	●		●			●
Seahurst Park Restoration (Burien, WA)	●		●	●		●

Notes:
* Detailed project descriptions and associated client references are provided on the following pages.
Projects are Anchor QEA experience, unless otherwise noted.
1 Fenstermaker; 2 GSRC

Onondaga Lake Dredging and Restoration

Honeywell | Syracuse, NY

Anchor QEA provided pre-design investigation, design, and habitation restoration services for the 15-year restoration of this 1,000-hectare lake. Our staff led dredging and cap design to remove more than 2 million cubic yards (cy) of contaminated material and cap over 400 acres of lake bottom sediments. Anchor QEA also developed the Comprehensive Lake-Wide Restoration Plan (Habitat Plan) that integrated habitat enhancement objectives with remedial alternatives and was a key driver for the basis of the dredging and cap design. The Habitat Plan identified a list of priority habitats, including wetlands and species to develop habitat characteristics including sediment elevation (water depth), sediment types, and habitat structure elements to integrate into the dredging and capping designs. The Habitat Plan also included specific wetland restoration components to serve as mitigation for the dredging and capping remedy. The mitigation was developed based on numerous discussions/negotiations with regulatory agencies and stakeholder groups, which facilitated agency approval and reduced mitigation costs.

During construction, Anchor QEA provided construction quality assurance and engineering support, including surface water quality monitoring and dredge and cap construction verification. The completed project won awards from WEDA for health and safety in 2010 and for best environmental restoration project in 2016.

For a separate but related project and client, Anchor QEA developed a water quality model to access nutrient and eutrophication issues of the lakes system.

Value Added: Anchor QEA's work during the Feasibility Study saved the client more than $100 million due to the use of innovative caps in lieu of dredging, resulting in a combination remedy that included more than 2,000 acres of monitored natural recovery and more than 400 acres of capping, in addition to the dredging and sediment management program.

Client Reference

John McAuliffe, Program Director
(315) 552-9700
john.mcauliffe@honeywell.com

Project Details

Dates: 2002 to 2017

Size: 2,400 acres, 2 million cy dredged

Construction Cost: $451 million

Similar Tasks

DATA HM WQ E&D DMH CON

Colorado Lagoon Dredging and Restoration

City of Long Beach | Long Beach, CA

Anchor QEA led design, permitting, and construction oversight for this multi-phased project for improving water and sediment quality, restoring aquatic and shoreline habitats, and providing recreational access to the community. Design and construction focused on sediment remediation and habitat restoration around the perimeter of the lagoon. This work modified lagoon bathymetry through dredging and filling to create elevations that support improved habitat features. Upland features were also transformed by removing a roadway, extending an existing pedestrian walkway, adding walking trails, constructing a bioswale to manage runoff from an adjacent golf course, and replacing non-native wetland and upland vegetation with native coastal zone species.

The project evolved significantly during engineering design to address budgetary, technical, and regulatory constraints. Despite the significant changes, Anchor QEA responded to each challenge with innovative, cost-effective solutions. Our proactive approach included balancing cut and fill volumes to avoid export of material through adjacent neighborhoods, working with agency staff to develop designs that met agency goals while not violating site constraints, supporting the City in community and stakeholder outreach to explain the value of the project and gain stakeholder support, and developing cost-effective solutions for the required vehicle bridges.

Value Added: Our proactive and hands-on planning and innovative design approach saved the City $2 million and reduced the overall project schedule by 6 months, while meeting the objectives and expectations of the City and its residents.

Client Reference

Eric Lopez, Tidelands Capital Projects Program Manager
(562) 570-5690
eric.lopez@longbeach.gov

Project Details

Dates: 2013 to 2017

Size: 6 acres, 30,000 cy dredged

Construction Cost: $4 million

Similar Tasks

DATA HM WQ E&D DMH CON

Montgomery County Lakes Dredging and Dewatering

Montgomery County Department of Environmental Protection | Montgomery County, MD

Anchor QEA supported project design through construction for the Lake Whetstone and Gunners Lake projects. These lakes experienced a significant amount of sediment accumulation, which resulted in exposed sediment shoals, water quality issues, and a reduction in overall storage capacity. The two lake dredging projects included a targeted removal of up to 40,000 cy of sediment from each lake to restore capacity. Two of the lakes were hydraulically dredged and mechanically dewatered in 2016 and 2017.

Anchor QEA reviewed the initial dredge designs for the two lakes and modified the overall approach and dredge prism development, dredging methodology, contract drawings, specifications, and alternatives analysis to determine appropriate placement options, and developed the engineer cost estimate to be used for evaluating contractor bids. We coordinated with the federal and state regulatory agency as well as with the public and stakeholders. Our staff supported evaluation of bids, including the combined bid approach used to perform combined dredging for both lakes under one contract.

Value Added: Anchor QEA was brought on after initial design was completed and it was clear that the current design was not going to be adequate. The first two lake dredging projects were constructed on time and on budget. Due to the success of the two dredging projects, we are currently finalizing the Lake Hallowell dredge design, where we performed the pre-design investigation, permitting, design, and preparation of all bidding documents. Construction is anticipated in 2021; the lake will be partially drawn down, and removal will be completed in the dry in conjunction with some dam work.

Client Reference

Gene Gopenko, Program Manager
(240) 777-7723
gene.gopenko@
montgomerycountymd.gov

Project Details

Dates: 2013 to 2017

Size: 48 acres, 40,000 cy dredged

Construction Cost: $6 million

Similar Tasks

DATA HM WQ E&D DMH CON

False River Watershed and Nitrogen Studies

Louisiana Department of Natural Resources | New Roads, LA

Fenstermaker led H&H modeling efforts to evaluate channel hydromodification alternatives to reduce suspended sediments entering False River, a 3,000-acre oxbow lake with a watershed of approximately 37,000 acres. Fisheries, vegetative habitat, and overall water quality have been in decline since the 1980s.

Fenstermaker collected water quality, meteorological, and H&H data to evaluate the type, volume, and source of sediment to assess the trapping efficiency of the existing canal sediment basin/trap and collected nitrogen, phosphorus, chlorophyll, and other water quality samples for nitrogen analysis. They developed H&H models of the M-2 watershed and incorporated those models into the previously built M-1 model, which were used to evaluate nutrient and sediment flux in the channel networks, assess the Patin Dyke Slough trapping efficiency, and identify hydromodifications to reduce nutrients and sediment transport into False River. Fenstermaker identified a preferred alternative that addressed the goals, while maximizing cost, and presented the findings in a report. Fenstermaker assisted with the design and construction administration of the watershed modifications including weir and baffle design and plantings. The hydromodifications including the installation of weirs, baffles, and riparian buffers were constructed and are currently performing as modeled.

Value Added: The modeling results helped identify an alternative that included a mixture of weirs and baffles that met the project objectives and saved the client money.

Client Reference

Thomas Van Biersel
(225) 342-1813
thomas.vanbiersel@la.gov

Project Details

Dates: 2014 to 2019

Size: 3,000 acres

Construction Cost: $650,000 (estimated)

Similar Tasks

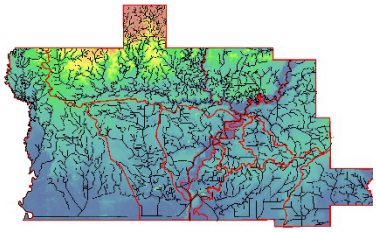
DATA | HM | WQ | E&D | DMH

Chateau Mirage Regional Detention and Channel Improvement | Lafayette Consolidated Government

Client Reference: Jessica Cornay, (337) 291-7015, jcornay@lafayettela.gov
Similar Tasks:

DATA HM WQ E&D DMH

Fenstermaker provided H&H modeling for dredging of 400,000 cy of material from eight existing detention facilities and 1 mile of channel. The staff modeled the 475-acre watershed in HEC-RAS, with the final design based on a full-buildout scenario for the 100-year design storm. The final design was approved by the Federal Emergency Management Agency (FEMA) and removed 250 acres from the FEMA floodplain. Aquatic fish habitats were also incorporated into the final design. The completed project won a Louisiana ACEC Engineering Excellence award.



