

CUMMINS | CEDERBERG

Coastal & Marine Engineering

December 3, 2019

Town of Palm Beach
Attn: Duke Basha
Asst. Purchasing Manager
951 Okeechobee Road, Suite D
West Palm Beach, FL 33401

RE: Coastal Engineering Services, RFQ No. 2020-02

Dear Mr. Basha and Selection Committee Members:

Cummins Cederberg, Inc. (Cummins Cederberg) is pleased to submit this RFQ for Coastal Engineering Services to the Town of Palm Beach (Town) for your review and consideration. We are excited for the opportunity to present our firm's qualifications with the intent to develop a long-term relationship as a trusted consultant for coastal engineering services. *This letter confirms that we have reviewed and understand the scope of work and its requirements, which are within our Team's core services.* We also met with key Town personnel, including the Director of Public Works and the Coastal Program Manager, to better understand the needs of the Town.

History of the Firm

Cummins Cederberg was founded in Miami in 2010 by principal engineers Jason Cummins, P.E., and Jannek Cederberg, P.E. The foundation of the firm was built upon an expertise in the coastal and marine environments, and remains at the forefront of science, research, and application in this constantly evolving industry. The firm has thrived with an exclusive focus on the coastal and marine area without diluting knowledge or resources amongst other disciplines. The firm has built a team of professionals, including licensed engineers and marine scientists. We have established a reputation of success by providing quality work in a transparent manner, resulting in sustainable working relationships with many repeat clients.

Cummins Cederberg provides both public and private clients with technical services in coastal and marine engineering consulting services. We have been providing these services over the last 9 years to public-sector clients, which include the following local, State, and Federal agencies:

- Miami-Dade County
- City of Miami Beach
- City of Miami
- Monroe County
- Bay Harbor Islands
- Palm Beach County
- Town of Jupiter Island
- City of Fort Myers
- City of Deerfield Beach
- Florida Department of Transportation
- US Coast Guard

Team

We have assembled a highly qualified team, including subconsultants, with experience working in the Town. Our team includes Terraquatic (TAI) for topographic/bathymetric survey, American Vibracore Services (AVS) for offshore geology (sand searches), and Tierra South Florida (TSF) for upland geotechnical services.

Coastal Engineering Capabilities

Our goal is to foster the development of strong, long-term client relationships by consistently delivering effective solutions on time and on budget. As a certified SBE firm, clients work directly with our experienced senior project engineers and managers who dedicate themselves to providing a superior level of responsiveness and quality. The firm's work performed on this project will be managed from our Palm Beach County office, and supported from local offices in Fort Lauderdale, Miami, as well as our Tallahassee office to streamline and expedite regulatory permitting needs.

Our team of engineers and marine scientists bring a collection of unrivaled qualifications and experience working in marine and coastal environments and are recognized in the industry for their knowledge and proficiency. We work very closely with our clients to understand their needs, quickly identify resolutions, execute projects cost-effectively, and on time.

Our Coastal Engineering Areas of Services Include:

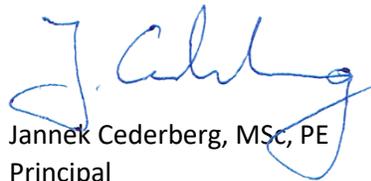
- ✓ Beach Nourishment
- ✓ Shoreline Protection
- ✓ Numerical Modeling
- ✓ FEMA Flood Mapping
- ✓ Coastal Erosion Studies
- ✓ Dredging Design
- ✓ Inlet Management
- ✓ Coastal Structure Design
- ✓ Sea Level Rise Planning
- ✓ Scour Analyses
- ✓ Coastal Resiliency
- ✓ Regulatory Permitting
- ✓ Marine Resources Surveys
- ✓ Construction Management
- ✓ Underwater Inspections
- ✓ Living Shorelines
- ✓ Aerial Drone Surveys
- ✓ Infrastructure Planning

Cummins Cederberg has not had the opportunity of working for the Town in the past, but we have key senior staff who have worked extensively with the Town in the past with their former firms and look forward to reestablishing these relationships. We appreciate the opportunity to submit our qualifications and stand by ready to assist the Town to execute services under this RFQ. Should you have any questions or require additional information, please do not hesitate to contact me at 561-210-9330 or jcederberg@CumminsCederberg.com.

Sincerely,
CUMMINS CEDERBERG, INC.



Jason Cummins, MSc, PE
Principal



Jannek Cederberg, MSc, PE
Principal



ANNE M. GANNON
CONSTITUTIONAL TAX COLLECTOR
Serving Palm Beach County

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TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
56-0016 ENGINEER BUSINESS	CUMMINS CEDERBERG INC	29062	B19.559342 - 07/18/19	\$33.00	B40170472

This document is valid only when receipted by the Tax Collector's Office.

B3 - 424

CUMMINS CEDERBERG INC
CUMMINS CEDERBERG INC
7550 RED RD STE 217
SOUTH MIAMI, FL 33143

**STATE OF FLORIDA
PALM BEACH COUNTY
2019/2020 LOCAL BUSINESS TAX RECEIPT**

**LBTR Number: 2017099823
EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.

Start Time Acknowledgement

February 28, 2020

Cummins Cederberg acknowledges and is prepared to start work under this contract by February 28, 2020.

A. Consultant Credentials & Related Projects

Since our inception, we have successfully grown and established ourselves as the leading engineering firm for complex coastal and marine engineering projects in Florida and the Caribbean with offices in Miami, Fort Lauderdale, Jupiter, and Tallahassee. Cummins Cederberg is repeatedly selected ahead of larger national engineering firms due to our unique and focused qualifications combined with a hands-on approach. Our success is built on providing high quality work in a transparent manner in order to build long term relationships resulting in organic growth through repeat clients and referrals.

The Cummins Cederberg team includes Florida Registered Professional Engineers with extensive experience utilizing advanced numerical modeling tools, such as MIKE (DHI), Delft (Deltares), SBEACH, and ADCIRC, amongst others. Specific numerical modeling experience includes the analysis of wave propagation both offshore and in shallow coastal areas, FEMA risk hazard map modeling, hydrodynamic flow in inlets and estuaries, and sediment transport associated with wave and current dynamics, as well as the interactions of beaches with natural and man-made coastal structures such as jetties, groins, breakwaters, rock headlands, and offshore reefs. Our project engineers are responsible for the investigation, planning, design, and construction management of every coastal project, including shoreline stabilization, coastal structures, inlet management, biological monitoring, and restoration.



ONE OF THE LARGEST GROUPS OF COASTAL ENGINEERS IN FLORIDA

What started with two engineers has successfully grown to one of the largest groups of coastal engineers in Miami-Dade, Broward, AND Palm Beach County

In addition, Cummins Cederberg has an in-house team of marine biologists and regulatory experts with experience in local, state, and federal coastal permitting, marine resource surveys, artificial reef design and monitoring, NEPA documentation, Endangered Species Act Section 7 consultation, and Essential Fish Habitat Assessments. Our team includes former executive level Florida Department of Environmental Protection (FDEP) staff with intimate knowledge of the regulatory process and professional relationships with agency personnel. We bring project experience related to regional sand management, inlet management, beach nourishment, restoration, FEMA funding from storm impacts, and compliance with stringent sand specifications and hardbottom mitigation requirements. Our biologists work hand in hand with our engineers to ensure projects are completed on time and budget to exceed your project goals, while protecting natural coastal resources.

Our construction management staff have experience on both the contractor and design side with project management and oversight specifically for beach nourishment projects using truck haul or dredging throughout

Florida including contract terms, construction specifications, construction methodology, monitoring, permit compliance, and reviews. Having former marine contractors on staff can result in a substantial cost savings when it comes to constructability reviews and estimating. During construction planning, Cummins Cederberg can collect the bid documents for the Town, as well as manage the bid process. Our construction management process includes regular site visits and progress reports to the Town staff.

**EXPERIENCED,
RESPONSIVE,
ORGANIZED**

Cummins Cederberg will work as an extension of the Town, not just as another consultant



The Cummins Cederberg approach is to work as an extension of the Town, and we have assembled a team to fulfill your needs. Current related projects in Florida are provided to demonstrate our technical experience with similar projects, along with a detailed understanding and approach.

Lake Worth Inlet Flood Shoal Dredging

Riveria Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Bathymetric survey
- ✓ Dredge design
- ✓ Environmental permitting
- ✓ Use of ADCP

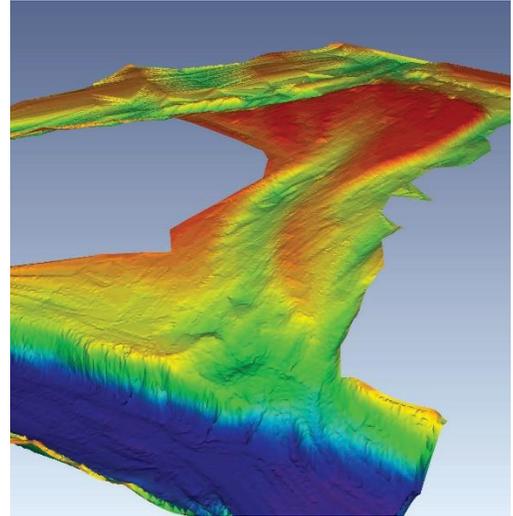
Project Client: Marine Industries Association of Palm Beach County

*Contact Info: Eric Andreson
EAnderson1@pbcgov.org
561-233-2514*

Start Date: June 2018

End Date: Ongoing

Contract Amount: \$169,000



Cummins Cederberg is providing marine engineering and environmental consulting services for the Lake Worth Inlet Flood Shoal Dredging Project, located adjacent to the Port of Palm Beach, Peanut Island Park, and the Lake Worth Inlet. The project consists of dredging a portion of the eastern perimeter and a center cut through the shoal to increase navigation and safety. The center cut will restore sediment deposition capacity in areas where sediment has historically deposited. As an additional benefit, it will increase access to the interior of the shoal and help reduce vessel density along the eastern and northern perimeters improving navigation and safety in the marked channels. The center channel will also improve access to law enforcement and first responders. The dredge material will be placed at the Tarpon Cover Restoration site, just south of the inlet. Responsibilities are bathymetric survey, current measurements, marine resource survey support, preparation of engineering plans, environmental permit application preparation and processing with the FDEP and the USACE, coordination and participation in public stakeholder meetings, and coastal engineering analysis.

The bathymetric survey and current data were used for coastal engineering design and numerical modeling. To better understand the dynamics of the flood shoal and evaluate effects post-dredging, a coastal engineering analysis was performed. The components that were evaluated were general coastal processes (waves and tidal hydrodynamic), sediment characteristics, sediment transport patterns, infilling time and anticipated dredge frequency, and impact to the Intracoastal Waterway west of the Lake Worth Inlet flood shoal based on cross-sectional profile and potential slope adjustments as well as anticipated sand movement and deposition. The bathymetric survey will also serve as a basis for the dredge design, which will be developed for reshaping of the flood shoal.

Hillsboro Club Dune Repair

Hillsboro Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Dune repair**
- ✓ **Sand samples**
- ✓ **Erosion assessment**
- ✓ **Construction administration**

Project Client: Hillsboro Club Condominium Association

*Contact Info: Susan Williams
susanw@hillsboroclub.org
954-941-2220 ext. 6001*

Start Date: 2018

End Date: 2018

Contract Amount: \$17,600



Cummins Cederberg served as the project manager, senior engineer, and marine biologist for the Hillsboro Club Dune Repair, providing emergency dune restoration and repair services, as well as sand studies at the Hillsboro Club.

Responsibilities included pre-construction sediment testing, preparation and submittal of FDEP CCCL permit application packages, development of construction documents, and coordination with the Town of Hillsboro Beach for code compliance. The dune design was based on maximizing the volume of sand seaward of the project property.

As required by the FDEP, existing dune vegetation mapping was performed, a proposed vegetation planting plan developed, and planting design parameters were prepared. The planting plans included the identifying the location of existing native dune vegetation to be preserved, buried, or replanted, proposed dune vegetation plantings for stabilization and mitigation, and areas of invasive exotic plants for removal.

Sand samples from the existing dune system were obtained and tested to identify available sand sources for the renourishment project. Cummins Cederberg was able to perform the sand testing prior to the beginning of a nearby dredging project, which was occurring concurrently. Through this expedited, out-of-the-box process, we were able to evaluate if this alternative sand source could be used for the dune repair, making the project more economically feasible for the client.

Cummins Cederberg also provided general construction administration services ranging from participation in pre-construction meetings, coordination with FDEP compliance, and periodic site visits.

Coco Plum Beach Erosion Study and Design

Marathon, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Field investigations
- ✓ Erosion study
- ✓ Beach design
- ✓ Coastal modeling
- ✓ 2,500 feet of shoreline

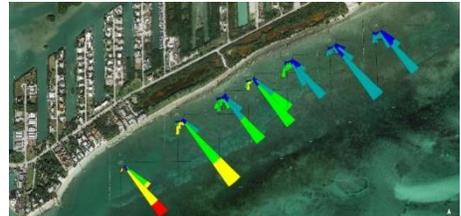
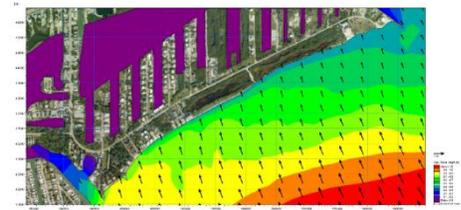
Project Client: City of Marathon

Contact Info: Carlos Solis, PE
solisc@ci.marathon.fl.us
305-289-5008

Start Date: 2016

End Date: 2017

Contract Amount: \$46,800



Coco Plum Beach is located along the southeast coast of Marathon in the Florida Keys. The beach is one of few beaches in the Florida Keys and is popular among residents and tourists. However, the beach has historically experienced significant erosion requiring costly beach fill projects, which add the nuisance of construction and periods of restricted beach use. The beach is exposed to the Atlantic Ocean but is fronted by extensive shallow seagrass habitat, which reduces direct exposure to ocean waves.

Cummins Cederberg worked with the City of Marathon to develop a beach management strategy with recommendations for implementation, prepare an erosion study, and coordinate pre-application meetings with the regulatory agencies to evaluate project feasibility. We recently submitted a CCCL permit application to the FDEP for a beach renourishment at the site with construction scheduled for this winter.

As part of the erosion study, a detailed statistical analysis of offshore wave data was conducted along with a wave propagation study. The wave modelling used the advanced MIKE21 wave model, which allowed for detailed review and comparison of the wave climate along the beach and an assessment of sediment transport rates and potential erosion, which are typically governed by the wave conditions.

The results of the numerical modeling study were used to understand the erosion trends at the site and utilized to support the beach and coastal structure design process. The area triggering the beach erosion was identified and solutions for stabilizing this area, while still providing sandy beach access, were developed. Understanding the underlying coastal processes allowed for an efficient design that works with the natural processes, thus reducing long term maintenance typically associated with projects working against nature.

Crandon Marina Sedimentation Study

Miami, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Field investigations**
- ✓ **Erosion study**
- ✓ **Coastal engineering analysis**
- ✓ **Shoreline stabilization design**
- ✓ **Marine resource assessments**
- ✓ **Public workshops**

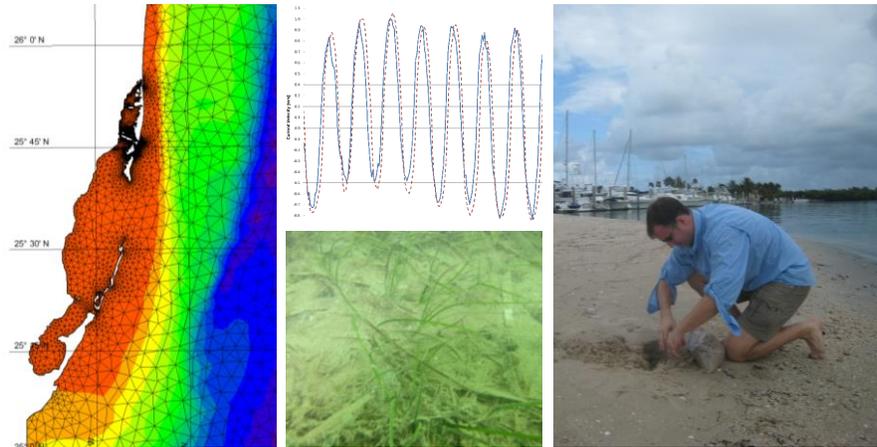
Project Client: Miami-Dade County Parks, Recreation and Open Spaces

*Contact Info: Angel Trujillo, PE
angel.trujillo@miamidade.gov
305-755-7800*

Start Date: 2012

End Date: 2013

Contract Amount: \$60,000



Crandon Marina is located along the northwest shoreline of Key Biscayne fronting Biscayne Bay and specifically adjacent to Bear Cut. Severe sedimentation occurs in the northwestern portion of the marina close to the entrance channel, preventing mooring in certain slips and consequently a loss in revenue. Cummins Cederberg was selected to determine the source and cause of the sedimentation as well as provide a solution.

The Project area is exposed to both high tidal currents and wind generated waves in Biscayne Bay. Due to the large tidal prism in Biscayne Bay, and limited flow pathways in north Biscayne Bay, high current speeds are experienced during ebb and flood tide in Bear Cut.

Field investigations including surveying, marine resource mapping, sediment sampling, and tide and current measurements were performed. A wave analysis was subsequently conducted to understand wave characteristics during normal conditions for the subsequent sediment transport assessment, and extreme wave conditions for the design of coastal structures. A detailed hydrodynamic numerical model was developed to simulate the tidal flow within Biscayne Bay and specifically the tidal flow patterns at the Project site. The numerical model was calibrated to current measurements obtained at specific locations.

Based on the results of the wave and hydrodynamic analyses, the sediment transport at the site was assessed to understand the governing mechanism in transporting excessive material into the marina.

Concepts to eliminate or reduce sedimentation were developed and compared relative to the current practice of dredging. The comparison included short and long-term costs, along with environmental and engineering constraints.

47th Street Beach Restoration

Miami Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **20,000 cy beach fill**
- ✓ **Permit applications**
- ✓ **Equilibrium Toe of Fill study**
- ✓ **Sediment transport study**
- ✓ **Numerical modeling**

Project Client: Miami-Dade County Public Works

*Contact Info: Paul Voight
voightp@miamidade.gov
305-372-6849*

Start Date: 2015

End Date: 2015

Contract Amount: \$32,000



Cummins Cederberg was engaged by Miami-Dade County to design a 20,000-cubic yard beach fill project in a highly eroded area of Miami Beach. The project area experienced significant shoreline retreat following a series of winter storms causing extensive erosion of the established dune system and preventing access for emergency vehicles.

In addition, the beach area fronts several upscale condominiums and hotels, which requested prompt resolution by the County. Cummins Cederberg worked around the clock to develop concept drawings to initiate the permitting process. The design included consideration of the existing dune and berm, as well as the general federal beach design requirements and construction methods as the project site is located within the federal project footprint. Permit applications with drawings were submitted to the regulatory agencies two days after Cummins Cederberg was initially contacted by the County.