Calcasieu Parish Regional Watershed Plan | Calcasieu Parish Police Jury

Client Reference: Allen Wainwright, (337) 721-3700, awainwright@cppj.net
Similar Tasks:

DATA HM WQ

Fenstermaker updated 12 watershed models for the Parish to plan for the needs of increased growth, sea-level rise, and subsidence. From 2006 to 2010, Fenstermaker completed seven watershed Master Plans that included 1D H&H modeling, as well as project identification and feasibility. In 2018, Fenstermaker updated these plans by migrating the 1D models to coupled 1D/2D models and expanded the modeling domain to encompass all the watersheds in the Parish.

Laredo Ecosystem Restoration | USACE Fort Worth District

Client Reference: Hope Pollman, USACE, Fort Worth District, (817) 886-6499
Similar Tasks:

DATA WQ E&D DMH

GSRC led preparation of the Feasibility Study for the restoration of aquatic habitats along the Rio Grande river in Laredo, Texas. GSRC coordinated with the City of Laredo, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and USACE to develop restoration measures including the removal of exotic plants, restoration of the natural hydrology and wetland benches, excavation of accumulated sediments, construction of drainage control structures, and road removal. GSRC also assisted in the design and implementation of biological surveys to quantify baseline conditions using HEP and HSI models and authored the Biological Assessment for Endangered Species Act Section 7 consultation.

Zemurray Park Lake Ecosystem Restoration | USACE New Orleans District

Client Reference: Bobby Duplantier, (504) 862-1037, bobby.duplantier@usace.army.mil
Similar Tasks:

DATA WQ E&D DMH

GSRC led preparation of the Feasibility Study for the restoration of the aquatic ecosystem at Zemurray Park Lake. They worked with the local sponsor and the New Orleans District to identify potential solutions to the lake's degraded water quality and prepared an alternative restoration measures evaluation report. GSRC coordinated topographic and bathymetric surveys of the lake and park and worked with a subcontractor to prepare a hydrology and hydrodynamics report detailing the surface water inflows and outflows at the lake.

Our Key Staff

PE: LA (41637)
MS, Civil Engineering
Location: Ocean Springs, MS

Managed 10 coastal restoration and engineering dredging projects along the Gulf Coast

Renee Robertson, PE

Project Manager

Renee Robertson's experience includes dredging and dredged material management and beneficial use design, coastal and restoration projects, and construction management. She has permitted, designed, and managed dredging and beneficial use projects, including for USACE, Mississippi Department of Environmental Quality (MDEQ), Mississippi Department of Marine Resources (MDMR), Audubon, and many other clients along the Gulf Coast. She is serving as the Project Manager for MDEQ's Greenwood Island and Cat Island beneficial use projects and MDMR's Pelican Key beneficial use project.

Enhancing Opportunities for Beneficial Use of Dredge Sediments in the Mississippi Sound. Ms. Robertson led engineering and design support for beneficial use sites, marsh habitat, and living shoreline breakwaters and prepared final plans, specifications, and opinions of costs.

Hancock County Marsh Living Shoreline Design and Beneficial Use. Ms. Robertson led permitting, design, and construction and developed bid documents for the five phases of project implementation including dredging and marsh creation.

Port of Gulfport Dredging and Beneficial Use. Ms. Robertson led the engineering design for the upgraded shore protection and revised Dredged Material Management Plan, and she developed the conceptual designs and Louisiana Department of Natural Resources and USACE permits for a regional beneficial use site to restore eroding marsh in the Biloxi Marsh Complex in St. Bernard Parish, Louisiana.

PE: MD (39876), LA (Pending)
MS, Civil Engineering
Location: Baltimore, MD

Innovative reuse expert and WEDA Executive Board of Directors

Walter Dinicola, PE, M.ASCE

Principal-in-Charge

Walter Dinicola has more than 25 years of experience in dredging design and delineation, dredged material transportation and disposal techniques, and waterfront development projects. He has designed more than 200 dredging projects, including 20 lakes, ranging from 15,000 to 2,700,000 cy of dredged materials. Mr. Dinicola has experience on many of the state and USACE dredged material management projects, including the development of the Innovative Reuse and Beneficial Use Program, strategic planning for future construction, and optimizing confined disposal facilities to extend life cycle.

Onondaga Lake Dredging and Restoration. Mr. Dinicola led the dredging design, dredged material transportation, and disposal activities, as well as the planning and performance of baseline monitoring plan and analysis.

Montgomery County Lakes Dredging and Dewatering. Mr. Dinicola managed the dredging, design, and construction oversight during the hydraulic dredging and dewatering of two lakes (20,000 cy each).

Community Lakes Dredging and Dam Repairs. Mr. Dinicola was Engineer-in-Charge for the three lake dredging projects overseeing the investigation involving surveys, geotechnical and analytical sampling, dredge prism design, technical specifications and plan development, stakeholder meetings, and construction.

PE: LA (44479)
ASCE Fellow, 2016
PhD, Ocean (Coastal and Dredging) Engineering
Location: Lewes, DE

Nationally recognized dredging expert and WEDA Dredger of the Year recipient

Ram Mohan, PhD, PE, F.ASCE

QA/QC Reviewer

Dr. Ram Mohan has 32 years of experience leading coastal resiliency, flooding, navigation (dredging and beneficial use), sedimentation/transport analysis, and hydrodynamic modeling projects. He is an Adjunct Professor at Texas A&M and runs the university's Dredging Short Course and is a member of the National Research Council's Marine Board. In 2005, Dr. Mohan was named the WEDA "Dredger of the Year" and served as the President/Chairman of the Board for WEDA from 2013 to 2016.

Onondaga Lake Dredging and Restoration. Dr. Mohan was Principal-in-Charge for the evaluation of the sediment pipeline, dredging of approximately 2 million cy of sediment, and technical review and input for the sediment consolidation area design on Onondaga Lake in New York.

Hancock County Marsh Living Shoreline Design and Beneficial Use. Dr. Mohan is the Engineer-of-Record for the creation of more than 6 miles of living shorelines, 46 acres of subtidal reef, and 46 acres of marsh restoration to protect this severely eroding shoreline.

Enhancing Opportunities for Beneficial Use of Dredge Sediments in the Mississippi Sound. Dr. Mohan is the Engineer-of-Record, technical advisor, and QA/QC officer and is leading coastal engineering aspects of the beneficial use marsh creation projects.

PE: LA (0041597)
MS, Water Resources Engineering (LSU)

Location: New Orleans, LA

Local water resources engineer with 10 years of experience investigating water systems

Samuel Best, PE

Task 1 Lead

Samuel Best has more than 10 years of experience applying water resources solutions to contaminated sediment and restoration projects. He is a Louisiana licensed professional engineer and has worked on numerous contaminated sediment projects providing task management, site investigation, data analysis, hydrogeological investigation, and groundwater modeling services. As a Louisiana native with two degrees from LSU and an extensive knowledge of the University Lakes system, Mr. Best will use his institutional knowledge and his experience working in multidisciplinary and multi-objective project teams on complex contaminated sediment projects to effectively lead the data assessment task.

Contaminated Sediments Site Remedial Investigation/Feasibility Study. Mr. Best led investigations, data analysis, and quantification of groundwater discharge and contaminant loadings to the site. He managed data analysis and reporting, client and regulatory agency engagement, and project budget and staffing.