An Equilibrium Toe of Fill (ETOF) study was subsequently prepared to assess potential impacts to nearshore hardbottom as the sand is exposed to waves and varying tidal conditions. The study analyzed potential cross-shore sand movement to facilitate adjustments to the construction template.

Sea Level Rise and Flood Mitigation Roadmap

Matheson Hammock Park,
Coral Gables, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Numerical modeling
- ✓ Coastal resiliency
- ✓ Flood mitigation concept development
- ✓ Condition assessment
- ✓ Cost estimates
- ✓ Stakeholder involvement
- ✓ Implementation strategy development

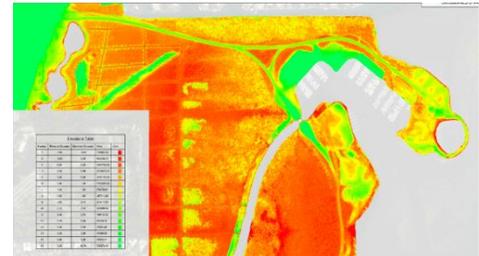
Project Client: Miami-Dade County Parks, Recreation and Open Spaces

Contact Info: Angel Trujillo, PE
angel.trujillo@miamidadade.gov
305-755-7800

Start Date: 2017

End Date: 2018

Contract Amount: \$90,000



Matheson Hammock Park is located along the western shoreline of Biscayne Bay in Coral Gables. The Park is one of few publicly accessible waterfront areas in this region of Miami-Dade County. Most of the park is relatively low lying, which results in flooding to some areas during high tide events. Flooding is a nuisance to visitors, as areas become inaccessible. In addition to the negative impact on visitor experience, flooding has financial impacts, as revenue generating components are impacted operationally and physically.

Cummins Cederberg was engaged to prepare a Sea Level Rise Flood Mitigation Study, relative to Matheson Hammock Park, with the primary objective to analyze the impacts of sea level rise on the park's infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting purposes. Cummins Cederberg compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the park; assessed the condition of existing infrastructure to understand conditions, remaining service life, and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on-site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Vizcaya Shoreline Stabilization and Wetland Restoration

Coral Gables, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Engineering analysis**
- ✓ **Storm surge wall design**
- ✓ **Wetland restoration**

Project Client: Vizcaya Museum and Gardens

Contact Info: Joel Hoffman, PhD
joel.hoffman@vizcaya.org
305-860-8422

Start Date: March 2011

End Date: August 2013

Contract Amount: \$30,000



Cummins Cederberg was retained to determine potential storm surge impacts and design a wall to prevent damage to a restored historic garden. The project included the design, permitting, and construction oversight of a shoreline stabilization wall as well as wetland restoration to protect a low-lying restored garden area at Vizcaya Museum and Gardens. The garden is an historical orchidarium in a highly visible area, immediately to the north of the Vizcaya Main House, directly fronting Biscayne Bay. Vizcaya is accredited by the American Association of Museums, which requires adherence to rigorous professional standards for site maintenance and educational programming.

The seawall is designed to protect a restored historical garden from storm surge, hydrodynamic, and wave impacts. As part of the seawall design, an adjacent area invaded with exotic vegetation was be restored to native conditions with planting of species native to the Biscayne Bay wetland environment. The restored wetland provided educational opportunities pertaining to Miami's native waterfront environment along with natural protection.

The wetland design will ultimately assist in dissipating wave energy in a non-intrusive way, as well as integrate into the overall master plan. The location and purpose of the wall provided opportunities for grant applications to assist Vizcaya Museum & Garden. A grant application was prepared, presented, and successfully processed with the Florida Inland Navigation District.

FDOT A1A Vulnerability Study and Roadway Stabilization Design

Indian River County, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Scour analysis
- ✓ Wave load analysis

Project Client: New Millennium Design Consultants, Inc.

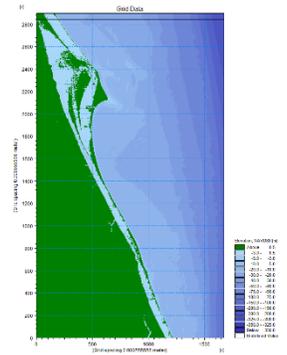
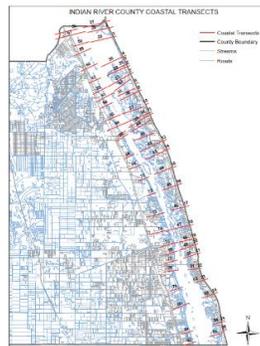
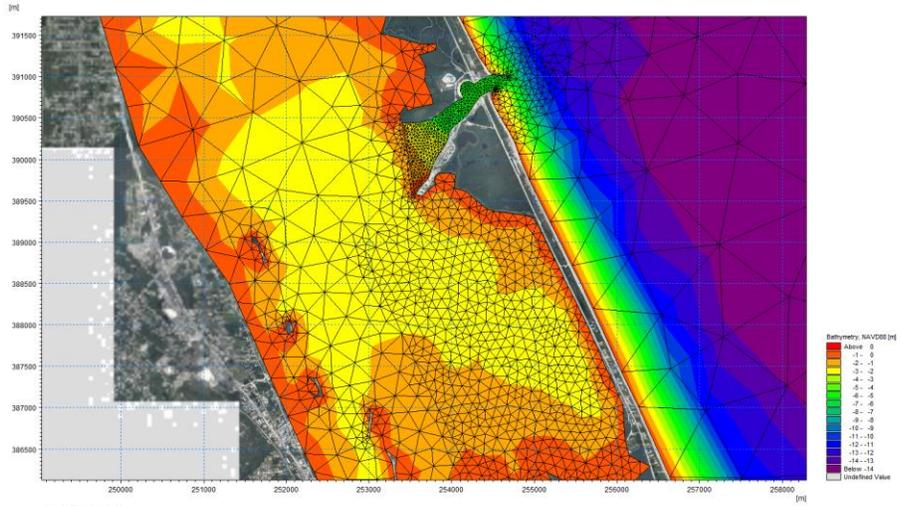
Project Owner: Florida Department of Transportation

Contact Info: Eugenio Ochoa
eochoa@nmdcenq.net
305-667-1657

Start Date: June 2017

End Date: December 2017

Contract Amount: \$55,000



Cummins Cederberg performed a scour and wave load analysis for a proposed seawall for approximately 2 miles of shoreline that experienced significant erosion during Hurricane Matthew. A hydrodynamic MIKE21 model was developed to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to stimulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme events under varying conditions and water levels.

MSC Cruises Ocean Cay Marine Reserve

Ocean Cay, The Bahamas

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering study
- ✓ Beach design
- ✓ Site analysis
- ✓ Shoreline configuration
- ✓ Sediment transport study
- ✓ Wave surge study
- ✓ Bathymetric survey
- ✓ Marine engineering

***Completed private project with marine construction cost over \$5M**

Project Client: Bermello Ajamil & Partners, Inc (B&P)

Project Owner: MSC Cruises

Contact Info: Scott Bakos (B&A)
sbakos@bermelloajamil.com

Start Date: 2015

End Date: Ongoing

Contract Amount: \$881,000



Cummins Cederberg was retained to lead all surveying, coastal engineering, beach and coastal structure design, as well as the Environmental Impact Analysis (EIA) and Environmental Management Plan (EMP) for this \$150M+ project. Topographic and bathymetric surveying was performed along with collecting rectified aerials photographs. Due to the remote location, existing baseline information such as control points and water levels were not available and had to be established. A long-term tidal study was performed to determine tidal levels. A marine resource survey was conducted to map marine resources, such as seagrass and corals, which could potentially be impacted by the construction. An EIA was prepared and approved by the Bahamas Environment, Science & Technology (BEST) Commission.

Detailed hurricane and wave modeling were conducted utilizing the advanced MIKE21 numerical model to determine extreme wave and storm surge conditions. A flood map with minimum finished floor elevations was prepared for use by the design team. Directly following the analysis, the island was impacted by Hurricane Matthew which was one of many hurricane events simulated during the design process. The modelled storm surge elevations were consistent with the observed impacts. A detailed sediment transport study was performed for subsequent use in the beach design. Nearly two miles of beach were created along the island's perimeter and within two interior lagoons. Water circulation modeling was performed to ensure a high rate of water exchange in the lagoons.

Wave loads during extreme conditions were determined for marine structure design. More than one mile of shoreline stabilization was designed along critical areas of the island's perimeter to ensure stability during extreme hurricane conditions. The shoreline stabilization included placement of 100,000 tons of rock, including areas with water depths up to 60 feet. Expansion of the island through reclamation and excavation was designed involving earthwork of approximately 1 million cubic yards.

B. Understanding the Town's Coastal Program

The Town of Palm Beach successfully implements a coastal management program to provide storm protection and recreational benefits along its coastline between Lake Worth Inlet and the southern Town boundary. Cummins Cederberg understands the dedication of the Town to maintain one of its most valuable assets and has the technical knowledge to support this continued effort. We have assembled a unique team of experts to support the Town's ongoing coastal management efforts, as well as to develop new, innovative solutions and approaches for the Town's coastal program.

Implementation of Comprehensive Coastal Management Plan

The Town's coastal program has evolved and grown since the Comprehensive Coastal Management Plan (CCMP) was first developed in 1986. Traditional, large-scale nourishment projects including inlet bypassing at the Sand Transfer Plant, Mid-Town Beach Nourishment, and Phipps Ocean Park Beach Nourishment have helped to stabilize large portions of the Town's coastline. Many of these projects and strategies were originally developed in the CCMP and have been refined over the years to provide tremendous benefit to the Town's beaches. As the Town moves into the 21st century, new challenges must be addressed, including sea level rise, increasing storm intensity, and reduced sand resources. Cummins Cederberg has the experience to help the Town preserve its beautiful coastline, while also working to improve coastal resiliency in the future.

Island Wide and Regional Management

The CCMP allows the Town to take both a regional and targeted approach to coastal management. Cummins Cederberg has worked with municipalities to implement both large- and small-scale coastal engineering projects that require careful consideration of multiple stakeholder interests. Our staff has experience with their former firms working with the Town on multiple projects outlined in the CCMP including development of the Beach Management Agreement (BMA), peer review of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS), preparation of the Environmental and Biological Assessment for the Reach 8 nourishment project, design of the new Mid-Town Groin, and biological monitoring for multiple CCMP projects throughout the Town. This experience positions Cummins Cederberg uniquely to understand the Town's current needs and goals moving forward.

At a regional scale, Cummins Cederberg can work with the Town to better understand existing conditions as well as plan for future changes. We have the in-house ability to support the Town by implementing many of the island-wide recommendations presented in the most recent technical review of the CCMP in 2013, including development of an island-wide sediment transport model, implementation of a coastal structures evaluation program, coordination to develop a Federal-level BMA, and refinement/expansion of the recently completed Coastal Flood Vulnerability Assessment.

Eight Reaches of the Town

The original CCMP separated the Town's coastline into eight reaches to facilitate a more targeted beach management strategy. The Cummins Cederberg team understands that each reach within the Town has been designated as critically eroded by the Florida Department of Environmental Protection (FDEP) and has different needs, with varying levels of required attention, funding, and maintenance.



Reach 1. Lake Worth Inlet to Onondaga Avenue

Reach 1 is located immediately south of Lake Worth Inlet and benefits from the efficient maintenance of the Inlet, including inlet bypassing by the Sand Transfer Plant and maintenance dredging by the Corps. Cummins Cederberg will work with the Town and relevant stakeholders to optimize sand placement locations throughout the Town, as described in the CCMP.



Reach 2. Onondaga Avenue to El Mirasol

Reach 2 is at the north end of the island and is primarily maintained by sand placement in Reach 1, which acts as a feeder beach, as extensive nearshore hardbottom limits the feasibility of nourishment project in this area. The Cummins Cederberg team can assist the Town by monitoring the upcoming Mid-Town Beach Nourishment project to evaluate the effectiveness of the extended northern taper to stabilize the southern end of Reach 2 and evaluating alternative sand placement locations within the Town.



Reach 3. El Mirasol to Via Bethesda

Reach 3 represents the northern part of the Mid-Town Beach Nourishment project, which recently received Federal funding for reconstruction. While this will be a Corps project, Cummins Cederberg can support the Town through construction support and/or monitoring. Reach 3 contains The Breakers, which is currently being studied to address erosion in front of the Breakers and downdrift along Clarke Beach. Cummins Cederberg can provide assistance and peer review of the proposed solutions to evaluate effects of private property beach management on the Town's beaches.



Reach 4. Via Bethesda to 270' South of Banyan Road

Reach 4 represents the southern part of the Mid-Town Beach Nourishment project, which recently received Federal funding for reconstruction. The proposed Project Manager for this RFQ, **Jordon Cheifet, PE, CFM, has experience working in Reach 4.** He served as Engineer-of-Record (at his previous firm) for the recently constructed Mid-Town Groin Construction project located in Reach 4 at Gulfstream Road and performed an engineering assessment of the seawall at the southern end of Mid-Town Beach.



Reach 5. 270' South of Banyan Road to 170' North of Widener's Curve

Reach 5 is located south of Mid-Town Beach and benefits from the southerly movement of sand from the Mid-Town Beach Nourishment project. This section of the Town's shoreline has been historically stable and not required nourishment. Monitoring of the beach and evaluation of the seawalls in this reach will allow the Town to maintain storm protection in Reach 5.



Reach 6. 170' North of Widener's Curve to Sloan's Curve

Reach 6 is located between Widener's Curve and Sloan's Curve and is protected by the Florida Department of Transportation (FDOT) revetment, which provides storm protection to A1A. While no dry beach is present in this section of the Town's coastline, Cummins Cederberg has experience designing and inspecting these coastal structures and could perform an independent structural assessment for the Town, consistent with the recommendations in the most recent CCMP technical review.



Reach 7. Sloan's Curve to The Ambassador Hotel

Reach 7 includes the Lake Worth Pier and is located towards the southern end of the Town. Reach 7 is maintained by the Phipps Ocean Park Beach Nourishment project. The northern part of Reach 7 remains an erosional hotspot due to the proximity to the revetment but the central and southern parts benefit from the large-scale nourishment in the reach. Like the Mid-Town project, Cummins Cederberg can support the Town through construction support and monitoring of this project during the next construction scheduled for this winter.

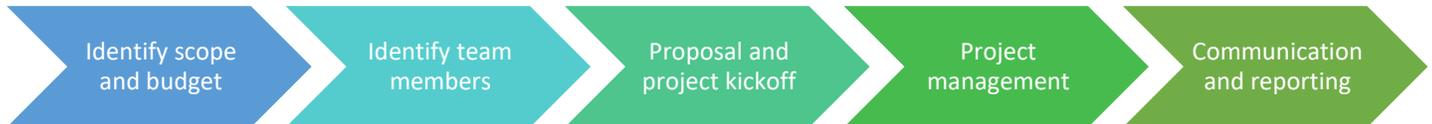


Reach 8. The Ambassador Hotel to La Bonne Vie

Reach 8 is located at the southern end of the Town and has historically been maintained through the southerly movement of sand from the Phipps project in Reach 7. The downdrift extent of these benefits is limited; therefore, the Town maintains the southern portion of Reach 8 through a successful dune restoration program. While the Town leverages the recently completed Reach 8 EIS to secure environmental permits for a Reach 8 project, Cummins Cederberg can support the town with engineering design and construction administration for an interim dune project.

C. General Approach

Our general approach utilizes a dynamic team of technical staff including coastal engineers, marine scientists, surveyors, geotechnical engineers, geologists, and regulatory experts to meet the Town's needs. Our Team is prepared to assist the Town in delivering successful projects that comply with all technical standards, while maintaining regulatory agency requirements. The Cummins Cederberg team will be an extension of the Town and is committed to assisting in all aspects of project management from initial kickoff meetings to project closeout. Our team management process will be used for managing and integrating all activities associated with each project utilizing this detailed 5-step approach:



Step 1: Identify scope and budget. The first step will include early communications with the Town to gain a full understanding of the scope of the project. We will work with the Town to identify the project needs in order to develop the scope, qualifications, staffing, and budget estimate for each task. Developing a full understanding of the needs of the project early on will help to avoid change orders as the project progresses.

Step 2: Identify team members. Upon approval of the project scope by the Town, we will immediately coordinate with the Team (e.g., coastal engineering, environmental services, geotechnical) to select the necessary team members and staff to fulfill the requirements of each task. Our goals during this step are to identify the best-suited personnel to address the task at hand, as well as to provide a highly responsive team that can conduct the requested work within the Town's desired timeframe and budget.

Step 3: Task proposal and project kickoff. Upon authorization to proceed, we will schedule a project kickoff meeting and immediately notify the Team to discuss the project assignment and to develop and issue scopes of work for each subconsultant to clearly define the roles, responsibilities, project objectives, schedules, and expected deliverables for each team member. Effective channels of communication will be established, including points of contact and procedures for feedback.

Step 4: Project management. We will regularly coordinate with the Team to monitor the progress of the individual tasks and will communicate often with Town staff to ensure that our Team is meeting or exceeding the level of quality and responsiveness the Town expects. We will communicate frequently with the Town to confirm that our Team is compliant with Town procedures and providing thorough project records.

Step 5: Communication and reporting. As part of overall project management, our Team will obtain regular progress updates from our subconsultants and provide progress reports to the Town as needed or as determined during project kickoff. At a minimum, progress reports will be provided in our monthly invoices.

D. Technical Approach

The Cummins Cederberg team of engineers, scientists, and additional technical staff are familiar with the Town’s coastal program and understand the technical expertise required to along its beautiful coastline. Many of our technical staff have also gained direct experience working with the Town on many projects while with their former firms. The following summarizes our technical approach to servicing this RFQ and describes how the Cummins Cederberg team can assist the Town with each area of the scope of work described under this RFQ.





Coastal Protection Design/Resiliency

The overarching theme of the Town's CCMP is to provide protection to the Town's coastal infrastructure through a carefully planned and managed strategy, which generally includes beach nourishment and strategically placed coastal structures including groins, revetments, and seawalls. Cummins Cederberg has experience at both the regional and local scale relative to the design and implementation of resilient coastal protection projects for both public and private clients. At a regional scale, our technical staff has developed sediment budgets for both inlets and open coasts and created solutions for erosional hotspots. Cummins Cederberg will apply our Team's experience to the Town's nourishment projects to optimize the designs for the next construction event. For example, a thorough analysis of the Town's Annual Physical Monitoring Reports may show that the fill template could be modified in specific areas to extend the life of the project.

Our team is accustomed to being innovative; it is part of the company's DNA

Our team is accustomed to being innovative; it is part of the company's DNA. For most of our projects in the Caribbean, we are required to think outside-the-box due to logistical constraints and limitations relative to materials, equipment, labor, and budget. Further, the majority of the Caribbean coastline is unique, unlike the Florida east coast where the coastal processes are fairly similar throughout. This forces our engineering and permitting team to develop innovative solutions for almost all projects, rather than just reproducing previous designs.

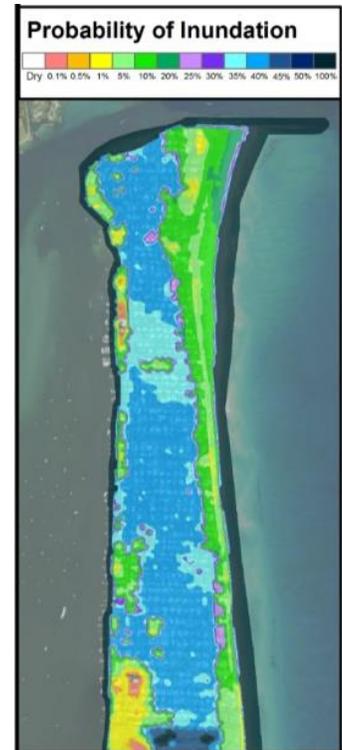
Coastal Protection

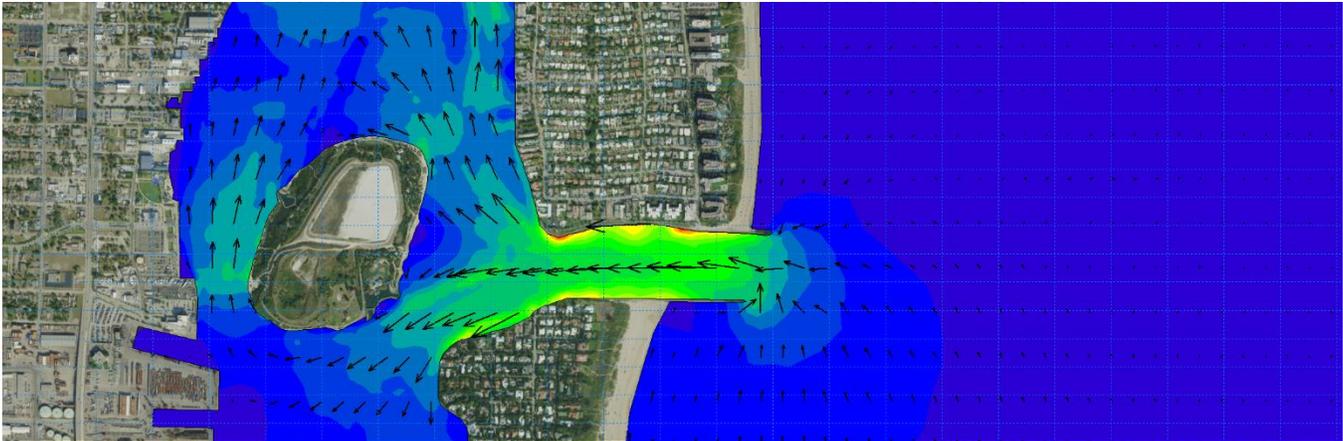
Our specific experience with coastal protection design includes work in Miami-Dade County, Village of Key Biscayne, City of Hollywood, and City of Hallandale Beach, along with multiple large-scale, private developments in the Caribbean, each with extensive beach frontage. This work ranges from small-scale, emergency dune repair projects using truck hauled sand to large-scale beach nourishment projects requiring offshore sand. Our technical staff has also evaluated, designed, and monitored many coastal structures including groins, revetments, and seawalls. This experience could be leveraged to initiate the Town's island-wide groin rehabilitation project. Our experienced team of coastal engineers has analyzed the coastal processes at inlets including Bakers Haulover Inlet, Hillsboro Inlet, and South Lake Worth Inlet. Two of our team members, **Danielle Irwin** and **Jordon Cheifet**, were members of the Bakers Haulover Inlet Technical Advisory Committee representing downdrift and updrift municipalities and thus bring state of the art understanding of inlet management strategies in Florida.

Resiliency

Cummins Cederberg recognizes that sea level rise and climate change are creating continually evolving conditions, which include a new reality to which we must adapt. With water on both the east and west side, the Town is particularly vulnerable to flooding. In fact, the Intracoastal Waterway (ICW) provides more flood risk to the Town than the Atlantic Ocean. We understand that the Town recently completed a Coastal Flood Vulnerability Assessment to identify Town assets that are vulnerable to coastal flooding and visualize where future flooding may occur (see *Probability of Inundation* map on next page). While the town only has \$120,000 budgeted for

flooding and climate change in FY2020, we can augment that budget with a grant strategy that leverages State and Federal funds for resiliency planning. Cummins Cederberg can assist the Town with the development of the Implementation Plan identified in this study to form a resiliency roadmap relative to the adaptations identified therein, future planning, infrastructure improvements, and shoreline management strategies. Our unique approach combines sea level rise projections with practical concepts and on-the-ground implementation strategies to maximize the service life of the Town's infrastructure. Our coastal engineers routinely evaluate the potential impacts of local sea level rise and create flood mitigation roadmaps to address coastal flooding and shoreline protection projects. We have specialized experience and capabilities within the coastal engineering industry, which we leverage to provide dynamic solutions that can be adapted for sea level rise. We have a team of experts who understand coastal processes and the drivers of climate change. We also have two Certified Floodplain Managers on staff who can provide the Town with expert guidance relative to compliance with the FEMA National Flood Insurance Program (NFIP) and Florida Building Code floodplain development requirements. This also provides opportunities to tie sea level rise improvements to increase in CRA rating, providing direct financial benefits to the residents. Furthermore, we have established relationships with experts in the economics of flood resiliency that can be brought in should the need arise.





Coastal Modeling

Analysis of the Town's complex shoreline can be expedited by using numerical models. The coastal area is dynamic and designs typically require some flexibility to account for variations in simulated dynamics (i.e. due to seasonal or extreme conditions). Cummins Cederberg routinely utilizes these models to conduct engineering design and evaluate performance of coastal projects. Numerical models are a tool that can assist in the engineering analyses and designs, but often require simplifications due to the computational time required to simulate the complex coastal processes. The Cummins Cederberg team understands the underlying coastal processes used by the models, which allows us to properly interpret the results, verify if the results are reliable, and determine when potential variations may occur.

Cummins Cederberg has utilized numerical models to optimize many coastal engineering projects including groins, breakwaters, beach nourishments, marinas, and piers. Our studies require the simulation of waves, currents, and sediment transport during both normal and extreme conditions (i.e. hurricanes). We will leverage this experience to assist the Town with implementation of the coastal infrastructure projects identified in the CCMP, which may include development of an island-wide numerical model to evaluate beach nourishment project performance, efficacy of groin repair/replacement, or flooding from sea level rise along Lake Worth Lagoon.

Our firm's Principal, **Jannek Cederberg**, has been utilizing the MIKE21 software package by the Danish Hydraulic Institute (DHI) for wave, hydrodynamic, and sediment transport studies since 1999 – long before numerical models were used commercially in the US. In addition to MIKE21, our staff has experience using the US-based SMS/ADCIRC model and Dutch-based Delft/Swan model. This experience proves extremely valuable in understanding the limitations and uncertainty in modeling results. We are currently using MIKE21 to simulate the changes associated with maintenance dredging of the Intracoastal Waterway adjacent to Peanut Island for Palm Beach County.



Coastal Permitting and Environmental Services

Execution of the Town's coastal construction projects can present regulatory hurdles and challenges due to the protected resources found along the Town's coastal habitat, including hardbottom, shorebirds, turtles, and dune vegetation. With two former FDEP regulators on staff, Cummins Cederberg is uniquely positioned to efficiently work through complex environmental issues, and successfully navigate the FDEP and U.S. Army Corps of Engineers (USACE) permitting process. Cummins Cederberg has extensive experience with processing Joint Coastal Permit (JPC), Coastal Construction Control Line (CCCL) Permit, Environmental Resource Permit (ERP), and Department of the Army Permit Applications for inlet management, beach nourishment, dune restoration, shoreline stabilization and marina projects. Our team of marine biologists and regulatory specialists include former FDEP regulators with strong relationships to current regulators at the State and Federal level. These senior managers are supported by a staff of marine scientists with extensive experience in permitting and biological monitoring in south Florida.

The permitting for the beach and dune projects is mainly handled through the Individual Project Authorization (IPA) process associated with the BMA at the State level. Federal permits are still required until such time as the USACE is a party to, or has a similar regulatory vehicle to, the BMA. Our experienced permitting team is familiar with the Town's projects. **Jordon Cheifet** and **Gina Chiello** reviewed the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS); **Jordon Cheifet** helped obtain a permit under the BMA for the Mid-Town Groin Construction project; **Danielle Irwin** was instrumental in the development of the BMA while working for the State, and **Jessica Ward** provided permitting support for the Reach 8 and Mid-Town Beach Nourishment projects. **Jessica Ward** also prepared NEPA documents, Biological Assessments and Essential Fish Habitat Assessments for various projects, and most recently conducted benthic monitoring throughout the Town under the BMA.

Our in-depth knowledge of the BMA can be leveraged by the Town to expedite future projects identified under the CCMP. The BMA has reached its first five-year review point with FDEP and should be reauthorized. This management document can become more powerful by incorporating the Federal review. Now that multiple years' worth of biological hardbottom monitoring data has been collected island-wide, the analysis of hardbottom exposure can provide the basis for a BMA 2.0. Focus will be put on establishing a threshold level of background variability of ephemeral hardbottom cover island-wide, so projects are not liable for burial of nearshore hardbottom if within natural variability. Cummins Cederberg marine biologist, **Jessica Ward**, has completed biological monitoring under the BMA and will bring an in-the-water level of knowledge to the discussion on the ephemeral marine resource management. BMA 2.0 will include pursuit of a programmatic environmental assessment related to dredge readiness at the Lake Worth Inlet and on the ICW. **Danielle Irwin** is involved with the USACE on a similar programmatic environmental assessment for dredge readiness on the Gulf Intracoastal Waterway that can provide some lessons learned for a similar approach to be applied to the BMA.



Topographic/Bathymetric Surveying

The collection of accurate topographic and bathymetric data is the basis of any successful coastal infrastructure project. *Terraquatic* (TAI) has provided surveying, mapping, and construction staking services to the Town during the Mid-Town Beach Groin Construction project and is familiar with working in its unique coastal environment. Whether it is surveying an easement for a new coastal structure, the as-built location of a new coastal structure, or conducting beach profiles to support the Town's ongoing annual monitoring program, our Team can provide the Town with the technical expertise required to support any coastal project.



Geotechnical Investigations

The Town's beach nourishment projects may require substantial input from geotechnical experts. The Cummins Cederberg team brings technical expertise to the Town for both upland and offshore geotechnical investigations. Our team's experience throughout South Florida allows us to be familiar with the specific requirements for project planning, permitting, construction, and monitoring. Our team can support the Town's beach nourishment projects with sediment testing, including granulometric, Munsell color, and carbonate analyses. *Tierra South Florida* (TSF), our upland geotechnical subconsultant, has extensive experience working in the Town on a variety of geotechnical projects including work on private seawalls, the Palm Beach Country Club, Flagler Memorial Bridge replacement, and Morton & Barbara Mandel Recreation Center. TSF can also provide recommendations for the design of deep foundations (e.g. pile-panel groins, seawalls, docks) and construction materials testing. Cummins Cederberg also understands that the Town periodically conducts offshore sand searches to support the Mid-Town and Phipps Ocean Park Beach Nourishment projects. *American Vibracore Services* (AVS), our offshore geotechnical subconsultant, has supported the Town's offshore sand search efforts in the past. This experience and familiarity with the Town's nearshore environment will facilitate the Town's efforts to locate a cost-effective, beach compatible sand sources for dredging and pumping onto the Town's beaches.



Bidding Assistance

Cummins Cederberg can provide the Town technical assistance throughout the bidding process. Our job does not end when we deliver construction documents to a client. We have a thorough understanding of marine construction, which allows to develop accurate Opinions of Probable Construction Cost (OPCC) for each project. An accurate OPCC allows Public Works to establish a realistic budget for a project, which is presented to the Shore Protection Board and Town Council and reduces the potential for additional budget approvals. Our team has developed professional relationships with marine contractors throughout South Florida and is familiar with which firms are qualified to perform work on the Town's projects.

Construction Management

The high-profile nature of the Town's coastline requires attention to detail throughout the construction process by both the engineer and contractor. Cummins Cederberg understands that the Town has unique challenges to manage when constructing a coastal project including limited beach access, a seasonal influx of traffic, and a beach that is continuously used by the public. The Cummins Cederberg team brings extensive experience managing coastal construction projects with engineering staff with unique contractor experience and understands how to manage a marine contractor to deliver a successful project to the Town in a safe, cost-effective, timely manner. Depending on the project scale, our team of engineers and scientists bring the ability to provide periodic or continuous site observations to a project. Our project manager for this RFQ designed and managed the recently constructed Mid-Town Beach Groin project while with his former firm, which required daily construction observations along South Ocean Boulevard and continuous communication with Town staff.



Public Outreach & State Funding Requests

Public Outreach

Town projects typically require managing the concerns of multiple stakeholders, including residents and non-profit organizations. If required for a coastal project, Cummins Cederberg can organize, moderate, or participate in workshops or meetings as part of a public outreach plan. Our marketing team can also organize print media notifications and digital campaigns (e.g. social media) to notify the public of the Town's coastal projects. We have conducted numerous outreach events to describe and solicit input from stakeholders for coastal and marine projects. Our team has significant experience with public outreach for large condominium waterfront projects, where board meetings with more than 50 people are very common.

State Funding Requests

Funding for beach and inlet projects comes in part from the State of Florida in the form of legislative appropriations. These appropriations are determined in part based on a ranked list of projects submitted to the FDEP in the form of local government funding requests (LGFRs). In the FY19/20 LGFR list of 28 projects to be funded submitted to the legislature, the Town had one project on the list, Mid-Town Beach Nourishment, that ranked 20th. The ranking is dictated by Florida Administrative Code 62b-36, a rule last updated under the direction of team member, **Danielle Irwin**. Between **Danielle's** depth of understanding of project ranking, **Jordon's** experience submitting LGFRs on behalf of local governments, and **Jacob's** experience with storm reimbursements while embedded in FEMA, our team will work to leverage the Town's projects for additional State and Federal funding.



Emergency Response & Inter-Governmental Coordination

Emergency Response

The Town's coastal location may require rapid engineering response including pre-/post-storm damage assessments, which include beach condition inspections, monitoring, and reporting. Cummins Cederberg will be servicing this RFQ from our Jupiter office, which is fully staffed with coastal/structural engineers and environmental permitting staff who are capable of quickly responding to the Town's needs. Our team has provided post-hurricane assessments to the City of Marathon and City of Miami Beach.

Our team could also provide rapid structural assessments of the Town's waterfront infrastructure including the Town docks, North Ocean Boulevard seawall, Mid-Town seawall, and other similar Town-owned assets should they sustain storm damage. Cummins Cederberg has provided these services to Clients to document storm damage and to facilitate insurance claims for repair and/or replacement efforts. Recently 20,000 feet of seawall and revetment were inspected for the entire perimeter of the Town of Bay Harbor Islands.

Inter-Governmental Coordination

While the Town successfully manages its coastline using internal staff, with technical support from outside consultants, occasional inter-governmental coordination may be required. Cummins Cederberg has experience working with local, County, State, and Federal governmental entities to execute both straightforward and complex coastal projects requiring management of each parties' interests. For example, we currently hold a contract for coastal engineering services with Palm Beach County and are familiar with their process of managing coastal projects. We could leverage this relationship to support the Town's ongoing management of the Sand Transfer Plant. While Palm Beach County operates the Sand Transfer Plant under a contract with the Town, the Town owns the Sand Transfer Plant and remains financially responsible for major repairs and upgrades.

Additionally, the BMA was built on inter-governmental coordination that can always be improved. We propose to bring the Federal agencies into the BMA through the development of a programmatic environmental assessment to aid in streamlining the Federal permitting related to coastal projects under review by NOAA's National Marine Fisheries Service and the U.S. Fish and Wildlife Service.



Coastal Data Administration

The Town's coastal program requires the collection and distribution of large data sets including aerial images, beach surveys, and monthly beach condition photographs. Management of these data is vital to the Town's continued implementation and assessment of its coastal infrastructure. More than half of the Cummins Cederberg staff has experience using Geographic Information Systems (GIS) to manage and analyze spatial data. Cummins Cederberg could leverage this experience to develop a coastal asset management tool to facilitate efficient tracking of the Town's spatial assets, maintain historical records, and sustain an accurate inventory. Our environmental staff has extensive experience managing and analyzing historical hardbottom and seagrass data as part of Joint Coastal Permit (JCP) and Environmental Resource Permit (ERP) applications, which could be incorporated into the asset management tool to evaluate historical trends in this nearshore resource. Cummins Cederberg also has established relationships with website developers who could assist with an update to the Town's Coastal Protection website.



Estuarine Enhancement

While the Town has been largely focused on its oceanfront shoreline, we also recognize that the Town has an extensive shoreline fronting Lake Worth Lagoon. In recent years, several projects have been undertaken by Palm Beach County and multiple stakeholders to improve water quality and enhance and restore the estuary's habitats. The Town itself has been involved in various projects to improvement the Lagoon's water quality and enhance estuarine habitat, such as the Par 3 Golf Course Habitat Restoration Project which involved creation of a living shoreline through installation of a mangrove planter along the existing seawall. The Town also received permits in 2017 to construct the Lake Worth Lagoon Waterway Project, which involves placement of dredged material into "Bonefish Cove" located within the Lagoon and slated for future environmental enhancement and restoration by Palm Beach County.

Cummins Cederberg is currently working with Palm Beach County Environmental Resources Management and the Marine Industries Association of Palm Beach County on the design and permitting of the Lake Worth Inlet Flood Shoal Dredging Project with an overall purpose to increase navigation and safety and to enhance water quality within the Lagoon. Cummins Cederberg collected bathymetric and current data using ADCP units for calibration of a numerical model to analyze sediment transport and flow conditions before and after the proposed dredging. In addition to this experience, we understand the multitude of ongoing restoration projects within Lake Worth Lagoon, the benefit of collaborating with stakeholders, and the need to establish strategic partnering to deliver estuarine enhancement solutions that benefit all local communities, including the Town.



Town Meetings

The Town has many decision makers involved in their coastal program, including Public Works, the Shore Protection Board, and the Town Council. Cummins Cederberg understands that keeping each of these groups up to date on project progress through meetings, presentations, or workshops helps to facilitate the exchange of project information in a clear and concise manner. We routinely meet with municipal staff to execute coastal projects from development through completion. More specifically, our staff gained experience with their former firms meeting with Town staff to support coastal project management, including presenting to the Shore Protection Board. As a result, we understand the level of support, attention, and detail required when meeting with the Town.



Additional Services

Underwater Inspections

The Town utilizes structures to stabilize and protect its shoreline on both the Atlantic Ocean and Lake Worth Lagoon waterfront through a combination of groins, revetments, and seawalls. The maintenance of these structures can significantly extend their service life and reduce capital costs incurred by the Town to replace these expensive structures. Cummins Cederberg is unique in South Florida by bringing expertise in both coastal engineering and structural engineering. We are capable of fielding two OSHA-compliant dive teams to conduct underwater investigations of coastal structures. Our staff includes six engineer-divers, five of which are registered Professional Engineers in Florida. As the Town moves forward with the Town Docks replacement project, implementation of a periodic maintenance program consisting of routine above- and underwater structural investigations could provide the Town with valuable information. Cummins Cederberg can assist the Town to develop and implement this management program, which could also include a plan for post-storm assessments of these assets.