Port of Baltimore Strategic Planning Support. Mr. Best is leading a variety of projects related to evaluating opportunities to reduce greenhouse gas and criteria air pollutant emissions from port operations. He managed data analysis and reporting, client and regulatory agency engagement, and project planning, budgeting, and staffing. His work included management, validation, and QA/QC of large datasets.

Hudson River Dredging and Restoration. Mr. Best performed data analysis and reporting in support of the construction monitoring program for evaluating water quality during dredging operations.

PE: LA (36717)
MS, Hydraulic and Environmental Engineering

Location: Lafayette, LA

Completed numerical modeling analyses for projects along the Gulf Coast

Jeanne Hornsby, PE, CFM

Task 2 Lead

Jeanne Hornsby has 16 years of numerical modeling, water resources engineering, and planning experience across Louisiana, Texas, and Florida. Within these systems, she has completed numerous numerical modeling analyses on inland and coastal systems, floodplain mapping, FEMA Letters of Map Revisions, stormwater planning, hydraulic design, environmental impact studies, H&H data collection, and flood mitigation projects. She is well versed in the suite of USACE HEC-Software, the Danish Hydraulic Institute's MIKE suite, and many other modeling and mapping software.

Calcasieu Parish Regional Watershed Plan. Ms. Hornsby is overseeing the Watershed Plan that includes the 1D and 2D modeling of all laterals within the Parish. In addition, the plan looks at mitigation projects, programs, and policy updates.

Marais des Cannes Regional Detention and Floodplain Analysis. Ms. Hornsby managed the regional detention and floodplain analysis (HEC-RAS) that looked at the implementation of approximately 300 acres of regional detention that would include the dredging of 4.7 million cy of material.

Louisiana Avenue Regional Detention Facility. Ms. Hornsby managed the H&H analysis and control structure design for 25 acres of a wet detention pond, along with an automated control structure.

PE: WA (40265), CA (61717)
MS, Civil Engineering

Location: Seattle, WA

Designed stormwater improvements for 30 projects

David Rice, PE

Task 3 Lead

David Rice has 22 years of experience providing planning and developing designs for water resources and civil infrastructure projects. He designed infrastructure and utility improvements for more than 30 projects, including 10 waterfront park redevelopment projects. His experience includes general civil engineering design, grading, green stormwater infrastructure, H&H analyses, stormwater conveyance and treatment, utility upgrades, and integrated water resources management.

Meydenbauer Bay Waterfront Park Redevelopment. Mr. Rice designed grading, stormwater improvements, and utility upgrades for expansion of a waterfront park. Improvements included daylighting an existing stormwater outfall, incorporation of bioretention and filtration to improve water quality, and upgrade of water, sewer, and drainage utility infrastructure.

Percival Landing Rehabilitation. Mr. Rice designed green stormwater infrastructure, frontage improvements, new parking, and utility upgrades for a waterfront park. Improvements included pervious parking surface, bioretention facilities, and a conventional cartridge filter system.

Seahurst Park Restoration. Mr. Rice designed a new fish ladder and water delivery system for an educational salmon-rearing facility, daylighting of a creek across the restored beach, and design of green stormwater infrastructure.

Mark Reemts, PE

Task 4 Lead

PE: MD (32535)
MS, Ocean Engineering
Location: Baltimore, MD

Experienced in large-scale dredging and dredged material management design and construction, specifically in lakes

Mark Reemts has more than 15 years of experience in engineering design and construction oversight in lakes, harbors, bays, and riverine systems. His experience involves large- and small-scale dredging operations associated with channel and general navigation dredging, berth deepening, and lake capacity recovery; dredged material transport, handling, and processing; confined aquatic disposal and confined disposal facility material management; sediment stabilization and processing; habitat restoration in riparian and aquatic environments; and site preparation and management during construction.

Lake Linganore Dredging. Mr. Reemts was project manager and lead engineer for a 120,000-cy hydraulic dredging project. He evaluated long-term deposition within the lake system to determine system capacity loss and designed large quantity dredging and material reuse.

Buffalo River Area of Concern Remediation and Restoration. Mr. Reemts supported design and implemented dredging of 500,000 cy of contaminated sediment and construction of five habitat restoration areas for mitigation.

Onondaga Lake Dredging and Restoration. Mr. Reemts assisted in the design and evaluation of sediment capping and armoring and materials specification development and coordination with local material suppliers to determine available material sizing and potential cost or armoring impacts.

Wendell Mears

Task 5 Lead

ME, Ocean Engineering
Location: Ocean Springs, MS

Constructed more than 1,200 ecological restoration projects

Wendell Mears has 40 years of marine engineering experience along the Gulf Coast. He has led, managed, and constructed more than 1,200 ecological restoration projects in his career—most are along the Gulf and East Coasts. He is a technical advisor to the Gulf of Mexico Alliance, in Mississippi, and Texas beneficial use programs and adaptive management teams and serves on the ERDC Engineering with Nature committee and the advisory board for the USA College of Civil, Coastal and Environmental Engineering.

Bayou d'Inde Dredging and Restoration. Mr. Mears led the constructability reviews for this multimillion-dollar dredging and habitat restoration project using marsh and living shoreline techniques to provide resilient containment of impacted sediments.

Hancock County Marsh Living Shoreline Design and Beneficial Use. Mr. Mears managed and led the permitting, design, and construction of more than 6 miles of living shoreline development, subtidal reefs, and marsh restoration. The project value is $50 million.

Houston, Galveston, and Texas City Navigation Channels. Mr. Mears was the key team leader for design and construction of the navigation channel beneficial use, bird islands, and reefs, using dredged materials to restore more than 3,000 acres of marsh and critical avian and fish habitat. Mr. Mears was requested by the Port and USACE to lead the Hurricane Ike recovery team, restoring damaged habitats while providing dredge material capacity to restore navigation.

Randy Brown, PE

Task 6 Lead

PE: WA (20122501), MI (6201052176)
BS, Civil/Environmental Engineering
Location: Syracuse, NY

Developed construction and implementation plan for 10 restoration and dredging projects

Randy Brown has 20 years of design and construction management experience for dredging and capping, sediment investigation, and earthwork projects, including developing engineering plans and specifications, preparing cost estimates, performing design calculations, conducting field construction management, reviewing construction financial reports such as contractor proposals and invoices, and writing quality assurance and technical reports summarizing field activities. Mr. Brown has provided construction observation or management services for at least 15 sediment remediation projects involving dredging and capping, four of which were specific to lake environments. In the Gulf Coast region, Mr. Brown has provided construction management services on two restoration projects in Texas and one in Louisiana.

Onondaga Lake Dredging and Restoration. Mr. Brown served as on-site resident engineer supervising construction quality assurance activities for this 5-year dredging, capping, and habitat restoration construction project. This project won the 2014 WEDA Safety award.

Habitat Development and Hurricane Ike Recovery (Texas). This project consisted of levee slope repairs around waste impoundments that sustained damage from Hurricane Ike. Mr. Brown served as a quality assurance officer during construction.

Torch Lake Time-Critical Removal Action. Mr. Brown was resident engineer providing construction oversight for removal of 1,500 cy of sediment followed by installation of a backfill cover as part of a time-critical removal action.

Our Supporting Staff

In addition to our key staff listed in the previous section, we have included our support staff and their invaluable expertise that will also support the necessary tasks throughout the project life.