Drones/Aerial Photography

The Town's use of aerial photography provides an invaluable tool to observe changes to the Town's coastline. Cummins Cederberg owns and operates an Unmanned aerial Vehicle (UAV), or drone, which we routinely use to collect data (e.g. photography, elevations) along the shoreline and in other difficult to access locations for our projects. We could deploy our drone to rapidly assess shoreline changes after a coastal storm, monitor beach/dune construction progress, or to supplement the Town's monthly beach condition update to the Shore Protection Board. Our technical staff includes a Federal Aviation Administration (FAA) certified remote pilot for small unmanned aircraft systems (drone pilot) who can not only efficiently operate the drone, but is familiar with the legal requirements for filing a flight plan with the FAA and applying for the appropriate permits to work in the Town's airspace.



Cummins Cederberg utilizes UAV's for surveying shoreline and dune systems

Key Personnel

Cummins Cederberg will serve as the Prime consultant and overall Project Manager under this RFQ. We have built a team with extensive experience in coastal engineering projects throughout Florida, including in the Town. Many of these projects included similar objectives, implementation opportunities, and challenges that will be encountered relative to the Town's coastal engineering needs. Our team of highly skilled professionals were hand-selected based upon their focused areas of expertise to address the key elements listed in the detailed scope of work, including coastal engineering, beach restoration/nourishment, coastal modeling, resiliency, and environmental permitting. We understand the needs of the Town and the necessity for an industry-leading team of professionals committed to delivering projects on time and on budget.

With more than 14 years of experience, **our team will be led by Jordon Cheifet, PE, CFM**. He will serve as Project Manager and will be ultimately accountable for ensuring we understand and apply the appropriate resources to meet the Town's needs. Jordon will maintain high-level contact with the Town staff throughout the course of this contract.



Jordon Cheifet, PE, CFM
Project Manager, Coastal Engineer

Team Member Highlights:

- Experience with the Town of Palm Beach
- Expertise in beach programs, waterfront structures, FEMA floodplain mapping, numerical modeling, and shoreline protection
- Significant experience in underwater investigations and GIS/GPS data collection

Jordon is a Coastal/Marine Engineer with technical and project management experience, including beach programs, waterfront structure design, FEMA coastal floodplain mapping, shoreline restoration/protection design, numerical modeling, and marina design. His field experience includes underwater waterfront facility inspections, GIS/GPS data collection and analysis, surveying, and construction administration. Jordon is a registered Professional Engineer in the State of Florida and a Certified Floodplain Manager. He has worked for the Town with his former firms, including serving as Engineer of Record for the Mid-Town Groin Construction project, performing a structural investigation of the Mid-Town seawall, assisting with obtaining permits for the Groin Rehabilitation project, and performing technical peer reviews of the Reach 8 EIS, Port of Palm Beach Expansion EIS, and the Breakers/Clarke Avenue Beach Shore Protection Design Report. He has also designed and inspected waterfront facilities for multiple municipalities including the City of West Palm Beach, City of Deerfield Beach, City of Miami, Martin County, and City of Dania Beach. These projects include bulkheads, docks, jetties, revetments, beach nourishments, and kayak/boat launch ramps. **Jordon is available to work immediately on the Town's projects** without any conflict of interest or on-compete restrictions from former firms.



Jason Cummins, PE
Principal in Charge, Coastal Engineer

Team Member Highlights:

- Expertise in coastal engineering, coastal modeling, surveying, ADCPs, seawall design, dredging, beach construction, and marinas
- Significant experience in planning, engineering, regulatory permitting, and construction of coastal projects

Jason is a native Floridian and is intimately familiar with the local waterfront and the Town of Palm Beach; he has spent a great deal of his life fishing and boating in the area. He earned his bachelor's and master's degrees in Civil and Coastal Engineering from the University of Florida and has been practicing coastal engineering in South Florida ever since. His experience ranges from project inception to construction, including field investigations, inspections, feasibility studies, regulatory permitting, cost estimates, comprehensive coastal engineering analyses, numerical modeling, engineering design, construction drawings, technical specifications, and construction oversight. Jason has designed shoreline stabilization and coastal structure projects including beach nourishments, dredging, steel sheet pile bulkheads, breakwaters, groins, jetties, fixed docks, and wave attenuators. He is proficient in the application of numerical models to simulate coastal processes including tidal hydrodynamics, wave propagation, sediment transport, hurricanes, and storm surge.



Jannek Cederberg, PE
Technical Advisor, Coastal Engineer

Team Member Highlights:

- Expertise in advanced coastal modeling, sediment transport, coastal structures, beach nourishment design, beach management, shoreline stabilization, and resiliency
- Served as expert witness in \$100M+ sedimentation lawsuit for 300,000 cy dredging project

Jannek is originally from Denmark and earned his master's degree in coastal engineering from the Technical University of Denmark. He has more than 17 years of experience in marine field investigations, hydrodynamics, linear and nonlinear wave dynamics, sediment transport, hurricanes, numerical modeling, coastal structure design, sea level rise, environmental permitting, and infrastructure projects. He has also conducted hurricane modeling in Florida and throughout the Caribbean creating flood maps and determining base flood elevations. Jannek has unparalleled experience with the coastal dynamics on the southeast coast of Florida, as he developed a detailed analysis of sediment transport and beach management strategies for all Miami-Dade County. The analyses include evaluating local and regional wave conditions, morphological trends, erosional hot spot assessments, shoreline response, and sediment budgets. In addition, he was the lead engineer for the Sunny Isles Shoreline Stabilization Project conducted in 2008 for the City, which evaluated local coastal dynamics and provided recommendation for long term beach management. Jannek was recently selected to participate in an expert group for PIANC related to marina design, Working Group 134 – *“Design and Operational Guidelines for Superyacht Facilities”*.



Danielle H. Irwin, CFM, PWS, LEED AP
Regulatory Review

Team Member Highlights:

- Former Chief of FDEP Bureau of Beaches & Coastal Systems
- Led the coordination of the Beach Management Agreement for the state
- Experience applying for and managing grant funding

Danielle specializes in water resource management in the State of Florida and has extensive expertise in waterfront development, shoreline erosion prevention, coastal management, stormwater practices, resiliency planning, sovereignty submerged lands regulations, marinas/ports/inlets, and seagrass, coral reef, and wetland habitat assessments. She was instrumental in the establishment of the pilot Palm Beach Island Beach Management Agreement (BMA), a regional master agreement involving the management of the beach/dune/inlet system across multiple municipalities and the County. It took a series of public meetings involving stakeholders to hash out agreement on sand specifications, ephemeral hardbottom resources, sea turtle management, and dune enhancement. Net environmental benefits were gained by reducing the number of outfalls leading to the beach, as well as through annual long-term hardbottom monitoring. Prior to joining Cummins Cederberg, Danielle served at the Florida Department of Environmental Protection (FDEP) as Director of the Division of Water Resource Management overseeing nine, state-wide regulatory programs. In addition, she held the position of Chief of FDEP's Bureau of Beaches & Coastal Systems, leading the State's coastal management program including its regulatory, funding, policy, and rulemaking aspects.



Zachary Sherman, PE
Coastal Construction Engineer

Team Member Highlights:

- Former project engineer for international dredging contractor
- Managed survey, positioning, dredge production, quality and safety for South Florida beach specific projects

Zachary brings a unique background and skillset that blends coastal construction projects from the contractor side, dredging, and coastal modeling experience. He is a Coastal Engineer who specializes in the construction administration of beach projects. He has experience in planning, engineering analysis, construction management, dredging, and inspection for marine and waterfront projects. He holds a master's degree in Coastal and Oceanographic Engineering and a bachelor's degree in Civil Engineering with a Construction Management concentration from University of Florida. He has more than 9 years of marine construction experience focused on dredging projects involving beach disposal working with Great Lakes Dredge and Dock, one of the largest dredging companies in the US. He has completed and assisted with marine construction and dredging projects in the United States, Caribbean, and Australia.



Leonard Barrera, EI
Coastal Engineer

Team Member Highlights

- Experience conducting beach nourishment projects
- Experience with numerical models for coastal processes
- Experience with floodplain modification studies

Leonard is a coastal engineer with significant experience in the planning, engineering analysis, and design of coastal and waterfront development projects in Florida and throughout the Caribbean and Latin America. His experience, ranging from project inception to construction, includes field investigations, inspections, feasibility studies, marine resources, regulatory permitting, cost estimates, comprehensive coastal engineering analyses, numerical modeling, structural design, construction drawings, technical specifications, and construction management. Leonard has conducted beach nourishment and vulnerability assessment reports throughout South Florida, as well as developing numerical models for coastal processes and floodplain modification studies.



Jacob Rice, EI
Coastal Engineer

Team Member Highlights

- Former FEMA program delivery manager – reviewing funding applications
- Beach nourishment design experience
- Experience managing FEMA Public Assistance applications for federal funded projects

Jacob is a coastal engineer who specializes in beach nourishment, coastal engineering analyses, numerical modeling, and the design of coastal structures. He was the project engineer for the Village of Key Biscayne nourishment, which included approximately 20,000 cy of fill material, and prepared the beach nourishment design to replace lost area, conducted construction administration throughout construction, and provided pre- and post-construction permitting compliance. Jacob also managed and coordinated with FEMA for the Public Assistance application to secure funding for the recent Hillsboro Beach nourishment project. He compiled permit applications for Broward County EPDMG, Florida Department of Environmental Protection, and U.S. Army Corps of Engineers and fulfilled post-construction reporting, permitting requirements, compiled bid package documents for public bid of project, and assisted in coordination with awarded contractor from pre- to post-construction. Jacob was also the FEMA Program Delivery Manager assigned to Houston following Hurricane Harvey. Jacob is uniquely experienced in managing Public Assistance applications for FEMA and working with local applicants to compile information for the application, as well as coordinating with FEMA employees to conduct site visits and gather necessary information.



Gina Chiello
Environmental Permitting

Team Member Highlights:

- Former reviewer for FDEP
- Strong background in regulatory proceedings
- Extensive experience performing marine resource surveys
- Performed peer review of Reach 8 nourishment project

Gina oversees engineering and environmental permitting projects from start to finish, including all environmental fieldwork, environmental permit processing, and permit compliance. As a former reviewer with the FDEP, she has a strong background in the permitting of dune restoration, beach nourishment, inlet management and marina type projects, as well as environmental and land use regulations at the local, state, and federal levels. Gina also has extensive experience conducting marine resource surveys and performing fieldwork throughout South Florida, including hardbottom edge mapping, hardbottom monitoring and artificial reef monitoring in compliance with permit conditions for beaches and other coastal works projects.



Jessica Ward
Biological Monitoring

Team Member Highlights:

- Specializes in marine benthic habitats in relation to beach projects
- Extensive experience performing marine monitoring
- Former Director of biological department at beach engineering firm
- Performed benthic surveys and nearshore hardbottom for Mid-Town Beach

Formerly the Director of the Marine Science & Biological Research Department at a coastal engineering firm in South Florida specializing in beach nourishment, Jessica is deeply familiar with the regulatory process for beach projects, including the JCP process and required analysis, NEPA documentation, ESA Section 7 consultation, and Essential Fish Habitat consultation. She has extensive experience preparing nearshore hardbottom monitoring plans and conducting hardbottom and artificial reef monitoring programs in compliance with permit conditions for beaches and other coastal works projects. Jessica has frequently worked with engineers on environmentally friendly designs that avoid impacts to hardbottom resources, seagrass, mangroves and listed species.

Town of Palm Beach Personnel Experience

We offer an unmatched team with members who have specific experience working on projects in the Town of Palm Beach consistently since 2012.



2012 | 30-50 Blossom Way

Jordon performed coastal engineering review for an oceanfront residential property to evaluate shoreline stability



2016 | Breakers/Clarke Ave. Beach Shore Protection

Jordon performed a coastal engineering peer review on behalf of the Town to ensure consistency with the Town's CCMP



2017 | Groin Rehabilitation

Jordon provided coastal engineering support to the Town to address public comments associated with USACE environmental permits



2017 | Mid-Town Beach Groin Construction

Jordon served as EOR and provided structural/coastal engineering design and construction administration services for a 140-foot rubble mound groin



2012-2015 | Coordination of the Beach Management Agreement

Danielle coordinated the Beach Management Agreement while serving as Chief of FDEP's Bureau of Beaches & Coastal Systems



2013 | Lake Worth Inlet

Jordon performed coastal engineering peer review on behalf of the Town for proposed channel deepening and widening as part of the Port of Palm Beach expansion



2016 | Southern Palm Beach Island Comprehensive Shoreline Stabilization

Gina and Jordon perform a peer review of the EIA for the Reach 8 nourishment project



2017 | Mid-Town Seawall Post-Irma Assessment

Jordon performed a structural investigation of the seawall to evaluate the condition after a hurricane, and provided recommendations for repair/replacement

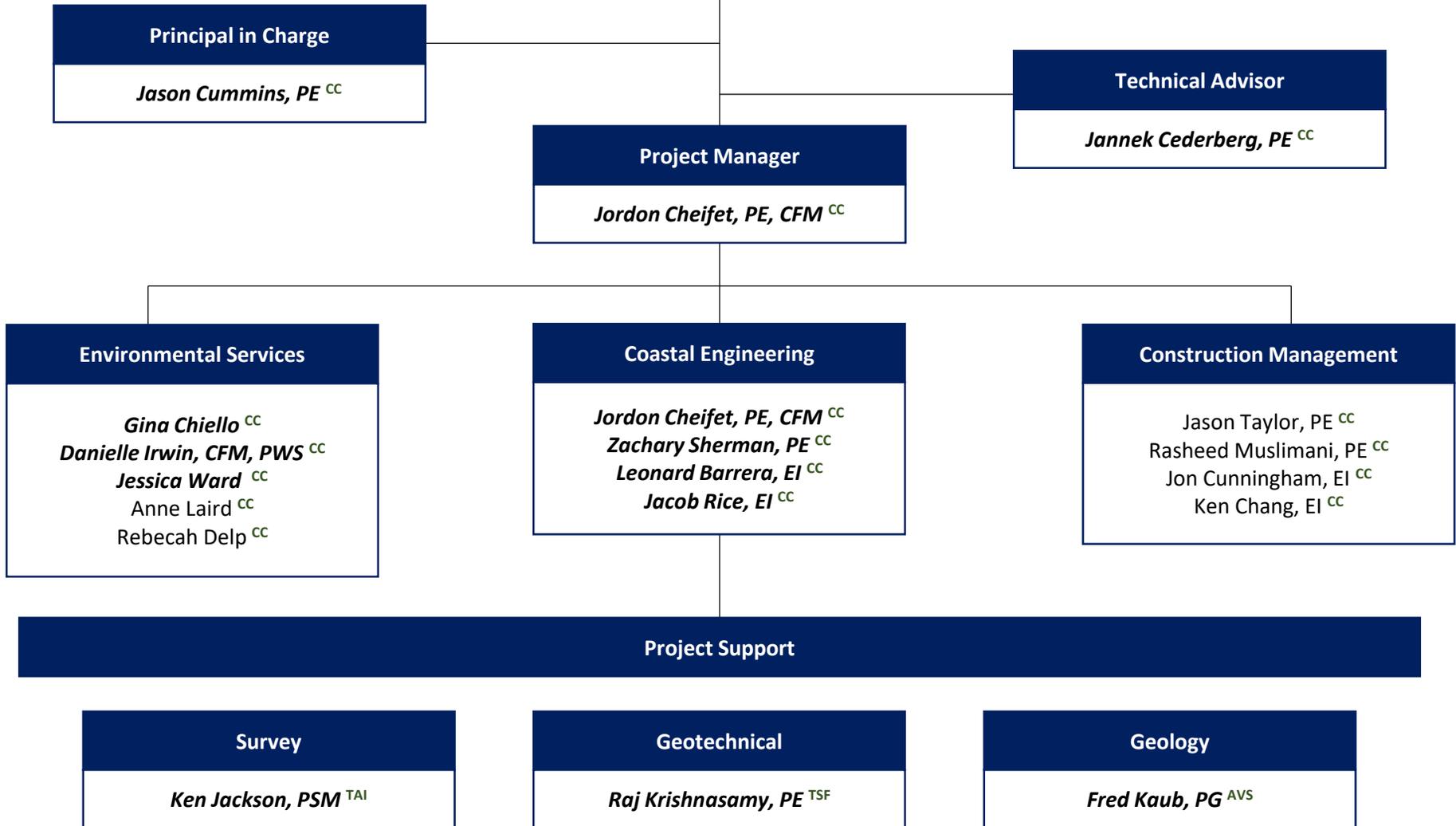


2018 | Benthic Surveys under Beach Management Agreement

Jessica performs benthic surveys and nearshore hardbottom mapping for the Mid-Town Beach Nourishment Project and Phipps Ocean Park Beach and Dune Restoration Project

TEAM ORGANIZATIONAL CHART

Legend:
Name Bold/Italic - Key Personnel, Resume Included



Jordon P. Cheifet, PE, CFM

Project Manager, Coastal Engineer

CUMMINS | CEDERBERG
Coastal & Marine Engineering



SKILLS & EXPERTISE

- Waterfront Structural Design
- Underwater Inspection Planning
- Engineering and Modeling
- Construction Plans and Specifications
- Construction Oversight
- Feasibility Studies of Marine and Coastal Engineering Projects

EDUCATION

- M.Sc. Ocean and Resources Engineering, University of Hawaii
- B.Sc. Civil Engineering, Pennsylvania State University

YEARS OF EXPERIENCE

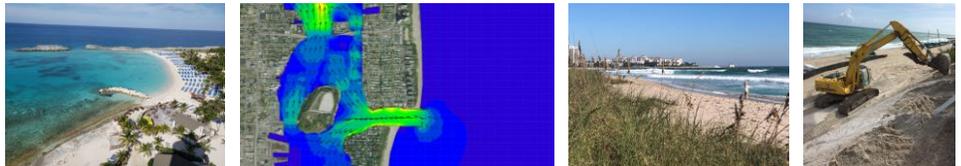
- 13

CERTIFICATIONS

- Professional Engineer – Florida No. 72876
- Certified Floodplain Manager
- Certified Video Ray ROV Operator
- Surface Supplied Air Underwater Inspection Certification
- Advanced/Rescue/Nitrox SCUBA

PROFESSIONAL AFFILIATIONS

- Association of State Floodplain Managers, Member
- Florida Floodplain Managers Association, Member



RELEVANT EXPERIENCE

Mid-Town Beach Groin Construction, Town of Palm Beach, FL (2017-2018). Mr. Cheifet provided structural/coastal engineering design for a 140-foot rubble mound groin to provide shoreline stabilization along a severely eroded portion of the Atlantic Ocean shoreline. The project included armor stones, a marine mattress foundation, and a beach fill to serve as a dry work area. Services performed included scour analyses, wave load analyses, bidding support, and construction administration. Mr. Cheifet was the Engineer-of-Record for the project.