Team Member	Experience and Value Added to the Team
Eddy Carter, PE *PE: LA (Civil 22801; Env. 22801)* *Baton Rouge, LA*	With 38 years of experience in environmental restoration planning, investigation, design, and engineering throughout Louisiana and the Gulf Coast region and having led data collection efforts in 2014 in support of the 2016 University Lakes Master Plan, Eddy Carter brings invaluable experience and institutional knowledge of the ULP to the Anchor QEA team.
Sarah Ballard *Ocean Springs, MS*	Sarah Ballard is a biologist with more than 15 years of experience conducting ecological risk assessments in coastal and wetland habitats throughout the Gulf Coast and brings extensive experience in sediment characterization and analytical data analysis to our data assessment team.
Kazungu Maitaria, PhD *Lafayette, LA*	Kazungu Maitaria has a PhD in hydrology and more than 16 years of professional experience in H&H modeling and will serve as a technical advisor to the H&H modeling team.
Josef Hoffman, PE *PE: LA (0042204)* *Mandeville, LA*	Josef Hoffman is a Baton Rouge native, two-time LSU graduate, and licensed professional engineer in Louisiana with more than 9 years of experience in numerical H&H and coastal modeling and will be providing modeling support to the H&H team.
Anna Spooner, PLA, ASLA *PLA: WA (1245)* *Seattle, WA*	As a landscape architect with more than 12 years of experience and having worked on more than 30 waterfront restoration and park design projects, Anna Spooner brings invaluable experience integrating in-water designs with upland designs in park settings to our water quality enhancement team.
Daniel Opdyke, PhD, PE *PE: TX (92528)* *Austin, TX*	With a PhD in environmental engineering and more than 20 years of experience in water quality modeling focused on eutrophication and sediment diagenesis, Dan Opdyke's expertise will help guide the earthwork/dredging, stormwater, and habitat feature designs to remove nutrients, reduce future sediment and nutrient loads, and ensure the long-term ecological health of the lakes system.
Josh McEnany *Baton Rouge, LA*	Josh McEnany is a Louisiana field biologist and Louisiana native with more than 20 years of experience conducting aquatic ecosystem, protected species, wildlife, migratory bird, and wetland surveys, performing biological assessments, and preparing environmental impact statements and Sections 401 and 404 water quality permit applications.
Travis Merritts, PE *PE: MD (41512)* *Horsham, PA*	Travis Merritts has more than 14 years of experience working on dredging, sediment management, contaminated sediment, waterway, and marine construction projects, including dredge prism design, and developing design documents and construction cost estimates, providing project oversight, drafting technical specifications, and providing contractor pre-qualification and bid evaluation services, and will be an integral part of our earthwork/dredging modeling team.
Derek Wagner, PE *PE: PA (091578)* *Horsham, PA*	Derek Wagner is involved in all phases and aspects of design for numerous projects including dredging design, subaqueous cap design, sediment and water sampling, core collection and processing, technical specification development, costing and equipment selection, and construction inspection and oversight.
John Laplante, PE *PE: LA (44190)* *Seattle, WA*	With more than 20 years of experience providing geotechnical engineering services for a variety of aquatic and waterfront restoration projects, John Laplante brings invaluable experience related to shoreline restoration, shoreline slope stability, and dredge design to our earthwork/dredging design team.
Rick Coupe, PE *PE: MS (29601)* *Ocean Springs, MS*	Rick Coupe is a coastal and marine engineer with more than 7 years of experience providing dredging and material placement design and cost estimating services for shoreline protection and restoration projects across the Gulf Coast region, including the Bayou d'Inde and Little Lake restoration projects in Louisiana, as well as several projects with the USACE Mobile District, and will be providing cost estimating services.
David Benton *LA Arborist (1878), ISA Arborist (SO-7242A)* *Baton Rouge, LA*	David Benton is a Louisiana licensed arborist with more than 10 years of experience providing tree preservation services throughout Louisiana and the Gulf Coast and will be assisting Anchor QEA in the development of a tree protection plan as part of construction and implementation plan deliverables.

PROJECT UNDERSTANDING AND WORK PLAN

Project Understanding

The University Lakes are the cornerstone of the Baton Rouge and LSU communities. They are a symbol of the land and culture of South Louisiana and are a heroic display of people's ingenuity. However, despite their grand juncture and beauty, they have been in declining health, reverting to their original state as a cypress swamp, since their creation. The 2016 Master Plan comprehensively explored the opportunities and constraints around restoring the lakes system and created a robust vision of what they could be and how to execute it. However, restoring the University Lakes system will not be easy. Attempts have been made before, but were largely unsuccessful, mostly from not having a comprehensive understanding of the lakes system, including its watershed, and the physical and biological processes governing it.

The objective of the FRRD is to restore the water quality of each of the six lakes, reduce the flood risk and maximize the retention capabilities of the system, and return the lakes to the destination they once were for migratory birds and recreational activity for the Baton Rouge and LSU communities. Doing this will require a multi-pronged approach involving the following:

- Deepening and reshaping the lakes
- Restoring and creating new habitat for stormwater treatment and ecological restoration purposes
- Redesigning how water and sediment moves throughout the system
- Developing best management practices that reduce flood risk and ensure the long-term health of the lakes system

In addition, as learned from the history of the lakes system and the past efforts at restoring it, this restoration effort must be designed to work with the natural system, leveraging natural processes to maintain the design goals.

Approach and Design Methodology

Our approach to delivering a successful project is founded on three main pillars: project and site understanding; effective planning, management, and coordination; and technical expertise.

Project and Site Understanding

Having a clear and comprehensive understanding of the lakes system, the project goals and constraints, and stakeholder expectations is critical to the success of this project. That is why at the onset of the project, we will host a project kickoff call with the Master Designer (MD), PA, and PMC, where we will first listen and learn firsthand about the history of the project and what's at stake, and then comprehensively define the project goals, scope, and constraints. Continued education of the lakes system will occur in Task 1 (Review and Interpretation of Existing Data), where we will conduct a comprehensive assessment of all available physical and chemical data provided by the PA, and in Task 2 (Hydrologic Model Development), where we will develop a current conditions H&H model to understand how water flows through the lakes system. Our partner Fenstermaker, who brings firsthand knowledge of the lakes system from their work in collecting the bathymetric and stump survey data, will provide unique insights that can only be gained by physically being on the water. In addition, Mr. Eddy Carter of GSRC, will bring with him the institutional knowledge from his many years of working on the lakes. We will also conduct a site visit within the first few weeks of the start of the project. We find that much can be learned on the ground that cannot be learned otherwise and always try to make a site visit at the onset of each project.

Effective Planning, Management, and Coordination

Effective planning, management, and coordination with the MD, PA, and PMC is the second critical piece to the success of the project. During the project kickoff call, the Anchor QEA team will work with the PA and PMC to develop a comprehensive budget, schedule, and project plan that is coordinated with the MD, incorporates the Construction Management at Risk (CMAR) approach to project delivery, and considers funding constraints, adaptive management, and project phasing. Our project manager will provide effective communication, oversight, and QA/QC of all project work. Throughout the project, our project managers will also work with the MD and PA to develop strategies to seamlessly integrate the in-water design with the upland design and expedite the overall project schedule.

Technical Expertise

Of most importance, however, is having the technical expertise to deliver a successful FRRD. Anchor QEA and our team have extensive experience with all aspects of the FRRD scope and will leverage this experience along with our team's local site knowledge to develop a cost-effective design that meets the project objectives and stakeholder expectations.

The work plan presented in the following pages provides a high-level look at how our team will tackle each task of the FRRD contract based on our current knowledge of the lakes system, project goals, and stakeholder expectations. This work plan, however, is meant to be nothing more than a starting point and will be revised with input from the MD, PA, and PMC to meet the project objectives, schedule, and budget constraints upon being selected and given the notice to proceed.

Work Plan

1 Review and Interpretation of Existing Data

Task Objective:	*Review and assess all data received and provide a list of additional information needed to perform H&H modeling and develop the earthwork model and associated plans and specifications*
Task Lead:	*Samuel Best, PE*
Task Deliverables:	*Data assessment report with conclusions and recommendations (electronic format)*

The data assessment task lays the foundation for all subsequent tasks. It is where we really learn about the about the lakes system and begin to develop our conceptual site model (CSM). It is also where we define what data are needed to meet the FRRD objectives and compare that to what data are available and assess what data may still need to be collected. This process is referred to as a data gaps analysis and is one of the main components of the data assessment task.

The data considered in this assessment include survey data, geotechnical and sediment quality data, watershed and other H&H data, and water quality and habitat data and information. Survey and sediment data will be used to develop the base elevation layers used in the H&H and earthwork/dredging models and to establish dredge prism design, update dredge material volumes, determine equipment access to consider in the design, and identify sediment properties. Sediment characteristics will be evaluated to determine the suitability of the sediments for reuse in reshaping the lakes' edges and creating habitat for ecological restoration and stormwater treatment purposes. It will also be used to evaluate effective dewatering process needs and transport options. Because the entire revitalization plan hinges on the ability to reuse the dredged material, providing a comprehensive assessment of the sediment physical and chemical characteristics is critical.

Hydrologic, hydraulic, and watershed characteristics data will include, but may not be limited to, National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall data, subbasin boundary data, land cover data, soil property data, FEMA Flood Insurance Study maps, and other survey data such as Light Detection and Ranging (LiDAR) data and elevations or as-builts of outfall structures. Historical rainfall and flood data are also needed to provide a proper calibration of the model.

Water quality and habitat data are needed to understand the chemical and biological processes at play within the lakes system and identify design conditions that will promote a healthy ecosystem and minimize long-term maintenance requirements. Understanding spatial patterns in water quality will help gain an understanding of the relative water quality concerns of the different lakes and how these water quality concerns are caused by lake morphology, stormwater inflows, bank erosion, shade levels, and other factors. As noted in the Master Plan, the shallowness of the lakes system is a major contributor to poor water quality, because of sunlight warming the waters and promoting algal blooms, as well as from wind-driven wave action, which stirs up the nutrient-rich sediments, increasing turbidity and nutrient concentrations in the water column, and further promoting algal blooms. Understanding these processes and how they differ from lake to lake and location to location is essential to executing the FRRD.

To execute this task, we will leverage Anchor QEA's highly skilled geographic information system (GIS), computer-aided design (CAD), and data solutions teams to provide a robust means for data storage, reduction, QA/QC, spatial analysis, mapping, and reporting. The results of this data assessment will be documented in a data summary and assessment report, which will include the results of the data gaps analysis. If data gaps are identified, we will coordinate with the PA to develop a targeted data collection work plan to be executed as quickly as possible.

The data summary and assessment report will also document our preliminary CSM and provide initial opinions regarding the project objectives and the direction of the FRRD. Our task and project manager will work with the PA and PMC throughout the data assessment task to ensure these efforts are coordinated with the efforts of the MD and to ensure expediency of the overall project.

2 Hydrologic Model Development

Task Objective:	*Produce an existing condition H&H model for the 10-, 25-, 50-, and 100-year storm events that depicts stage, storage, and peak flow rates for each lake individually, as well as routed in sequence to the primary outfall under Stanford Avenue*
Task Lead:	*Jeanne Hornsby, PE, CFM*
Task Deliverables:	*Existing condition model results for the simulated storm events, in GIS raster and PDF file formats*

Development of an accurately calibrated current conditions H&H model is the next step toward developing a comprehensive understanding of the lakes system and executing the FRRD. A current conditions model will provide insights into the H&H processes governing the lakes system and allow for the assessment of current flood risk under a variety of storm events, covering a range of intensities and durations. The results of the current conditions model will inform our CSM, identify features and locations of concern, and help define the design objectives. For example, as seen in drone footage of the area following the August 2016 flood event, Corporation Canal running along the southern edge of the site experienced significant flooding, whereas the adjacent University Lakes showed minimal flooding. This demonstrates there may be limited hydraulic connectivity of the lakes system with the local drainage network and presents an opportunity for meaningful stormwater detention and flood mitigation.

The second part of the modeling task is to evaluate design and management alternatives and their impact on future flood risk and the health of the restored habitat features. A particular challenge will be to ensure that appropriate aquatic conditions are maintained. Changes to the water level can negatively impact the ecologic system through the growth of invasive vegetation species, as well as impact the fish and wildlife within the system. A calibrated H&H model can identify changes in water level at all locations within the proposed system, as well as the length of time that water levels will remain elevated. This allows for design modifications prior to or, in some situations, during construction to ensure that selected flora will thrive and prevent invasive, non-native, or undesirable species from taking hold.

The Anchor QEA team will work with the MD and PA to confirm the modeling approach. To capture the unsteady dynamics of the lakes system and evaluate flood mitigation options, a 2D HEC-RAS (hydraulic) model coupled with a HEC-HMS (hydrologic) model is required. The HEC-HMS model will be used to quantify runoff rates, volumes, and timing resulting from storm events based on land use, soil type, and topography. Specific drainage areas, such as the I-10 overpass and LSU's campus, will be isolated and their runoff contributions identified. The HEC-RAS model will be used to quantify the flow of runoff through the system using detailed bathymetry, topography, and hydraulic structure data. From this analysis, flood extents and timing both within the system and for the surrounding drainage areas will be determined. Furthermore, the HEC-RAS model allows for the evaluation of flood risks and ecologic conditions resulting from small-scale changes such as the size and/or condition of hydraulic structures and large-scale changes such as rerouting all or parts of Corporation Canal into the lakes system.

The NOAA Atlas 14 data will be used to identify rainfall depths for the 10-, 25-, 50-, and 100-year design storms, as well as shorter return intervals that are typically responsible for the introduction of contaminants to the system and can be used to verify design requirements of stormwater infrastructure such as bioswales and other engineered habitats during low-flow conditions. Inclusion of longer-term events will also be considered for the purpose of evaluating hydroperiod characteristics of the engineered wetland and habitat features (such as inundation frequencies and depths) that are critical to their long-term health and viability. In addition, events will be run with a variety of surface conditions (e.g., curve number, Manning's "n," soil saturation) to evaluate seasonal variations.

The results of the current conditions model will be provided to the PA and PMC in GIS and PDF format. The H&H modeling, however, does not stop here. H&H modeling will be conducted in conjunction with the development of the earthwork/dredging model in Task 4 (Earthwork/Dredging Model Development) to evaluate the impacts of different designs and long-term management scenarios on detention capabilities of the lakes system and peak water surface elevations, as well as understanding the design criteria for the restored habitat features.

3 Water Quality Enhancement

Task Objective:	*Evaluate ways to enhance and manage the long-term health of the lakes system and to work with the MD to include water quality enhancement components into the dredge, material placement, and habitat feature designs and integrate them with the upland designs*
Task Lead:	*David Rice, PE*
Task Deliverables:	*None*

Along with reducing flood risk, enhancing the water quality of the University Lakes system is at the heart of the FRRD. The lakes system is well studied, having been researched as part of long-term monitoring programs. These data indicate that the system suffers from poor water quality, due in part to its urban watershed, high temperatures, long residence time, shallow bathymetry, and historical loadings of nutrients, which enrich the underlying sediments. A further complication is the possibility that the lakes are nitrogen limited, as opposed to phosphorus limited (2010 LSU thesis by Ryan Mesmer[1]), which impacts the effectiveness of management actions. Finally, Norris and Laws (2017)[2] suggest that dredging only temporarily improves water quality, due to subsequent inflows of stormwater with high nutrient concentrations, indicating that rerouting, or treating, the stormwater is important. Based on this information, it is critical that the design, construction, and implementation plan carefully consider the following water quality enhancement components:

- Stormwater treatment, both before and as it enters the lakes
- Collection of sediment before it enters the lakes
- Bank stabilization and erosion prevention
- Aquatic and nearshore habitat restoration
- A long-term water quality management plan

The Anchor QEA team is well suited to incorporate these water quality enhancement components into the FRRD because of our interdisciplinary team combining expertise in green stormwater treatment design, water quality and nutrient cycling, habitat restoration, and landscape architecture. We have the necessary experience to integrate our in-lake designs with upland stormwater drainage and treatment, habitat, and recreational features.