Mid-Town Seawall Post-Irma Assessment, Town of Palm Beach, FL (2017-2018). Mr. Cheifet performed a structural engineering assessment of the Mid-Town Seawall to evaluate the current condition after damage sustained during Hurricane Irma. Engineering data obtained was used to provide recommendations for repair design including concrete hardness testing and non-destructive testing of the steel sheet pile thickness using an ultrasonic gauge. Mr. Cheifet provided engineering recommendations to the Town for possible repair and replacement of the structure.

Southern Palm Beach Island Comprehensive Shoreline Stabilization, Town of Palm Beach, FL (2016-2018). Mr. Cheifet provided coastal engineering support to respond to public comments associated with the USACE Environmental Impact Statement review process. Technical responses were prepared based on a review of the basis of design and technical documentation used to prepare the draft and final EIS documents.

Groin Rehabilitation, Town of Palm Beach, FL (2016-2017). Mr. Cheifet provided coastal engineering support to respond to public comments associated with the USACE environmental permit review process. Technical responses were prepared based on a review of the basis of design and technical documentation used to prepare the draft and final EIS documents. Mr. Cheifet prepared and submitted Individual Project Authorization (IPA) application materials to the FDEP to secure environmental permits under the Beach Management Agreement (BMA).

Lake Worth Inlet, Palm Beach Harbor EIS, Town of Palm Beach, FL. Performed a coastal engineering peer review on behalf of the Town of the proposed channel deepening and widening associated with the Port of Palm Beach expansion. The peer review included a review of the EIS for general and technical soundness relative to the Town's interests. The peer review included a review of the EIS to identify data gaps and inconsistencies to be included in the public record.

Breakers/Clarke Avenue Beach Shore Protection, Town of Palm Beach, FL. Mr. Cheifet performed a coastal engineering peer review on behalf of the Town of the proposed improvements along the Breakers/Clarke Avenue Beach to evaluate consistency with the Town's CCMP. The peer review included a review of the technical report, which identified data gaps and provided recommendations for areas of further evaluation to the Town.

30-50 Blossom Way, Town of Palm Beach, FL. Mr. Cheifet performed coastal engineering for an oceanfront residential structure. Services performed include a due diligence investigation of published technical reports, historical shorelines, and detailed review of the Town's CCMP to evaluate the long-term viability of shoreline stability along the properties.

Bakers Haulover Inlet Feasibility Study, City of Sunny Isles Beach, FL. Mr. Cheifet performed a coastal engineering peer review of the Feasibility Study on behalf of the City for the proposed Inlet Management Plan update. The peer review included a review of the Feasibility Study for general and technical soundness relative to the City's interests; specifically, updrift impacts and conservation of sand local resources. The peer review included a review of the Feasibility Study to identify data gaps and inconsistencies to be included in the final Inlet Management Plan.

Vessel Exclusion Zone, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering design and permitting services for a vessel exclusion zone. Services provided include coordination with the Corps, FDEP, FWC, and Broward County to permit a series of buoys along the City shoreline. The project included sediment probes to determine buoy foundation requirements, engineering design, and preparation of plans and specifications. Mr. Cheifet also provided construction administration services including an underwater post-construction inspection.

Hurricane Irma Pier Repairs, City of Deerfield Beach, FL. Mr. Cheifet performed a structural engineering assessment of the International Fishing Pier to evaluate the current condition after damage sustained during Hurricane Irma. Engineering data obtained was used to provide recommendations for repair design. Mr. Cheifet provided structural engineering design and construction administration services for the repair of the structure.

Artificial Reef, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering design and permitting services for construction of a recreational artificial reef in the nearshore along the Deerfield Beach shoreline. A materials assessment of an existing boulder stockpile was completed along with sediment probes to determine sand depth in the project area. The project included a stability analysis to size the stone size for the design storm and preparation of plans and specifications. Mr. Cheifet also provided construction administration services including an underwater post-construction inspection.

Storm Berm Nourishment, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering permitting and design services for a nourishment project along the shoreline damaged by Hurricane Matthew. Services provided include preliminary design and submittal of an FDEP Coastal Construction Control Line (CCCL) permit application. Mr. Cheifet also prepared and submitted a Storm Impact Assessment Report to FEMA for funding assistance.

FEMA Coordination, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering services to support a FEMA storm damage claim from Hurricane Matthew. Mr. Cheifet prepared and submitted a Storm Impact Assessment Report to FEMA for funding assistance which included a review of pre-and post-storm surveys, volume calculations, and preparation of cost estimates for the project. Processing of the FEMA damage claim is ongoing.



EDUCATION

- M.Sc. Coastal Engineering, Technical University of Denmark

YEARS OF EXPERIENCE

- 17

CERTIFICATIONS

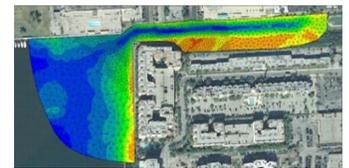
- Professional Engineer – Florida No. 69839

PROFESSIONAL AFFILIATIONS

- Permanent International Association of Navigation Congress
- Member of PIANC Working group
- Design and Operational Guidelines for “Superyacht Facilities”
- Danish Society of Hydraulic Engineering
- Florida Association of Environmental Professionals
- Urban Land Institute

SKILLS & EXPERTISE

- Waterfront Engineering and Planning
- Coastal Resiliency
- Numerical Modeling
- Environmental Permitting
- Coastal and Marine Structures
- Coastal Processes - Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Matheson Hammock Park Sea Level Rise Flood Mitigation Study, Coral Gables, FL. Mr. Cederberg served as Senior Project Manager to prepare a Sea Level Rise Flood Mitigation Study to analyze the impacts of sea level rise on the park’s infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting. Compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the Park; assessed the condition of existing infrastructure to understand conditions, remaining service life and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Town of Bay Harbor Islands Resiliency and Seawall Condition Assessment, Bay Harbor Islands, FL. Shoreline assessment and island resiliency study for the entire Town of Bay Harbor Islands. The shoreline assessment included 20,000 feet of shoreline, including seawalls, rock revetment, residential areas, bridges, and they causeway that connects the town to the mainland. LiDAR survey data was processed to provide 3D elevation map, and an analysis of the water levels to predict sea level rise, along with tidal data analysis.

Crandon Park Marina, Key Biscayne, FL. Field investigations including bathymetric surveying, tide and current measurements, marine resource survey, and sediment sampling. Tidal hydrodynamic modeling along with wave and sediment transport analyses conducted to determine source and magnitude of marina sedimentation problem. Alternatives assessment of potential coastal structures to inhibit sedimentation and need for periodic dredging.

Vizcaya Museum & Gardens, Miami, FL. Site plan for storm surge protection wall, environmental wetland restoration and public space. Grant application, regulatory permitting, and engineering design for marine works. Wall design

for reinforced concrete able to withstand storm surge and high wave loads associated with tropical storm event.

Regional Sediment Transport Study, Miami, FL. Shoreline and sediment transport studies performed on the coast of Miami-Dade County between Bakers Haulover Inlet and Government Cut. Numerical modeling conducted utilizing Danish Hydraulics Institute (DHI) MIKE 21 and LITPACK software to simulate waves and nearshore coastal processes.

FDOT Manatee Bridge Repair, Pinellas County. Review of hurricane and storm surge analysis completed to determine peak water level and extreme wave conditions for proposed bridge repair project. Comparison of calculated values with historical observations. Evaluated the potential impacts of dredging on wave conditions.

Village of Key Biscayne Beach Nourishment, Key Biscayne. Coastal engineering and environmental permitting for 120,000 cy beach fill and dune restoration project. Beach profile and hydrographic surveys conducted, along with sand source search, jet probes, vibrocores, and sediment compatibility analysis. Coordination of dune vegetation planting and exotic removal plan.

North District Wastewater Treatment Plant. Assessment of coastal resiliency of important infrastructure components relative to flooding and sea level rise. Analyzed storm surge impacts from historical hurricane events as well as assessed potential and magnitude of future impacts. Evaluated risk and probability of various events.

Miami Beach Emergency Truck Haul, Miami Beach. Performed surveying, data collection, volumetric and equilibrium toe of fill analysis based on available historical beach profiles for four segments of beach. This information was utilized in designing the expansion of beach segments for maintenance nourishment.

Aquazul Condominium Risk Mapping, Lauderdale-by-the-Sea, Florida. Longshore and cross-shore erosion assessment based on existing beach conditions and potential 100-year storm event. Evaluation of dune volume and consistency over 10,000 feet of shoreline north and south of subject property. Numerical modeling of wave propagation, storm surge and potential wave run up impacts. Revised flood risk mapping, processing and approval through FEMA.

Rickenbacker Causeway Recreation Area, Miami. Design of shoreline stabilization and associated public recreation area improvements along 2.5 miles of shoreline of the Rickenbacker Causeway across Biscayne Bay. Marine resource and hydrographic surveys completed, and coastal engineering analysis conducted to assess design wave conditions, sediment transport and optimum shoreline stabilization methods. Design elements included landscaping, invasive species removal with native species restoration, parking improvements, storm water management and vendor kiosks for waterfront activities.

FDOT A1A Vulnerability Study and Roadway Stabilization Design, Indian River County. Scour and wave load analysis for proposed seawall from almost 2 miles of shoreline that experienced significant erosion during Hurricane Matthew. A hydrodynamic MIKE21 model was established to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to stimulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme event under varying conditions and water levels.

32nd Street Morphological Change Study, Florida. GIS analysis of morphological changes related to the construction of three shoreline attached breakwaters at the 32nd street erosional hotspot. GIS database was established, and the morphological changes was reviewed relative to coastal processes. Based on the study, recommendations were provided for short- and long-term beach management.



SKILLS & EXPERTISE

- Planning and Feasibility of Marine Infrastructure Projects
- Underwater Investigations (SCUBA)
- Coastal Design Criteria - Tides, Waves, Currents and Hurricanes
- Structural Design of Steel and Concrete Marine Structures
- Bathymetric Surveying



EDUCATION

- B.Sc. & M.Sc. Coastal and Oceanographic Engineering, University of Florida

YEARS OF EXPERIENCE

- 15

CERTIFICATIONS

- Professional Engineer – Florida No. 71538
- Certified Diver
- FHWA A-NHI 130091 Underwater Bridge Inspection – National Highway Institute and Association of Diving Contractors

PROFESSIONAL AFFILIATIONS

- Urban Land Institute (ULI) SE Florida/Caribbean, Member
- American Society of Civil Engineers, ASCE
- American Institute of Architects
- South Florida Association of Environmental Professionals

RELEVANT EXPERIENCE

MSC Cruises Ocean Cay Marine Reserve, Bimini Islands, Bahamas. Topographic and bathymetric surveying rectified aerial photography and mapping for proposed out-island cruise destination. Environmental resource surveys and preparation of Environmental Impact Assessment (EIA) for proposed land and marine works. Detailed coastal engineering analysis, including numerical modeling of hurricane impacts. Engineering design of beach improvements and shoreline stabilization of reshaped island perimeter. Processing of EIA through government regulatory agencies.

North District Wastewater Treatment Plant, Miami, Florida. Assessment of coastal resiliency of important infrastructure components relative to flooding and sea level rise. Analyzed storm surge impacts from historical hurricane events as well as assessed potential and magnitude of future impacts. Evaluated risk and probability of various events.

Sunny Isles Coastal Analysis, Sunny Isles, Florida. Assessment of local sediment transport characteristics and the potential for shoreline stabilization along Sunny Isles Beach. An evaluation of nearshore coastal processes and sediment transport characteristics in the Project vicinity was completed. Based on the assessment, a beach management plan was prepared for long-term beach planning.

Miami Beach Emergency Truck Haul, Miami Beach, Florida. Performed surveying, data collection, volumetric and equilibrium toe of fill analysis based on available historical beach profiles and proposed fill volumes for four segments of beach. Designed fill template to maximize emergency truck haul nourishment based on observed eroded conditions. Survey stake-out of proposed fill template.

Fort Zachary Taylor State Park, Key West, Florida. Above and below water inspection of breakwaters, terminal groin, as well as topographic survey to accurately identify rock displacement and settlement. Coastal engineering design and environmental permitting for truck-haul beach fill project.

Village of Key Biscayne Beach Nourishment, Key Biscayne, Florida. Coastal engineering and environmental permitting for 120,000 cy beach fill and dune restoration project. Beach profile and hydrographic surveys conducted, along with sand source search, jet probes, vibracores, and sediment compatibility analysis. Coordination of dune vegetation planting and exotic removal plan.

Vizcaya Museum & Gardens, Miami, Florida. Site plan for storm surge protection wall, environmental wetland restoration and public space. Grant application, regulatory permitting, and engineering design for marine works. Wall design for reinforced concrete able to withstand storm surge and high wave loads associated with tropical storm event.

Dade Boulevard Seawall Replacement, Miami Beach, Florida. Marine engineering and construction drawings for 2,670 linear feet of shoreline stabilization associated with a linear park and bike path. Structural design of steel sheet pile and reinforced concrete cap, including barrier wall connection, and utility crossover detail for FPL 69KV oil-filled transmission line.

FDOT A1A Seawall, Indian River County, Florida. Scour and wave load analysis for proposed seawall for almost 2 miles of shoreline that experienced significant erosion during Hurricane Mathew. A hydrodynamic MIKE21 model was established to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to simulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme event under varying conditions and water levels.

14th Street End Seawall Project, Miami Beach, Florida. Marine engineering for new seawall in association with street-end and storm water pump station improvements. Seawall constructed at increased design elevation from concrete piles and panels with reinforced concrete cap, as well as opening for outfall. Construction inspection performed for concrete pours and pile/panel installation.

FDOT Manatee Bridge Repair, Pinellas County, Florida. Review of hurricane and storm surge analysis completed to determine peak water level and extreme wave conditions for proposed bridge repair project. Comparison of calculated values with historical observations. Evaluated the potential impacts of dredging on wave conditions.

FDOT I-275 Seawall Repair, Pinellas County, Florida. Review of seawall design and scour protection for a proposed seawall repair and replacement project. Review of storm conditions as well as soil and wave loadings.

Tides Condominium Risk Mapping, Hollywood, Florida. Erosion and scour assessment based on existing beach and seawall conditions. Numerical modeling of wave propagation, storm surge and potential wave run up impacts. Prepared and processed letter of map revision (LOMR) based on detailed survey information and coastal design conditions.

Cap Juluca Beach Restoration, Anguilla. Evaluate sediment transport and storm impacts. Perform hydrographic and beach profile surveys. Subsurface investigations of nearshore borrow area. Design of dredge plan and beach fill template. Provide construction administration for emergency beach restoration.

Sediment Study, Turks & Caicos. Field investigations to collect sediment core samples from the seabed in multiple locations. Collected samples were tested for grain size and composition. Conducted coastal study to evaluate wind, wave and tidal forcing mechanisms relating to sediment transport.



SKILLS & EXPERTISE

- Beach Nourishment & Nearshore Hardbottom
- Coastal Construction Permitting & Mitigation
- Hardbottom Impacts & Mitigation
- Sustainable Waterfront Systems
- Seal Level Rise and Coastal Resiliency
- Marine Construction (mooring fields, seagrass, seawalls)
- Riparian Rights & Recreational Waterways



EDUCATION

- M.Sc. Oceanography, Florida State University
- B.A. Environmental Studies, University of Southern California
- B.Sc. Biology, University of Southern California

YEARS OF EXPERIENCE

- 22

CERTIFICATIONS

- Flood Plain Manager
- Professional Wetland Scientist
- LEED Accredited Professional BD&C

PROFESSIONAL AFFILIATIONS

- Florida Association of Environmental Professionals, Tallahassee Area Chapter Board Member
- Florida Floodplain Managers Association
- Association of State Floodplain Managers
- Florida Shore and Beach Preservation Association
- Society of Wetland Scientists

RELEVANT EXPERIENCE

Hillsboro Inlet Management, Broward County, FL. Assisted the District with their inlet management activities including their annual bypass reporting, permitting of their inlet improvements to the jetty, marine resource mapping and compliance assistance. Negotiated the sovereignty submerged lands easement for the jetty improvements. Transplanted corals from the jetty to an artificial reef and monitored.

Hollywood Beach Nourishment, Hollywood, FL. Provided consulting services related to the permitting and compliance assistance for the City's beach nourishment project. Services include the development of their biological monitoring plan, permit modifications at the local, state, and federal level, and compliance assistance following the biological monitoring.

St. Lucie Inlet, Martin County, FL. Coordinated and oversaw the FDEP review and approval of the update to the sediment budget, sand bypassing volume, and Inlet Management Plan. Negotiated agreements with the County, City of Jupiter Island, and residents on inlet dredging and beach placement frequency and locations.

Sebastian Inlet District State Lands, Miami-Dade County, FL. Coordinate with the FDEP Division of State Lands to reauthorize expired submerged land and upland easements, as well as adding new easement areas in the upland for pipeline staging and dredged materials management, all related to maintenance of the inlet.

Bal Harbour Coastal Program Management, Village of Bal Harbour, FL. Provided ongoing coastal management support for the Village including development of a Village-wide dune restoration plan, permitting and design of a beach nourishment project, providing drone aerial surveys of the Village shoreline, and representing the Village on the Bakers Haulover Inlet Technical Advisory Committee.

Post Hurricane A1A Reconstruction, Ft. Lauderdale, FL. Coordination of FDEP staff review for re-construction of storm damaged North Ocean Blvd. (aka

State Road A1A). The project included reconstruction of the road, dune enhancement and plantings, sidewalk, curb and gutter demolition and reconstruction, construction of a decorative and retaining wall with pedestrian cut outs, new stormwater runoff management system, hot spot nourishment, and reconstruction of street accesses, and driveways.

Summerhaven River Restoration, St. Augustine Port, Waterway & Beach District, St. Johns County, FL. Coordinated the FDEP review and approval of the Joint Coastal Permit for restoration of a historical river in St. Johns County. Project involved shorebird mitigation coordination with FFWCC, sand excavation, and dune and beach nourishment for sand disposal.

PortMiami Environmental Monitoring, Miami, FL. Performed biological monitoring of the artificial reef associated with Port Deepening. Analyzed field data and drafted the monitoring report for permit compliance. Oversaw biological monitoring and reporting associated with hardbottom impacts and seagrass mitigation monitoring/reporting. Assist in environmental permit compliance efforts.

Martin County Artificial Reefs, Marin County, FL. Performed sidescan sonar surveys of artificial reef structure to comply with FWC grant requirements and biological assessment of the health of the artificial reef in compliance with monitoring requirements in the County's permits from the U.S. Army Corps of Engineers.

City of Miami DDA Resiliency Guidelines, City of Miami, FL. Drafted shoreline resiliency guidelines for the City's Downtown Development Authority including recommended seawall elevation standards and living shoreline best management practices.

Boca Chica Mooring Field, Monroe County, FL. Provided consulting services related to the permitting of a proposed public mooring field project in Boca Chica basin. Services include oversight of the field services (bathymetric and marine resource surveys), conceptual mooring field design and drafting the permitting feasibility study.

Ocean Villas at Serenata Shoreline Stabilization, St. Johns County, FL. Assist the Association with determining the feasibility of obtaining armoring of their shoreline. Prepare and submit the CCCL Permit Application and Variance Petition for coastal armoring to FDEP.