There is no deliverable associated with Task 3. Thus, the purpose of this task is to ensure water quality enhancement components are incorporated into the FRRD and are coordinated with the MD. To do this, the Anchor QEA team will work closely with the MD and PA to make sure the FRRD components are integrated with the upland design components and adequately address both current and long-term water quality concerns.

4 Earthwork/Dredging Model Development

Task Objective:	*Develop a baseline earthwork model to depict cut and fill volumes to balance the cut and fill relationship and determine the approximate size and acreage of the proposed lakes system, and to investigate ways to create more detention capabilities while lowering flood risk*
Task Lead:	*Mark Reemts, PE*
Task Deliverables:	*Submittal of developed condition model results for all storm frequencies modeled in Task 3, as well as earthwork balance models both in phases and total earthwork for the full project*

The earthwork/dredging model is key to developing the approach to sediment removal and paramount to achieving project objectives. The purpose of this model is to evaluate cut and fill volume relationships in conjunction with alterations to the normal pool water elevation that maximize the storage capacity of the lakes

[1] Mesmer, R., 2010. "Impact of urban runoff on phosphorus, nitrogen, and dissolved oxygen in a shallow subtropical lake." LSU Master's Thesis. 4017.

[2] Norris, B., and E.A. Laws, 2017. "Nutrients and Phytoplankton in a Shallow, Hypereutrophic Urban Lake: Prospects for Restoration." Available at: https://www.mdpi.com/2073-4441/9/6/431. *Water* 9(6):431.

system while simultaneously minimizing the volume of material to be dredged and managed. These modifications will incorporate design details and planning associated with stormwater management and wetland creation to balance dredge volumes, cut and fill areas, and overall structure of the dredging and material reuse. The resulting dredge prisms provide the basis to the H&H model to evaluate the influence the new lake design has on flood risk and long-term health of the lake's ecosystem.

The first step to developing the earthwork/dredging model is to develop the dredge prism—a 3D geometric volume representation of sediments to be dredged that accounts for the anticipated dredge operations. The dredge prism could be used in reference to the total project (as is the case defined herein), a specific sediment management unit (SMU), dredge management unit (DMU), or for a smaller subdivision.

The design of the dredge prisms utilizes the bathymetric and stump surveys, as well as topographic surveys, geotechnical analysis and probing results, locations of wetlands and sensitive tree species, and locations of easements, utilities, and infrastructure. It also requires consideration of the H&H modeling results to understand where locations susceptible to flooding may exist and how modifications of the bathymetric surface will result in changes to the normal pool stage and flood risk.

The survey data (topographic and bathymetric) will be used to generate a master basemap and triangulated irregular network (TIN), which is a set of adjacent, non-overlapping triangles computed from mass points and breaklines. The TIN contains vector data, which are structured on irregularly spaced points, and line and polygon data interpreted as mass points and breaklines and stores the topological relationship between triangles and their adjacent neighbors. The basemap is then updated to include the aforementioned data, which define the dredge cut depths, potential dredge offsets (e.g., from sensitive environmental habitats, utilities, infrastructure), and stable side slopes. These additional features incorporate site-specific data such as geotechnical characteristics to evaluate safe and stable side slopes and incorporate removal depths necessary to balance total project volumes. The dredge prism maybe be subdivided into SMUs or DMUs, which are horizontally defined subareas within the overall project area. SMUs and DMUs are a common method of subdividing large and complex sites and are usually defined based on differing site physical conditions or differing sediment physical or chemical characteristics. A key consideration in developing SMUs or DMUs is the potential for areas within a larger site to have important distinctions such as differing sediment geotechnical characteristics, debris fields, water depths, current or wave regimes, required thicknesses of dredge cuts, and differing chemical analyses, among others.

Dredge prism design will be iterative, incorporating design alternatives working with the habitat and restoration elements to determine removal approach and depths necessary for water quality and flow improvements while adding stormwater features. Volume balancing from removal and placement will work together with concept designs to incorporate removed sediments into detention options where feasible.

5 Dredging Methods and Dredged Material Hauling

Task Objective:	*Determine the feasibility of various dredging methods and equipment for this application and develop options for dredging material handling, processing, transporting, and placement that consider the impact on the daily lives of the surrounding communities and the lake ecosystem and meet the project objectives*
Task Lead:	*Mark Reemts, PE*
Task Deliverables:	*An Alternatives Analysis Report in PDF format*

The development of the dredging and material handling means and methods is arguably the most critical task of this work plan. Because of the physical characteristics of the site (urban, residential setting; shallow water depths; and presence of numerous stumps and other debris), the multiple project objectives (enhance water quality and reduce flood risk and enhance public access and create new public park space), and the institutional constraints (inability to dewater the lakes, costs, and aggressive timeline), developing the dredging and material handling

means and methods will require creative, out-of-the-box thinking and very close coordination and collaboration with the MD, the PMC, and the adjacent communities.

Based on our dredging experience, which includes dealing with stumps (e.g., Bayou d'Inde), Anchor QEA will develop the Alternatives Analysis Report (AAR) that evaluates the full suite of available technology (e.g., dredging, transport, dewatering, placement) and process options (e.g., mechanical and hydraulic dredging) to achieve project objectives. Our experience with all methods of dredging and equipment will bring detailed evaluations of applicable equipment and approaches to determine the most effective construction methodology to perform the work. The most applicable technologies and process options will be combined to develop alternatives. The alternatives will then be evaluated using three criteria to perform a comparative analysis to select the most appropriate approach for each lake. Those criteria are further detailed below.

Effectiveness. The effectiveness criterion evaluates the technology relative to its ability to achieve the project objectives. Both short-term and long-term effectiveness are evaluated. Short-term effectiveness encompasses potential impacts to the community and environment during the construction and implementation periods (e.g., dewatering), whereas long-term effectiveness encompasses the reliability and ability to achieve long-term goals of the project following implementation.

Implementability. The implementability criterion evaluates the alternatives for technical and administrative feasibility. Technical feasibility refers to the ability to construct, operate, maintain, and monitor the action during and after construction. Technical feasibility also applies to the availability of necessary equipment and services for implementation or construction. Administrative feasibility refers to the ability to obtain approvals and permits and gain community acceptance.

Cost. A rough order-of-magnitude cost estimate will be developed for each alternative during the alternatives analysis. The costs will be developed using information obtained from vendors, cost-estimating guides, prior projects, and engineering judgment.

The results of the comparative analysis will identify the alternative to be carried forward into design. In addition to the evaluation and selection of an alternative, the AAR will provide a preliminary basis of design and specify initial conceptual design components. The purpose of the basis of design is to identify the requirements that the design must satisfy and constraints on the design. The basis of design will continue to be revised throughout the course of the project as data become available. The results of the AAR will provide the basis for Task 6 (Construction and Implementation Plan) and advancing the final design.

The conceptual design components are then developed using the selected alternative and the basis of design providing the foundation for the 30% design phase in Task 6. Examples of design components include mobilization and site preparation, resuspension control, debris management, dredging means and methods, transportation of dredged material, processing of dredged material, transportation and disposal or placement of dredged material, shoreline and placement area stability control, environmental monitoring, habitat construction and enhancement, and demobilization and site restoration.