Indigo Branch Drainage Basin, Clay County, FL. Bank evaluation of channelized stream through urban communities including riparian wetland assessment. Evaluated proposed flow attenuation approaches and bank stabilization methods in conjunction with the project engineer. Permit processing involving SJRWMD & ACOE.

Long Bar Pointe Mitigation Bank, Manatee County, FL. Coordination of FDEP staff review for proposed mitigation bank with enhancement of seagrasses and mangrove areas. Involvement included coordination with permit reviewer and applicant, Division of State Lands and other governing agencies, policy and applicable regulation review, review of mitigation plan and service area in a pre-application manner.

Florida Gulf Coast Mitigation Bank, Levy County, FL. Coordination of FDEP staff review for proposed ~1587 acre mitigation bank with enhancement of salt marshes, freshwater marshes, coastal scrub, and mesic flatwoods in Cedar Key. Involvement included coordination with permit reviewer and applicant, Division of State Lands and other governing agencies, policy and applicable regulation review, review of mitigation plan and service area.

Fisher Island Club Visitor Marina Improvements, Miami, FL. Environmental Permitting for marina improvements including maintenance dredging, pier replacements, and consolidation/expansion of the multiple sovereignty submerged lands easements and lease covering the marina, breakwater and jetty.

Zachary Sherman, M.Sc., P.E.

Coastal Construction Engineer

CUMMINS | CEDERBERG
Coastal & Marine Engineering



EDUCATION

- M.Sc. International Transportation Management, SUNY Maritime
- M.Sc. Coastal & Oceanographic Engineering, University of Florida
- B.Sc. Civil Engineering, Construction Management, University of Florida

YEARS OF EXPERIENCE

- 11

CERTIFICATIONS

- Professional Engineer – Florida No. 78550
- Third Mate Unlimited Oceans, USCG
- USACE QC Management for Contractors
- Association of Ship Brokers and Agents Charter Party Certificate
- Tankerman Barge Person in Charge
- Crane Rigging Awareness
- PADI SCUBA

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- Tau Beta Pi Engineering Honor Society
- Chi Epsilon Civil Engineering Honor Society

SKILLS & EXPERTISE

- Waterfront Engineering and Planning
- Construction Management, Administration, and Inspections
- Capital and Maintenance Dredging Management
- Beach Nourishment Management
- Hydrographic and Topographic Surveying



RELEVANT EXPERIENCE

MSC Cruises Ocean Cay Marine Reserve, Bimini Islands, The Bahamas. Dredging, turbidity management, and planning for proposed out-island cruise destination. Coastal armor and construction review for proposed land and marine works. Detailed coastal engineering analysis and site assessment for hurricane impacts. Engineering design of beach nourishment plan and shoreline stabilization of reshaped island perimeter.

Miami Harbor Deepening, Miami, Florida. Provided site engineering management for the Dredge Texas on the environmentally sensitive \$205.6M Port Miami Deep Dredge Project. Led an engineering team responsible for daily field engineering tasks including survey works, dredge positioning and planning, daily production monitoring, and adherence to contract quality control requirements. Provided assistance with seagrass mitigation area material placement and monitoring.

Great Stirrup Cay Development, Exumas, The Bahamas. Pier design and analysis for cruise ship private island destination improvements to accommodate 5,000 passenger cruise ships. Evaluated potential cruise ship pier alternative locations, and island infrastructure improvements.

Sunset Harbour Yacht Club, Miami Beach, Florida. Repairs of concrete slabs, caps and piles for 125 slip yacht marinas. Provided construction administration services to review in accordance with construction documents and environmental permits, specifically the replacement of timber marginal dock and concrete pile/panel repair.

Seahaven Superyacht Marina, Dania Beach, Florida. Site inspections for new marina design consisting of approximately 1,200 feet of new bulkhead for a deep-water yacht basin located in the Dania Cut-Off Canal. Part of the canal was excavated in order to create a new marina basin connected to the canal for this 40-slip superyacht marina. Bulkhead consists of steel sheet piling with concrete batter piles and reinforced concrete capping beams.

Derecktor Megayacht Yard Travel Lift Piers, Dania Beach, Florida. Managed the bidding process, assisted and made recommendations for contractor selection. Cummins Cederberg provided marine engineering services for the

extension and relocation of existing travel lift piers located at the Derecktor shipyard, and designed pier extensions associated with 900-ton travel lift and new piers for relocation of a 200-ton travel lift.

Truck Haul Beach Nourishment, Sunny Isles and Hillsboro, FL. Provided construction administration and oversight of 28,500 CY and 37,200 CY projects. Coordinated permit compliance requirements for both Coastal Construction and Joint Coastal Permits.

Crandon Park Marina Shoreline Stabilization, Miami, Florida. Construction administration of rock revetment shoreline protection and mangrove planter system. Coordinated meetings, submittal review, payment application certifications, RFI's permitting modifications and close-out.

Dinner Key Marina, Miami, Florida. Conducted post-Hurricane Irma waterfront structures' and utilities' inspections, assessments, and summary reports.

Eden Isles, Miami, Florida. Construction bidding and review for new construction of fixed docks and seawall.

Wheatstone LNG Project, Onslow, Western Australia, AUS. Engineer in charge of environmental field operations consisting of several subcontractors on \$1.2B remote Western Australian capital dredging project removing 25M cubic meters of material for 16 km long shipping channel and protected harbor basin. Led mobilization of environmental monitoring scope, provided environmental vessel operations management, conducted environmental incident investigations and issued recommendations, developed environmental plans and procedures to prevent and/or mitigate project impacts during construction, and designed an IALA compliant temporary navigation aid system.

Duval County Beaches, Miami Beach Nourishment, Panama City Beach Nourishment, Florida. Quality Control Systems Manager ensured project works were completed in adherence with contract documents. Compiled and reviewed submittal documents, maintained submittal database and tracked government review timelines, lead weekly stakeholder meetings, interfaced with environmental monitoring firms, city and state officials, private interests, and technical divers.

BP Oil Berm, LA, Bethany Beach, DE, Ocean City, New Jersey. Provided engineering, survey, quality control, reporting, and safety support for hydraulic cutter suction, trailing suction hopper, clamshell dredging, and beach nourishment operations. Utilized state of the art surveying equipment and software to document dredging and beach fill progress including hydrographic and beach profile surveys



EDUCATION

- M. Sc. Ocean Engineering, University of Miami,
- B. Sc. Civil Engineering, University of Miami

YEARS OF EXPERIENCE

- 5

REGISTRATION

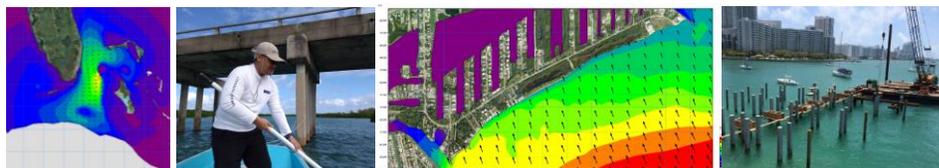
- Engineering Intern, E.I. – Reg. No. 1100019727

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)
- Society of Hispanic Professional Engineers (SHPE)
- Urban Land Institute (ULI) SE Florida/Caribbean

SKILLS & EXPERTISE

- Waterfront Structural Engineering
- Coastal Resiliency
- Numerical Modeling
- Coastal Siting and Design
- Marine and Coastal Structures
- Coastal Processes – Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Higgs Beach Sand Replenishment, City of Key West, FL. Conducted a benthic survey to document the general extent, species, and density of seagrasses and other potential marine resources of concern (e.g., corals), that may be growing on the submerged substrate within the proposed fill template, as well as, conducted an equilibrated toe-of-fill (ETOF) analysis, to estimate the seaward location of the sand placement and profile adjustment, referred to as the ETOF, based on the profile translation method. Based on the proposed fill conditions, a representative equilibrium profile was established for three profiles, based on an equilibrium of the proposed beach fill template and seaward translation of the native beach profile. This information was summarized into a report, along with recommendations for design adjustments.

Town of Bay Harbor Islands Resiliency and Seawall Condition Assessment, Bay Harbor Islands, FL. Shoreline assessment and island resiliency study for the entire Town of Bay Harbor Islands. The shoreline assessment included 20,000 feet of shoreline, including seawalls, rock revetment, residential areas, bridges, and they causeway that connects the town to the mainland. LiDAR survey data was processed to provide 3D elevation map, and an analysis of the water levels to predict sea level rise, along with tidal data analysis.

Matheson Hammock Park Sea Level Rise Flood Mitigation Study, Coral Gables, FL. Assisted in preparing a Sea Level Rise Flood Mitigation Study to analyze the impacts of sea level rise on the park's infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting. Compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the Park; assessed the condition of existing infrastructure to understand conditions, remaining service life and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Coco Plum Beach Erosion Study and Beach Design, Marathon, FL. Prepared an erosion study for the City of Marathon in Monroe County. Services under this project included the implementation, recommendations from the erosion study, assisting the City by coordinating with the regulatory agencies, and the preparation and submittals of the necessary permits. As part of the erosion study, a detailed statistical analysis of offshore wave data was conducted along with a wave propagations study. Based on the results of the wave modeling and sediment transport study, the underlying coastal processes of the erosion trends were documented and utilized in the beach and coastal structure design process. The area triggering the beach erosion was identified and solutions for stabilizing this area, while still providing sandy beach access, was developed.

Brickell Key Island Coastal Resiliency Study, Brickell Key Island, FL. Site inspection to identify vulnerable areas, including the perimeter of the entire Brickell Key Island. Analyses of sea level rise and extreme tide events were conducted to understand water level design conditions. The potential for increased storm impacts was assessed. Recommendations for long term planning was provided along with mitigation options. Construction documents and environmental permitting was conducted for the design. The design focused on adapting existing infrastructure to provide a cost-effective solution.

Ocean Pointe FEMA Coastal Vulnerability Study, Tavernier, FL. Performed a coastal vulnerability study and analysis with respect to the feasibility of a FEMA Letter of Map Revision (LOMR) which would revise the flood zones within the property of Ocean Pointe Condominiums. It was unclear if the vegetation coverage was enough in density and cross-sectional width, so a vegetation assessment and feasibility study was conducted for the FEMA LOMR. FEMA approved the LOMR and the modified flood hazard information for the community.

Sheraton Key West FEMA Coastal Vulnerability Study, Key West, FL. Performed a coastal vulnerability study and analysis with respect to the feasibility of a FEMA Letter of Map Revision (LOMR) which would revise the flood zones within the property of Sheraton Key West. Based on a review of the site conditions and 100-year storm surge level, it appeared feasible to modify the flood insurance rate map which would reduce construction and term insurance costs. Cummins Cederberg prepared and submitted the LOMR which was approved and the proposed revision to the existing flood insurance rate map was adopted.

Key West by the Sea FEMA Coastal Vulnerability Study, Key West, FL. Coastal engineering studies and risk mapping according to FEMA standards to determine the risk for coastal flooding along the shoreline of Key West by the Sea. Data collection of offshore wind and wave data was conducted, and statistical analysis of extreme events was performed. Based on wave and beach conditions, an erosion analysis was conducted to assess wave and flood conditions during a 100-year storm. A wave propagation study was conducted based on the eroded profile to determine the shallow water effects on wave height and specifically the wave crest elevation. The vulnerability analysis and the coastal risk mapping were reviewed, approved and adopted by FEMA.

MSC Ocean Cay Marine Reserve, Bimini Islands, Bahamas. Topographic and bathymetric surveying rectified aerial photography and mapping for proposed out-island cruise destination. Environmental resource surveys and preparation of Environmental Impact Assessment (EIA) for proposed land and marine works. Detailed coastal engineering analysis, including numerical modeling of hurricane impacts. Engineering design of beach improvements and shoreline stabilization of reshaped island perimeter. Processing of EIA through government regulatory agencies.

Coastal Engineering Analysis for Pearns Point Development, St. Johns, Antigua. Cummins Cederberg was retained to prepare a coastal engineering analysis relative to a proposed development located along the western shoreline of Antigua. The primary components of the proposed development include the construction of several beaches along the southern shoreline of Pearns Point. The coastal engineering analysis evaluated the coastal process at the site relating to the construction of beaches and shoreline stabilization as well as conceptual designs.

Jacob Rice, E.I.

Coastal Engineer

CUMMINS | CEDERBERG
Coastal & Marine Engineering



EDUCATION

- M. Sc. Ocean Engineering, University of Miami
- B. Sc. Civil & Environmental Engineering, Carnegie Mellon University

YEARS OF EXPERIENCE

- 3

REGISTRATION

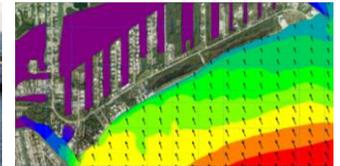
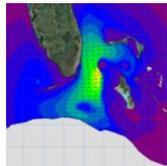
- Engineering Intern, E.I. – Reg. No. ET021632

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)

SKILLS & EXPERTISE

- Waterfront Structural Engineering
- Coastal Resiliency
- Numerical Modeling
- Coastal Sitting and Design
- Coastal Processes – Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Key Biscayne Beach Nourishment, Key Biscayne, FL. Designed a beach layout on Key Biscayne's beach that was impacted by Hurricane Matthew of approximately 20,000 cubic yards of fill material. Assisted in coordination with Miami-Dade DERM, Florida Department of Environmental Protection, and U.S. Army Corps of Engineers for permit modifications and compliance. Assisted in compiling construction and construction specifications for construction. Provided construction administration throughout duration of construction of the project. Provided post-construction close out and reporting for compliance with public agencies.

FEMA Program Delivery Manager, Houston, TX. Assigned to Houston, Texas as a Program Delivery Manager to coordinate and manage Public Assistance (PA) applications for FEMA as a result from Hurricane Harvey. Communicated and coordinated calls and meetings with local applicants to compile (PA) applications and assist through application process. Coordinated with other FEMA employees to conduct site visits and gather necessary information required for the applications.

Great Stirrup Cay Lagoon Design, Modeling, and Survey, Great Stirrup Cay, Bahamas. Provided wave forcing calculations on a pier structure utilizing site wave conditions from MIKE21 Spectral Wave numerical model. Preliminary design of new lagoon beach area, including rock sizing for new breakwaters and beach design. Surveys northern side of Great Stirrup Cay using RTK survey equipment.

Walker's Cay Breakwater Design, Abacos, Bahamas. Walker's Cay is a marina and breakwater redesign and reconstruction in the north Abacos, The Bahamas. Provided a flushing analysis of the project utilizing MIKE21 Spectral Wave numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave conditions in the proposed marina. Analyzed results to determine if the marina fulfilled flushing requirements.

Briland Development Coastal Analysis, Harbour Island, Bahamas. Briland Development includes creation of an inland canal to provide coastal access to a lot development. Provided a flushing analysis utilizing MIKE21 Spectral Wave

numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave condition in the proposed canal. Analyzed results to determine if the canal fulfilled flushing requirements and canal layouts to produce optimal flushing.

Windermere Island Club Marina Coastal Analysis and Modeling, Eleuthera, Bahamas. Windermere Island Club Marina includes the creation of an internal basin and docking facility with small flushing 'creeks.' Provided a flushing analysis utilizing MIKE21 Spectral Wave numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave conditions in the proposed basin and 'creeks.' Analyzed results to determine if the proposed basin and 'creeks' fulfilled flushing requirements.

Hillsboro Beach Nourishment (FEMA – Hurricane Matthew), Town of Hillsboro Beach, FL. Served as Project Engineer during the post Hurricane Matthew beach nourishment project. Designed a beach layout on the northern beach area of Hillsboro Beach that was impacted by Hurricane Matthew or approximately 30,000 cubic yards of beach fill material. Coordinated with FEMA for a Public Assistance application for federal funding for project. Compiled permit applications for Broward County EPDMG, Florida Department of Environmental Protection and U.S. Army Corps of Engineers and fulfilled post-construction reporting and permitting requirements. Compiled bid package documents for public bid of project and assisted in coordination with awarded contractor from pre- to post-construction.

Gina Chiello, B.Sc.

Marine Scientist, Environmental Permitting

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Coastal & Marine Engineering



SKILLS & EXPERTISE

- Environmental Permitting
- Sovereign Submerged Lands Issues
- Marine Resource Assessments and Mapping
- Environmental Impact Assessment / Environmental Impact Statement
- Mitigation Assessment and Planning



EDUCATION

- Graduate Certificate Geographic Information Systems, Florida Atlantic University
- B.S. Marine Biology, University of West Florida

YEARS OF EXPERIENCE

- 11

CERTIFICATIONS

- NAUI Rescue Dive Certification
- American Academy of Underwater Sciences (AAUS) Scientific Diver Certified

PROFESSIONAL AFFILIATIONS

- American Academy of Underwater Sciences (AAUS)
- Florida Association of Environmental Professionals (FAEP), Treasure Coast Chapter (TCC), Treasurer
- Urban Land Institute (ULI) SE Florida/Caribbean, Member

RELEVANT EXPERIENCE

Coco Plum Beach Erosion Study and Beach Design, Marathon, Florida Keys. Coastal engineering study of erosional hot spot and development of shoreline stabilization concepts to provide long term stability for the City of Marathon. Detailed statistical analysis of offshore wave data was conducted along with a wave propagations study utilizing the advanced MIKE21 wave model. Sediment transport study conducted based on local wave dynamics. A marine resources survey and beach vegetation survey was performed to identify potential impacts by Project construction.

Hillsboro Inlet District Maintenance Dredging & Sand Bypassing, Broward County, Florida. Managed project and secured permit modifications from the USACE, DEP, and Broward County. Several permit conditions were modified to better suit the ongoing nature of the maintenance dredging and sand bypassing activities of the Hillsboro Inlet District. Provided as needed environmental and engineering consulting services with regards to permit compliance.

Currie Park Boat Ramp, West Palm Beach, Florida. Conducted a marine resource assessment of the submerged lands, as required by the environmental regulatory agencies to evaluate impacts related to the proposed project consisting of a boat ramp, new navigation channels, and staging docks, and as required to secure permits for the proposed project. A Field Observation Report was prepared documenting the extent, species, and density of existing marine resources. Secured permits from the USACE, DEP, USCG and FWC.

Village of Key Biscayne Beach Re-nourishment, Village of Key Biscayne, Florida. Conducted marine resource assessments of the nearshore seagrass habitat using the Braun Blanquet method to monitor twenty-seven 35-meter-long transects and conducted nearshore seagrass edge mapping, to evaluate any unanticipated project related impacts. Monitoring Reports were prepared, per the project specific permit requirements, documenting the findings of the nearshore seagrass edge surveys and Braun Blanquet monitoring data.

City of Lake Worth Outfall Projects, FDOT District 4, Florida. Conducted a marine resource survey and seagrass assessment to identify potential seagrasses growing within the project limits. Project site is located within Johnson Seagrass (*Halophila johnsonii*) Range, therefore the National marine Fisheries Service (NMFS) recommendations for sampling *Halophila johnsonii* were followed. A Field Observation Report was produced documenting the presence of seagrass, seagrass species and density, as well as the dominant species, corals, vegetation, and other marine resources of significance along the project shoreline.