Ongoing communication between selected contractors and efficient coordination and transfer of data will be imperative in the development of the AAR (Task 5), BODR (Task 6), and conceptual design components (Task 6). Additionally, as detailed in Task 6, Anchor QEA will engage with a CMAR to update the basis of design and the conceptual design components, as well as perform a preliminary constructability review. Comments received from the CMAR will be incorporated into the final design deliverables.

6 Construction and Implementation Plan

Task Objective:	*Develop a construction and implementation plan for the redesign of the new lake footprint; management, handling, and placement of dredged material; and construction methodologies*
Task Lead:	*Wendell Mears*
Task Deliverables:	*Construction plan drawings at scale; grading plan (inside lakes' edges); grading sections (inside lakes' edges); slope stabilization plan and details; tree protection plan and details; demolition plans; earthwork calculations (outside of lake boundaries); specifications; updated estimate of probable construction costs; and permit and related documents (up to 30% complete and again at 100%)*

The geometric shape of the lake footprint, placement of dredged material, construction methodologies, and suitability of the dredged material for construction of recreational improvements will be designed during this task in collaboration with the MD, PA, and PMC. Wetland elevations, configurations, containment and shoreline stabilization, and desired ecological functions will be designed using data from previous tasks. Specifically, we will incorporate the water quality enhancements from Task 3 into the design including final elevations of the marsh based on site-specific goals: preferred habitat, reference marsh characteristics, dredged material physical characteristics, and regulatory agency consultations. The containment and shoreline stabilization (if necessary) alignments will also be designed, which will include selecting the geometry and material for construction of the containment and shoreline to balance initial capital construction cost, long-term performance and maintenance, and potential damage during extreme storm events. We will also work in conjunction with the CMAR to develop the 100% construction plans and technical specifications.

We will use the modeling results and our experience in other areas throughout the Gulf Coast and United States to optimize the lake designs by varying dredged material placement elevations, methods, and controls to provide recreational areas and natural development of wetlands and other habitat for the desired ecological functions. The design optimization tasks could include variations on lake footprints to optimize capacities for specified volumes of dredged material, marsh and habitat restoration acreages, and shoreline protection. The results will be summarized in an engineering BODR, which will include design criteria, assumptions, and calculations; plan views; typical sections; alignment of the containment and shoreline stabilization; water control structures, such as risers and spillways (if applicable); habitat analyses for sustainability in the project area; and construction means and methods that will minimize long-term impacts.

Geotechnical sampling, testing, and analysis of the sediments to be used for wetland fill are critical to achieving the target elevation. The determination of the target elevation will be a combined effort between the engineers and biologists. Target elevations will be developed based on the inundation requirements for the desired aquatic marsh and wetland meadow grasses, such as the southern swamp-lilly, Louisiana iris, and bullrush.

Water depths, beneficial use, and shoreline protection alignments and geometry, construction access, material costs, and construction trends are items often considered after the design of a project and have the potential to cause serious impacts during bidding and project construction. By integrating our construction experience into the design process and collaborating with the CMAR, we will incorporate these components into the design to minimize the potential for construction impacts and also assist in developing a high-quality bid package for potential contractors.

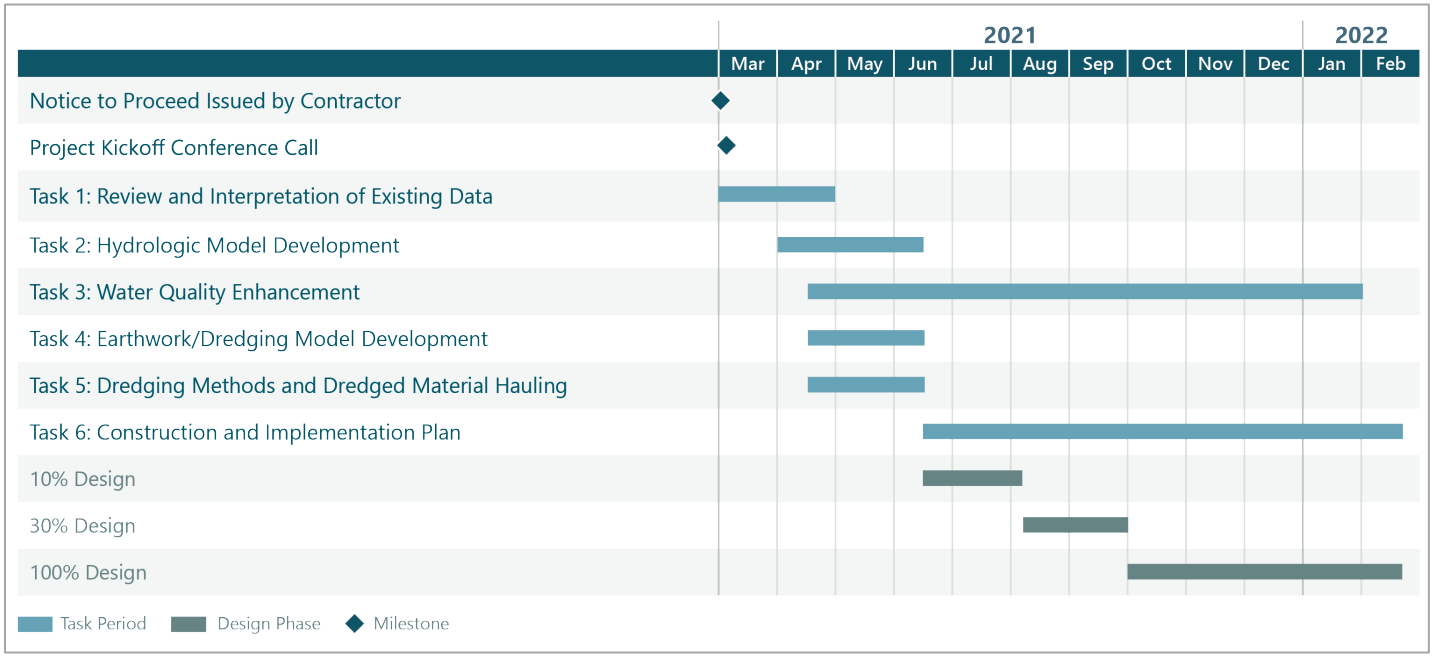
For example, on the Hancock County Marsh Living Shoreline Project, we provided input to MDEQ on construction phasing and timing. The design team suggested avoiding breakwater construction during typical low-tide months, which minimized contractor standby time and, in turn, reduced costs and construction time.

Although the Request for Proposal includes 30% and 100% deliverables, we also recommend conducting constructability and value engineering reviews at the 60% and 90% design phases to optimize project elements. Further, as the design is nearing completion, preparing a good bid document involves attention to detail and knowledge of outside factors that can affect the bid and construction costs. To help ensure the design team prepares a biddable, constructible, and cost-effective

design, we suggest, at a minimum, performing constructability and value engineering reviews prior to finalizing the bid documents.

Continuing early agency and stakeholder outreach during the development of the construction and implantation plan is critical to evaluate responses to design concepts and move the project design forward. Establishing relationships and coordinating early in the project will be beneficial for all involved parties. All prepared documents including engineering drawings and technical specifications will reasonably conform to applicable codes and regulations of governmental bodies having jurisdiction over the work at the time of preparation.