Higgs Beach, 1000 Atlantic Boulevard, City of Key West, Monroe County, Florida. A marine resource survey was performed along approximately 570 linear feet of shoreline. The purpose of this survey was to document the general extent, species, and density of seagrasses and other potential marine resources of concern (e.g., corals), that may be growing on the submerged substrate within the proposed fill template. The findings of the marine resource survey were summarized in a Field Observation Report, which will be furnished to the relevant environmental permitting agencies and referenced as to avoid and minimize impacts to marine resources.

Matheson Hammock Park, Miami, Florida. Performed a preliminary assessment of the condition of existing natural resources (mangroves and seagrass) to document species, extent and adaption feasibility relative to sea level rise for Miami-Dade County Parks, Recreation and Open Spaces. Identified potential environmental constraints relative to flood mitigation improvements. The observations were summarized in the Sea Level Rise Mitigation Study Report.

Bakers Haulover Inlet, Village of Bal Harbour, Florida. Conducted marine resource assessment of existing jetty and proposed footprint of reconfigured jetty as required by environmental regulatory agencies to evaluate impacts related to proposed Project and as required to secure permits for proposed Project. A Field Observation Report was prepared documenting extent, species, and density of existing marine resources.

Hollywood Beach Re-nourishment, Hollywood, Florida. Conducted pre-construction transect installation and biological monitoring including hardbottom mapping, *Acropora cervicornis* health tracking, and assessment of the nearshore reef using BEAMR, and conducted post construction hardbottom and epifaunal edge surveys. Monitoring reports were prepared per the project specific permit conditions.

Hillsboro Beach Re-nourishment, Town of Hillsboro Beach, Florida. Conducted marine and coastal surveys including marine resource investigations, pipeline corridor surveys, hardbottom mapping, *Acropora* sp. Surveys, in-water sea turtle surveys, weekly escarpment surveys, and year-long shorebird monitoring.

U.S. Coast Guard Sector Key West, Key West, Florida. Under contract to conduct an updated marine resource assessment of the existing submerged bottom, dock and bulkhead structures, in accordance with the NMFS recommendations for sampling *Halophila johnsonii*, the Recommended Survey Protocol for *Acropora spp.*, and the FKNMS Protocol for Benthic Surveys for Coral Resources in FKNMS, to document the extent, species, and density of corals, sponges, and seagrasses growing within the Project area, necessary to evaluate impacts related to the proposed marine improvements and assist with concept planning. A Field Observation Report will be prepared.

Ocean Cay Development, Bahamas. completed marine resource surveys to provide an understanding of the existing conditions of the marine environment surrounding Ocean Cay. The assessment included roving and transect surveys, detailed habitat mapping, and photo and video surveillance. Data was analyzed to identify species abundance and diversity, habitat complexity, as well as overall resource complexity and health at the Project site. Ms. Chiello also assisted in preparing the Environmental Impact Assessment for the BEST Commission. She supported conducting additional marine resource surveys and coastal vegetation surveys to identify potential excursions that the cruise line could offer to their patrons. As part of construction administration services, Ms. Chiello reviewed consistency with the EMP.

Jessica C. Ward, M.Sc.

Marine Scientist, Environmental Permitting

CUMMINS | CEDERBERG
Coastal & Marine Engineering



EDUCATION

- M.Sc. (Dual) Marine Biology and Coastal Zone Management, Nova Southeastern University, Oceanographic Center
- B.Sc. Marine Biology, University of West Florida

YEARS OF EXPERIENCE

- 22

CERTIFICATIONS

- PADI Divemaster; Drysuit Diver; Rescue Diver; Enriched Air Nitrox Diver (IAND/EANx); Specialty Diver; Open Water Diver
- TBOSIET offshore safety
- NOAA/MMS Protected Species Observer for the Gulf of Mexico

PROFESSIONAL AFFILIATIONS

- Florida Association of Environmental Professionals
- Society of Wetland Scientists

SKILLS & EXPERTISE

- Environmental permitting
- Marine resource assessments and mapping
- Environmental Impact Assessment/NEPA
- Impact avoidance and mitigation planning/design
- Artificial reef design and monitoring
- ESA Section 7 Consultation



RELEVANT EXPERIENCE

Beach Management Agreement (BMA), Mid-Town Beach Nourishment Project, Phipps Ocean Park Beach and Dune Restoration Project, Town of Palm Beach, Florida (2018). Conducted benthic surveys of nearshore hardbottom communities within the BMA Agreement Area in Palm Beach County, and along regulatory monitoring transects for the Mid-Town Beach Nourishment Project and Phipps Ocean Park Beach and Dune Restoration Project. Contributed to data analysis and report preparation.

Wiggins Pass Inlet Management Study, Collier County, Florida (2011). Participated in the 2011 inlet management study for Wiggins Pass, to compile data regarding its coastal processes and inlet and shoreline dynamics. Acted as liaison coordinating with adjacent parks managers, conducted natural resource data collection including benthic resource surveys, and worked with project engineer on elevation designs to protect mangroves within the inlet. Also contributed to the JCP application for interim dredging of the inlet.

2006 Collier County Renourishment Project, Florida (2006-2010). Post-construction monitoring was conducted for the 2006 beach project which placed sand on Vanderbilt Beach, Park Shore Beach, and Naples Beach via hopper dredge. In addition to the 2006 beach fill project, channel dredging of Doctor's Pass in 2006, Wiggins Pass in 2005 and 2007, and Clam Pass in 2007 resulted in the additional placement of sand between R18 and R-62. Monitoring involved *in situ* evaluation of hardbottom communities in the vicinity of the project area to evaluate potential impacts to marine resources from sand placement. Conducted nearshore hardbottom monitoring as per permit requirements and reviewed monitoring reports and permit-required deliverables to the FDEP.

Town of Longboat Key Beach Renourishment Project, Florida (2005-2011; 2018). Five years of post-construction monitoring of nearshore hardbottom resources was conducted to detect any unanticipated impacts associated with the 2005-06 renourishment project for the Town. Also conducted nearshore hardbottom mapping and monitoring in 2018 for the *Longboat Pass Navigational Maintenance Dredging Project*.

Environmental Assessment for the Town of Longboat Key Beach Renourishment Project, FL, 2011. An Environmental Assessment (EA) report was prepared according to NEPA for the Bureau of Ocean Energy Management (BOEM, formerly Marine Minerals Service). The project entailed the use of an offshore sand source on the Outer Continental Shelf and thus under BOEM jurisdiction. The EA document was prepared in support of obtaining a BOEM lease for the sand source, or borrow area. The borrow area is planned to be hopper dredged for placement along the Longboat Key shoreline for the Town's next beach nourishment.

Mitigation Reefs for the Town of Longboat Key Beach Renourishment Program, FL (2005-2011; 2018). Series of artificial reefs made from limestone boulders placed as compensatory mitigation for beach nourishment activities along Longboat Key. Active management techniques and coral recruitment enhancers (larval attractants, grazers) were implemented to aid in establishment of target epibenthic communities, and reduction of temporal lag in habitat function. Macroalgae, coral colonies and urchins were transplanted to designated areas of artificial reefs.

Nearshore and Borrow Area Monitoring for Siesta Key Beach Renourishment Project, Siesta Key, FL (2005-2011; 2018). Pre-construction and post-construction monitoring of nearshore hardbottom habitat was conducted in accordance with permit conditions for the Siesta Key beach renourishment projects (2007; 2016). Offshore monitoring of hardbottom resources surrounding the project borrow areas was also conducted weekly for the duration of dredging during the 2007 project. Also conducted emergency coral rescue through transplantation of damaged coral near the borrow area.

Manatee County Artificial Reef (Enhancement Reefs) Biological Monitoring, Manatee County, FL (2011). A series of artificial reefs constructed from multiple materials and installed in both bay and offshore areas, were placed by Manatee County for the purposes of fisheries enhancement. Ms. Ward was responsible for the design of a comprehensive monitoring program that examined the colonization of both benthos and fish to the reef installations. She also led the field surveys, conducted all statistical analyses and was responsible for the preparation of the report to the County.

Broward County Segment III Shore Protection Project, Florida (2005-2011; 2018). In support of permitting the next County nourishment project, a baseline characterization of nearshore hardbottom resources was conducted. Benthic resources were first mapped and then characterized using an *in situ* quadrat-based methodology. Quantitative fish censuses were conducted at each sample location and towed video documentation of the entire project length was collected. Surveys for juvenile green sea turtles (*Chelonia mydas*) were also conducted. A comprehensive GIS deliverable was prepared along with a baseline report. Ms. Ward took part in the characterization and oversaw the production of deliverables.

Broward County Segment II Shore Protection Project, Florida (2011; 2018). Extensive pre-construction and post-construction monitoring were conducted in association with the County renourishment. Fifty-two transects were monitoring using an *in situ* quadrat method. Sedimentation and coral health were also monitored. Data were placed into an interactive GIS deliverable for the client. Ms. Ward took part in every monitoring event for seven years, assisted in statistical analyses and write-up, and oversaw the production of later reports and deliverables. She was also responsible for attending monthly beach team meetings and coordination with the client.

Hollywood Interim Beach Nourishment Project, Florida (2018). Conducted benthic community biological monitoring, data analyses, impact evaluation, and permit-required reporting for nearshore hardbottom habitats for the 2017 Hollywood Interim Beach Nourishment Project.

Lake Worth Lagoon Comprehensive Seagrass Mapping Project, Palm Beach County, FL (2018). Conducted extensive groundtruthing for seagrass distribution throughout the entire Lake Worth Lagoon resulting in comprehensive seagrass map of the Lagoon. Survey is conducted every five years for Palm Beach County.

Terraquatic, Inc.
6836 Bayshore Drive
Lantana, Florida 33462



Professional Resume - Kenneth C. Jackson, P.S.M.

Title: President

Contract Assignment: Director of Surveying

Education:

Palm Beach Community College,
Land Surveying

Registration:

Licensed Professional Land Surveyor, Florida, 1988

Continuing Education:

Florida Minimum Technical Standards
Florida Laws, surveying and mapping
Mean High Water Determination

Corporate Experience:

Terraquatic, Inc. – Surveying & Mapping **President & Director of Surveying**

2014 - Present

- For over five years Mr. Jackson has been not only the president of Terraquatic, Inc. and responsible for managing and conducting normal business functions but is still actively involved in all field surveys either directly or over seeing specific projects.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils.
- The client base at Terraquatic, Inc. covers a wide array of private dredging firms, government agencies, coastal engineering firms and home owner associations and private home owners.

Sea Diversified, Inc. – Surveying & Engineering **Vice-President / Director of Surveying**

2004 to 2014

- Mr., Jackson was responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils, underwater utility locations, including jet probe and electronic tracking of utilities related to bridge design projects. Mr. Jackson was also involved and directed several wave, current and tide studies for coastal engineering design projects, cruise ship port design and vertical datum determination for chart datums in remote locations throughout North and South America including the Bahamas and the Caribbean.
- Surveys were conducted for a diverse group of public and private clients such as the State of Florida, FDOT, several Florida Counties, large dredging firms, coastal engineering firms, port and coastal engineers and local contractors.

Terraquatic, Inc.
6836 Bayshore Drive
Lantana, Florida 33462



Sea Systems Corporation. – Surveying & Engineering
Vice-President / Director of Surveying

1992 to 2004

- In 2004 SSC partners split the company which produced Sea Diversified, Inc., so most responsibilities and field surveys tasks were an extension from SSC, with the exception of a large amount of experience with the US Army Corps of Engineers in the Jacksonville District (USACE-Jax).
- Mr. Jackson was responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils, underwater utility locations, including jet probe and electronic tracking of utilities related to bridge design projects. Mr. Jackson was also involved and directed several wave, current and tide studies for coastal engineering design projects, cruise ship port design and vertical datum determination for chart datums in remote locations throughout North and South America including the Bahamas and the Caribbean.
- Surveys were conducted for a diverse group of public and private clients such as the USACE-jax. District, State of Florida, FDOT, several Florida Counties, large dredging firms, coastal engineering firms, port and coastal engineers and local contractors.

Coastal Planning & Engineering, Inc. – Surveying & Engineering
Vice-President / Director of Surveying

1989 to 1992

- Mr. Jackson was qualifying the firm as a licensed surveyor and responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils primarily related to beach nourishment and re-nourishment projects.
- Surveys were primarily focused on beach projects typically for municipalities and government agencies.

City of Boca Raton – Surveying Department
Survey Technician, Survey Crew Chief and Survey crew Manager

1983 to 1989

- Mr. Jackson started as a survey technician within the survey department and soon worked his way to directing the survey crews. In 1988 Mr. Jackson obtained his professional license in the State of Florida.
- While with the City Mr. Jackson was involved in several municipal projects such as road widening or route surveys, property acquisitions, preparing utility and specific purpose sketch and descriptions. He was also involved in preparing and establishing a citywide vertical control network for utility projects.

Professional Experience:

For forty-two (42) years of experience in the surveying and mapping industry with specific expertise in hydrographic and remote sensing surveys, large scale wave current and tide studies, topographic surveying, boundary surveying and geodetic control surveying. Mr. Jackson has been involved with numerous large-scale mapping projects encompassing beach and nearshore surveys, citywide canal systems bathymetric surveys, dredging projects encompassing pre and post-conditions dredge surveys, charting and volumetric evaluations. His experience also includes remote sensing surveys such as side scan sonar, magnetometer and sub-bottom profile surveys. For underwater investigations, Mr. Jackson is a certified Nitrox Diver, participating in underwater video and inspections, underwater mapping for environmental projects, tide/wave/ current investigations, and various other diver-assisted surveys.

Locations:

Mr Jackson not only has experience working throughout the entire state of Florida but also in the following locations:

- ✓ Bahamas, including fiber optic cable as-built surveys throughout over 18 individual islands.
- ✓ Turks & Caicos
- ✓ Haiti, five separate projects for cruise ports, port development and hurricane assessment surveys
- ✓ Dominican Republic two projects hurricane assessment and dredge survey for the Carnival Port built in 2016
- ✓ Puerto Rico, multiple projects for the USACE, San Juan Harbor, aerial target placement large scale mapping surveys and the re-alignment of the Rio De Manati in Barceloneta (river survey and city-wide mapping for flood protection)
- ✓ British and US Virgin Islands including, St Thomas, St. John's, Tortola, Virgin Gorda
- ✓ St Maarten. Cruise & Cargo Port monitoring surveys, port hurricane clearance bathymetric and remote sensing surveys.
- ✓ St. Kitts, Nevis & Antigua, dredging projects for shipping and cruise ports
- ✓ Panama, 1999 aerial mapping for new canal design coast to coast aerial target placement and geodetic control survey.
- ✓ Roatan Honduras, cruise port development and private cable surveys
- ✓ Maracaibo, Venezuela, oil spill survey assessment on behalf of Lloyd's of London Insurance.
- ✓ French Guyana, Cayenne, route survey near the mouth of the amazon river for a fiber optic cable design.

Client Base:

- Palm Beach county, DERM
- Town of Palm Beach
- Miami Dade County
- Broward County
- City of Sanibel
- Lee County
- Collier County
- Florida DOT
- USACE, Jacksonville District
- Great Lakes Dock & Dredge
- Weeks Marine
- Orion Construction
- Moss / Kiewit Joint Venture, Port Everglades
- Olsen & Associates
- Cedarburg / Cummins

FRED KAUB
PROFESSIONAL GEOLOGIST



PROJECT ASSIGNMENT

Geotechnical Investigation

YEARS OF EXPERIENCE

With this firm: 17

With other firms: 13

PROFESSIONAL REGISTRATION

Florida Registered Geologist #1344

Florida Licensed Water Contractor

#11236

Louisiana Geoscientist #1107

EDUCATION

B.S., Geology, Indiana University, 1987
(white Star Endowment Scholarship)

CERTIFICATIONS:

SafeGulf; SafeLand; OSHA; ISNetworld; Huet

OTHER:

Member of American Institute of Professional Geologists

Professional Member of ASBPA and FSBPA

Named Business Leader Magazine's 2012

Entrepreneur of the Year

CONTACT INFORMATION

Email: Fred@americanvibracore.com

Cell: 561-414-7631

KEY QUALIFICATIONS

Mr. Kaub co-founded American Vibracore Services (AVS) and served as CEO since its inception in 2002 until 2019. During Mr. Kaub's tenure, his work has involved leading the company and directing environmental and geotechnical field investigations including conducting pre-dredge studies, subsurface and subaqueous soil investigations, hydrogeological studies, vibracore investigations, grab sample investigations, CPT investigations, geophysical investigations and other studies through the application of sound theoretical concepts and a practical knowledge of earth materials and marine science.

RELEVANT PROJECT EXPERIENCE

Lake Worth Lagoon Waterways, Town of Palm Beach, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. Vibracore sampling operations were conducted in the Lake Worth Lagoon Intracoastal Waterway to determine the characteristics of collected sediments in support of a channel dredging project. A shallow platform and vibracore equipment were used for the near shore operations. A total of 6 vibracores to depths of -6 MLW or until refusal were collected to within 50 feet of the proposed locations. Sediments sampled were split, logged, photographed, sampled and preserved.

Boca Raton Sand Search (North & South Search Areas), Offshore Boca Raton, Florida (2016) - Mr. Kaub served as the principal in charge and the professional geologist. We performed sand searches at locations offshore of Boca Raton in the North and South search areas during June 16, 2016 - June 25, 2016. For the vibracore sampling operations, 50 vibracore samples to depths of 20' below sea bottom or refusal were collected. A final report provided field logs, penetrometer reports, generalized subsurface profiles, core logs, particle size distribution reports and a summary of the laboratory test results of the physical parameters, all to FDEP standards.

Vibracore Sampling, Offshore Juno Beach, Florida (2016) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were the development of an offshore borrow site for beach renourishment purposes along northern Palm Beach County beaches. Sand

searches were performed offshore of Juno Beach with our 85' research vessel which was equipped with an A-frame, winch and DGPS for the coring operations. We collected 20 vibracore samples to depths of 20' below sea bottom or refusal at the designated offshore locations. All field operations were summarized in a brief report, including penetrometer graphs.

Vibracoring and Analysis – Offshore Lake Worth, Florida (2014) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were to establish geotechnical characteristics of borrow area sediments from a potential borrow area offshore of Lake Worth. All cores collected from the project were split, logged, photographed, sampled, and preserved. Laboratory tests conducted included grain size analysis, carbonate content, post carbonate grain size analysis, visual shell content, and Munsell color designation. Collected 15 vibracore samples at the designated locations.

Town of Palm Beach Geotechnical Investigation, Palm Beach County, Florida (2011) - Mr. Kaub served as the principal in charge and the professional geologist. The purpose of this geotechnical investigation was to characterize the quality and beach compatibility of sand in potential borrow areas for beach nourishment projects in the Town of Palm Beach. The project collected 20 vibracores from offshore areas immediately north and south of the Lake Worth Inlet, and from 500' to 3,500' offshore of the Town of Palm Beach and Singer Island, Florida.