Project Schedule



CURRENT BACKLOG AND ABILITY TO CONFORM TO SCHEDULE

Anchor QEA is aware of the high priority of the ULP and that time is of the essence. To support this need, Anchor QEA is ready to provide the support necessary using the combined depth of services available through our full company and subconsultant range. The Anchor QEA team is available to start work immediately on this contract. Our team was designed to provide a depth of resources and technical expertise to meet University Lakes LLC's needs in a timely manner. We have completed a detailed workload forecast and can confirm that other project obligations will not affect our responsiveness and flexibility over the duration of the contract. We have the necessary staff and equipment resources to complete the project and required tasks within the established regulatory timeframes using the latest technology.

Staff Availability

All staff listed are fully dedicated to a successful project outcome and are available to fulfill their role on this project. The project management team will adjust their workload accordingly to fully administer and implement this project. Ms. Robertson will allocate team resources as needed, including tapping into the bench strength of our team's other staff members, to ensure that all project goals are met on time and within budget.

Staff	Availability
Renee Robertson	45%
Walter Dinicola	25%
Ram Mohan	15%
Samuel Best	35%
Jeanne Hornsby	35%
David Rice	35%
Mark Reemts	30%
Wendell Mears	30%
Randy Brown	35%
Eddy Carter	25%

Staff	Availability
Sarah Ballard	30%
Kazungu Maitaria	25%
Anna Spooner	30%
Daniel Opdyke	20%
Josh McEnany	25%
Travis Merritts	25%
Derek Wagner	35%
John Laplante	20%
Rick Coupe	30%
David Benton	20%

SMALL AND/OR DISADVANTAGED BUSINESSES PLAN

At Anchor QEA, we believe that diversity drives creativity and innovation, which drive success. We also believe that it is our duty to support those who are disadvantaged. For our FRRD contract, we have teamed with GSRC, a certified economically disadvantaged woman-owned small business headquartered in Baton Rouge. GSRC offers multidisciplinary, environmental consulting services and will assist the Anchor QEA team in the water quality and habitat design tasks, as well as in supporting the PA and PMC with permitting requirements.

REFERENCES

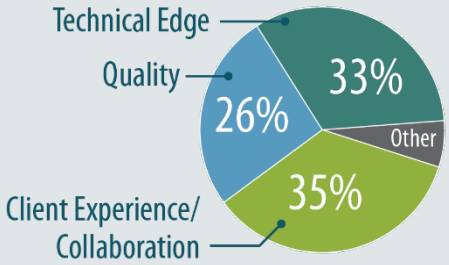
Contact	Relevant Project(s) and Services
Jared Harris, Deputy Director Office of Coastal Resources Mgmt. Mississippi Department of Marine Resources (228) 523-4053 jared.harris@dmr.ms.gov	Beneficial Use Program Support & Pelican Key Beneficial Use Project: Conceptual design, permitting, geotechnical data collection and analysis, and construction management
Gene Gopenko, Senior Stormwater Facility Engineer Montgomery County Department of Environmental Protection (240) 777-7723 gene.gopenko@montgomerycountymd.gov	Montgomery County Lakes: Dredge prism development, cost estimating, plans and specifications, and construction management
Melissa Slatnick, Environmental Section Chief Environmental Dredging & Restoration Maryland Department of the Environment (410) 729-8342 mslatnick@menv.com	Lake Linganore Dredging, Frederick, MD Cononwingo Reservoir Dredging Pilot Project, Cononwingo, MD: Sediment investigations, dredge prism development, dredging disposal and reuse evaluations, cost estimating, plans and specifications development, and construction oversight support

How Do Our Clients Rate Our Services?

In 2019, we surveyed more than 70 of our existing clients to learn more about their views of our client services. On a scale of 1 to 10, with 10 being "extremely satisfied," our clients responded as follows:

Rated our services as an 8 or higher

Why Do Our Clients Choose Anchor QEA?



SCHEDULE D to UL RFQ for Flood Risk Reduction Design Services – CERTIFICATION STATEMENT

The undersigned hereby acknowledges she/he has read and understands all requirements and specifications of the Request for Qualifications (RFQ), including attachments.

OFFICIAL CONTACT. UL requests that the Respondent designate one person to receive all documents and the method in which the documents are best delivered. Identify the contact name and fill in the information below: (Print Clearly)

Date: 01/21/2021 Official Contact Name:Renee Robertson, PE

A. E-mail Address: rrobertson@anchorqea.com
B. Facsimile Number with area code: (N/A)
C. US Mail Address: 614 Magnolia Avenue, Ocean Springs, MS 39564

Respondent certifies that the above information is true and grants permission to UL to contact the above named person or otherwise verify the information provided.

By its submission of this Statement of Qualifications and authorized signature below, Respondent certifies that:

1. The information contained in its response to this RFQ is accurate.
2. Respondent complies with each of the mandatory requirements listed in the RFQ and will meet or exceed the functional and technical requirements specified therein.
3. Respondent accepts the procedures, evaluation criteria, mandatory contract terms and conditions, and all other administrative requirements set forth in this RFQ.
4. Respondent understands that if selected as the successful Respondent, he/she will have *15 business days* from the date of delivery of final Contract in which to complete contract negotiations, if any, and execute the final contract document.
5. There is no litigation or any suspension or debarment proceedings that could affect the services to be supplied in any contract resulting from this RFQ, or a list of such litigation/ proceedings is attached to this Certification.
6. In the last ten (10) years, the Respondent has not filed (or had filed against it) any bankruptcy or insolvency proceeding, whether voluntary or involuntary, or undergone the appointment of a receiver, trustee, or assignee for the benefit of creditors, or if such proceedings exist, an explanation providing relevant details is attached.
7. There are no pending Securities Exchange Commission investigations involving the Respondent, or, if such are pending or in progress, an explanation providing relevant details and an attached opinion of counsel as to whether the pending investigation(s) will impair the Respondent's performance in a contract under this RFQ is attached.
8. There is no open or pending litigation initiated by Respondent or where Respondent is a defendant in a customer matter**,** or if such proceedings exist, an explanation providing relevant details is attached.
9. Respondent certifies and agrees that the following information is correct: In preparing its response, the Respondent has considered all SOQs submitted from qualified, potential subcontractors and suppliers, and has not, in the solicitation, selection, or commercial treatment of any subcontractor or supplier, refused to transact or terminate business activities, or taken other actions intended to limit commercial relations, with a person or entity that is engaging in commercial transactions in

Israel or Israeli-controlled territories, with the specific intent to accomplish a boycott or divestment of Israel. Respondent also has not retaliated against any person or other entity for reporting such refusal, termination, or commercially limiting actions. UL reserves the right to reject the response of the Respondent if this certification is subsequently determined to be false, and to terminate any contract awarded based on such a false response.

Authorized Signature: Walter Dinicola

Typed or Printed Name: Walter Dinicola, PE

Title: Principal-in-Charge/Principal Engineer

Company Name: Anchor QEA, LLC

Address: 614 Magnolia Avenue

City: Ocean Springs State: MS Zip: 39564

Walter Dinicola 1/21/21

SIGNATURE of Respondent's Authorized Representative DATE

PART III: Acknowledgement of Receipt

This Acknowledgement of Receipt should be signed by an Authorized Representative of the Proposer and included in Proposer's response to this Request for Proposals.

I HEREBY CERTIFY THAT I HAVE ACKNOWLEDGED RECEIPT OF THIS ADDENDUM 1 TO THE REQUEST FOR PROPOSALS FOR FLOOD RISK REDUCTION DESIGN SERVICES AND HAVE INCLUDED A COPY OF THIS ACKNOWLEDGEMENT WITH PROPOSAL AS EVIDENCE OF RECEIPT.

COMPANY NAME: Anchor QEA, LLC

SIGNATURE OF AUTHORIZED REPRESENTATIVE: Walter Dinicola

PRINTED NAME: Walter Dinicola, PE, M.ASCE

TITLE: Principal-in-Charge/Principal Engineer

DATE: January 21, 2021

End of Addendum