Golden Triangle Marsh Creation Project, Lake Borgne, Louisiana (2018) - Mr. Kaub served as the principal in charge and the professional geologist. The Golden Triangle wetlands is an important natural buffer that is one of the multiple lines of defense protecting vulnerable communities in and around the city of New Orleans from storm surge. The project goal was to identify a borrow area containing 6 - 9 million cubic yards of suitable marsh fill material and design a project to create new wetland habitat, restore degraded marsh, and reduce wave erosion outside of the Inner Harbor Navigation Canal surge barrier. Our geotechnical investigation collected vibracores and grab samples within the borrow area.

Town of Oak Island, Offshore of Oak Island, North Carolina (2019) - Mr. Kaub served as the principal in charge and the professional geologist. To assist the Town of Oak Island in their master plan for shore protection and beach nourishment efforts, we performed geological field investigations consisting of vibracore sampling and laboratory analyses to evaluate potential borrow sources. Borrow areas surveyed include offshore sources, inlets, navigation channels and upland disposal areas. The investigation consisted of a minimum of 150 cores and maximum of 200 cores, providing flexibility to shift cores from borrow areas that contained undesirable material based on the field inspections.

U.S. Geological Survey Sediment Vibracore Sampling, Offshore Breton Island, Louisiana (2015) - Mr. Kaub served as the principal in charge and the professional geologist. Our responsibility was the collection of marine sediment vibracores at 52 locations around Breton Island. The purpose of the project was to provide base level geologic and morphologic information to support the restoration of bird habitats.

Jacksonville Beach Fishing Pier Geotechnical Exploration, Jacksonville, Florida (2018) - Mr. Kaub served as the principal in charge and the professional geologist. Our role consisted of providing the design team with geotechnical services to support the reconstruction of the Jacksonville Beach Fishing Pier. Site and subsurface data were collected within the proposed offshore pier footprint area. Laboratory testing was performed to facilitate classification of samples and to determine engineering indexes. Testing included Atterberg limit testing, particle size distribution and unit weight determinations. A geotechnical engineering data report summarized

soil characteristics for pile design considerations for unit weight, effective unit weight, internal friction angles, undrained shear strength, subgrade modulus, shear modulus, unit skin friction and ultimate end bearing capacity.

Vibracore Borings and Laboratory Testing, St. Johns County, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. For St. Johns County's shore protection project in St. Augustine Beach, a sand search investigation was performed by collecting vibracores within the proposed offshore borrow area. The work was performed within state waters, off the southeast coast of Florida, approximately 30 miles south of Jacksonville and adjacent to the city of St. Augustine, Florida. Vibracore sampling occurred at two locations. Twelve borings were collected on the eastern edge of the St. Augustine Inlet ebb shoal and twelve additional borings were collected approximately 1 to 2 miles offshore of the town of Vilano Beach. Water depths in these areas were approximately 30' to 60'.

Big Carlos Pass Channel Dredging in Lee County, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. To support a channel dredging project, we performed vibracore sampling in the Big Carlos Pass location. A 28' shallow draft vessel and an electric coring machine were utilized for the operations. A penetrometer measured coring advance rates and penetration depths. Collected 8 vibracore samples below the sea floor to an elevation of at least -14' NAVD.

Charleston Harbor Vibracoring, Charleston, South Carolina (2016) - Mr. Kaub served as the principal in charge and the professional geologist. Vibracore boings and washprobe soundings were taken within the reaches of Charleston Harbor and within the harbor entrance. The resulting geotechnical and laboratory analysis was evaluated by the USACE Wilmington and Charleston Districts for developing their Beneficial Use of Dredged Material Plan for the Preliminary Engineering and Design (PED) of the Charleston Harbor Post-45 Deepening.

Subsurface Investigation and Geotechnical Laboratory Testing Results, NC 12 S-Curves and Vicinity – Rodanthe, North Carolina (2013) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were to establish geotechnical characteristics from potential offshore borrow areas near Rodanthe in Dare County, North Carolina, with the intent to restore barrier island beaches. A total of 100 vibracores were collected. Cores were then analyzed per USACE project guidelines with a report prepared of the findings.



RAJ KRISHNASAMY, P.E.

PRESIDENT, PRINCIPAL ENGINEER
32 Years of Experience



PROFESSIONAL QUALIFICATIONS

EDUCATION

- MS in Geotechnical Engineering, University of Memphis, 1995
- BS in Civil Engineering, Christian Brothers University, 1987
- Diploma in Electronic Engineering, Malaysian Air Force Institute, 1984

PROFESSIONAL ORGANIZATION AND REGISTRATION

- Professional Engineer: Florida, 53567
- Water Well Contractor, Florida, 11346
- Certified OSHA Supervisor
- Certified Environmental Consultant

PROFESSIONAL EXPERIENCE

Mr. Raj Krishnasamy, P.E., President and Principal Engineer of TSF, is a Florida State registered Geotechnical Engineer with over 32 years of experience. Mr. Krishnasamy oversees the geotechnical engineering, construction materials testing, and inspection services operations. His experience consists of successfully completing over 5,000 public and private projects. He serves as Project Manager for continuing contracts with over 20 Florida public agencies. He has a history of repeatedly retaining those contracts through successful, cost-effective and prompt execution of each task order. Mr. Krishnasamy's daily involvement with the in-house and field operations of the construction and geotechnical services departments provides him the "hands-on" experience and knowledge of current construction codes and construction practices throughout the State of Florida. Mr. Krishnasamy and his highly experienced team focus on providing the client with a consistently accurate, cost-effective quality product that is delivered on time and within budget.

TOWN OF PALM BEACH PROJECT EXPERIENCE

- Bradley Park Improvements
- Rapaport Seawall Soil Improvements
- Community Center
- Flagler Memorial Bridge (SR A1A)
- PBC South County Tennis Center
- Morton & Barbara Mandel Recreation Center
- 2175 Ibis Isle Road
- Palm Beach Four Seasons Exterior Renovation
- TOPB Roadway Rehabilitation #2
- Seaview Park and Recreation Center
- Palm Beach Country Club
- 125 Casa Bendita
- R.G. Kruesler Park Restroom Building
- Drainage Improvements for Town of Palm Beach
- Flagler Memorial Bascule Bridge
- Pine Walk Transfer Facility Ramp Repairs
- Southern Boulevard Bascule Bridge
- Southern Boulevard Watermain Crossing
- Mast Arms at Wells Road and North County Road
- Port of Palm Beach - Bulkhead Reconstruction/Slip Dredging at Slip No. 3
- Port of Palm Beach - Siwertell Ship Unloader
- Temple Emanu-El



Ron DeSantis, Governor

Halsey Beshears, Secretary



STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

BOARD OF PROFESSIONAL ENGINEERS

THE ENGINEERING BUSINESS HEREIN IS AUTHORIZED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

CUMMINS CEDERBERG, INC.

7550 RED ROAD
SUITE 217
SOUTH MIAMI FL 33143

LICENSE NUMBER: CA29062

EXPIRATION DATE: FEBRUARY 28, 2021

Always verify licenses online at MyFloridaLicense.com



Do not alter this document in any form.

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Ron DeSantis, Governor



FBPE
FLORIDA BOARD OF
PROFESSIONAL ENGINEERS

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

CUMMINS, JASON ROLLAND

LICENSE NUMBER: PE71538

EXPIRATION DATE: FEBRUARY 28, 2021

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Ron DeSantis, Governor

Halsey Beshears, Secretary



**STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION**

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

CEDERBERG, JANNEK

LICENSE NUMBER: PE69839

EXPIRATION DATE: FEBRUARY 28, 2021

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Palm Beach County Office of Equal Business Opportunity (OEBO)

Certifies That

Cummins Cederberg, Inc.

VENDOR # VS0000007139

is a **Small Business Enterprise (SBE)** as prescribed by
section 2-80.21 – 2-80.30 of the Palm Beach County Code for a three-year-period from

Sept. 26, 2019 to Sept 25, 2022

The following Services and/or Products are covered under this certification:

92513 Bridge Engineering
92517 Civil Engineering
92536 Engineering Services (Not Otherwise Classified)
98814 Erosion Control Services
92018 Computer Aided Design Services
90735 Designing Services
96847 Inspection Services, Construction Type

95953 Marine Survey Services (Including Sonar Radar, Location/
Recovery of Sunken Objects, etc.)
96143 Hydrological and Oceanography Services



Allen Gray, Manager

Thursday, September 26, 2019



Palm Beach County Board of County Commissioners

Mack Bernard, Mayor
Dave Kerner, Vice Mayor
Hal Valeche
Greg K. Weiss
Robert S. Weinroth
Mary Lou Berger
Melissa McKinlay

County Administrator

Verdenia Baker



Florida Department of Agriculture and Consumer Services
Division of Consumer Services
Board of Professional Surveyors and Mappers
2005 Apalachee Pkway Tallahassee, Florida 32399-6500
800HELPFLA(435-7352) or (850) 488-2221

February 6, 2019

TERRAQUATIC INC
121 SE 24TH AVE
BOYNTON BEACH, FL 33435-7634

SUBJECT: Professional Surveyor and Mapper Business Certificate # LB7324

Your application / renewal as a professional surveyor and mapper business as required by Chapter 472, Florida Statutes, has been received and processed.

The license appears below and is valid through February 28, 2021.

You are required to keep your information with the Board current. Please visit our website at www.800helpfla.com/psm to create your online account. If you have already created your online account, you can use the website to maintain your license. You can also find other valuable information on the website.

If you have any questions, please do not hesitate to call the Division of Consumer Services, Board of Professional Surveyors and Mappers at 800-435-7352 or 850-488-2221.

Detach Here



Florida Department of Agriculture and Consumer Services
Division of Consumer Services
Board of Professional Surveyors and Mappers
2005 Apalachee Pkway Tallahassee, Florida 32399-6500

License No.: **LB7324**
Expiration Date February 28, 2021

Professional Surveyor and Mapper Business License
Under the provisions of Chapter 472, Florida Statutes

TERRAQUATIC INC
121 SE 24TH AVE
BOYNTON BEACH, FL 33435-7634

Nicole Fried

NICOLE "NIKKI" FRIED
COMMISSIONER OF AGRICULTURE

This is to certify that the professional surveyor and mapper whose name and address are shown above is licensed as required by Chapter 472, Florida Statutes.



RICK SCOTT, GOVERNOR

JONATHAN ZACHEM, SECRETARY



STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

BOARD OF PROFESSIONAL GEOLOGISTS

THE PROFESSIONAL GEOLOGIST HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 492, FLORIDA STATUTES

KAUB, FREDERICK GEORGE

851 NE 71ST STREET
BOCA RATON FL 33487

LICENSE NUMBER: PG1344

EXPIRATION DATE: JULY 31, 2020

Always verify licenses online at MyFloridaLicense.com



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Professional Licenses

Ron DeSantis, Governor

Halsey Beshears, Secretary

Florida
dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE ENGINEERING BUSINESS HEREIN IS AUTHORIZED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

TIERRA SOUTH FLORIDA, INC.
2765 VISTA PKWY, STE 9
WEST PALM BEACH FL 33411

LICENSE NUMBER: CA28073
EXPIRATION DATE: FEBRUARY 28, 2021
Always verify licenses online at MyFloridaLicense.com



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Tierra South Florida, Inc., CA 28073; Expires 2/28/2021

Ron DeSantis, Governor

Halsey Beshears, Secretary

Florida
dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

KRISHNASAMY, RAJ
2765 VISTA PARKWAY, SUITE 9
WEST PALM BEACH FL 33411

LICENSE NUMBER: PE53567
EXPIRATION DATE: FEBRUARY 28, 2021
Always verify licenses online at MyFloridaLicense.com



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Raj Krishnasamy, P.E., FL P.E. 53567; Expires 2/28/2021

Palm Beach County
Office of Small Business Assistance

Certifies That

Tierra South Florida, Inc.

Vendor # VC0000118568

*is a Small/Minority Business Enterprise as prescribed by section 2-80.21 – 2-80.35 of the
Palm Beach County Code for a three year period from*

October 11, 2018 until October 10, 2021

The following Services and/or Products are covered under this certification:

**Core Drilling Services, Pavement
Geotechnical Foundation Drill Services
Geotechnical Drilling and Boring Services
Testing, Asphalt Density
Quality Control Testing Services for Construction**



Allen F. Gray, Manager

10/10/2018



Palm Beach County Board of County Commissioners

Melissa McKinlay, Mayor
Mack Bernard, Vice Mayor
Hal Valeche
Paulette Burdick
Dave Kerner
Steven L. Abrams
Mary Lou Berger

County Administrator

Verdenia C. Baker

My Accountant

Tax & Financial Services

100 E Granada Blvd #214B • Ormond Beach, FL 32176

Tel: 954-972-3776 • Fax: 800-987-6470

kylee.miller.e.a@gmail.com

April 9, 2019

To whom it concerns,

This letter is to confirm that Cummins Cederberg Inc has an adequate accounting system in place to support the needs of the Department's audit requirements. I am not aware of any material modifications that would be necessary to be in accordance with generally accepted accounting principles.

Cummins Cederberg Inc's accounting system provides for proper segregation of direct costs from indirect costs, identification and accumulation of direct costs by contract, a timekeeping system that identifies employees labor by intermediate or final cost objectives, interim determination of costs charged to a contract through routine posting of books of account.

Their billing system allows for timely notification to prime contractor of overpayments/underpayments, segregation of incurred costs that may be non-billable, adjusting submissions for final rates or indirect billing rates that differ from billed rates, identifies costs that require specific approvals, and segregation and exclusion of unallowable costs, as required.

Sincerely,



Kylee Miller #91509

Workload and Scheduling

Cummins Cederberg will work closely with the Town to *ensure all schedules and budgets are met and meet the Town's operational and administrative requirements*. The applicability of the services offered in this contract are within our core services.

Workload

Our company workload allows us to quickly respond to the Town's needs and our technical staff has the availability to service any task orders that may arise under this RFQ. Cummins Cederberg's experienced project management team allows us to efficiently manage current workload with new opportunities. Our project team's familiarity with the Town's procurement and proposal procedures also allows us to effectively service both large and small task orders under this RFQ. We will service this RFQ from our fully staffed Palm Beach County office, which includes the Project Manager for this RFQ, with support from other offices to allow rapid response to the Town, regulatory agencies, and contractors who may be involved in projects under this RFQ.



ON
TIME



ON
BUDGET

Scheduling

To ensure that schedules are met in accordance to the Town's timeframe, a project schedule will be developed immediately upon the issuance of a notice to proceed from the Town. ***Our Project Manager for this RFQ, Jordon Cheifet, will be responsible for ensuring the overall schedule requirements for a project under this contract are met.*** Cummins Cederberg believes in having a strong Project Manager, as well as project management approach, where all lines of communication are funneled directly through the Project Manager. Our Project Manager will be responsible for maintaining a thorough understanding of a project, to provide one point of contact to the Town so project details can be effectively disseminated to the Team.



MEETS THE
TOWNS
NEEDS

Litigation Statement

There is no action, suit, proceeding, investigation or litigation pending or, to the best of our knowledge threatened against Cummins Cederberg which may have an adverse effect on our ability to perform its obligations to the Town.

Request for Taxpayer Identification Number and Certification

**Give Form to the
 requester. Do not
 send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	<p>1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. Cummins Cederberg Inc</p> <p>2 Business name/disregarded entity name, if different from above</p>	
	<p>3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input checked="" type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p>	<p>4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p><small>(Applies to accounts maintained outside the U.S.)</small></p>
	<p>5 Address (number, street, and apt. or suite no.) See instructions. 7550 Red Road, Suite 217</p> <p>6 City, state, and ZIP code South Miami, FL 33143</p> <p>7 List account number(s) here (optional)</p>	<p>Requester's name and address (optional)</p>

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number									
or									
Employer identification number									
2	7	-	2	1	2	9	0	3	3

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶ 3-18-19
------------------	----------------------------	-----------------------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



TOWN OF PALM BEACH

BIDDER'S QUALIFICATION FORM

The Vendor, as a result of this bid proposal, must hold a County and/or Municipal Tax Receipt (Occupational License) in the area of their fixed business location. Each proposer must complete the following information and submit with their proposal in order to be considered:

1. Legal Name and Address:

Name: _____

Address: _____

Email: _____

City, State, Zip: _____ Phone/Fax: _____

2. Check One: Corporation () Partnership () Individual ()

3. If Corporation, state: Date of Incorporation: _____ State in which Incorporated: _____

4. If an out-of-state Corporation, currently authorized to do business in Florida, give date of such authorization: _____

5. Name and Title of Principal Officers Date Elected:

_____	_____
_____	_____
_____	_____
_____	_____

6. The Vendor's length of time in business: _____ years

7. The Vendor's length of time (continuous) in business as a service organization in Florida: _____ years

8. All bidders must disclose with their bid the name of any officer, director or agent who is also an employee of the Town. Further, all bidders must disclose the name of any Town employee who owns, directly or indirectly, an interest in the bidder's firm or any of its branches.

Name _____ Percentage of Interest: _____

9. A copy of County and/or Municipal Tax Receipt (Occupational License) in the area of their fixed business location.

10. A current, signed copy of your firm's IRS form W-9.

Note: Information requested herein and submitted by the proposers will be analyzed by the Town of Palm Beach and will be a factor considered in awarding any resulting contract. The purpose is to insure that the Proposers, in the sole opinion of the Town of Palm Beach, can sufficiently and efficiently perform all the required services in a timely and satisfactory manner as will be required by the subject contract. If there are any terms and/or conditions that are in conflict, the most stringent requirement shall apply.



ANNE M. GANNON
CONSTITUTIONAL TAX COLLECTOR
Serving Palm Beach County

P.O. Box 3353, West Palm Beach, FL 33402-3353
www.pbctax.com Tel: (561) 355-2264

****LOCATED AT****

50 S US HWY 1 Ste 308
JUPITER, FL 33477

Serving *you.*

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
56-0016 ENGINEER BUSINESS	CUMMINS CEDERBERG INC	29062	B19.559342 - 07/18/19	\$33.00	B40170472

This document is valid only when receipted by the Tax Collector's Office.

B3 - 424

CUMMINS CEDERBERG INC
CUMMINS CEDERBERG INC
7550 RED RD STE 217
SOUTH MIAMI, FL 33143

**STATE OF FLORIDA
PALM BEACH COUNTY
2019/2020 LOCAL BUSINESS TAX RECEIPT**

**LBTR Number: 2017099823
EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.

Request for Taxpayer Identification Number and Certification

**Give Form to the
 requester. Do not
 send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	<p>1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. Cummins Cederberg Inc</p> <p>2 Business name/disregarded entity name, if different from above</p>	
	<p>3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input checked="" type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p>	<p>4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p><small>(Applies to accounts maintained outside the U.S.)</small></p>
	<p>5 Address (number, street, and apt. or suite no.) See instructions. 7550 Red Road, Suite 217</p> <p>6 City, state, and ZIP code South Miami, FL 33143</p> <p>7 List account number(s) here (optional)</p>	<p>Requester's name and address (optional)</p>

Part I Taxpayer Identification Number (TIN)

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Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number																					
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Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here

Signature of U.S. person ▶

Date ▶

3-18-19

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

CUMMINS | CEDERBERG

Coastal & Marine Engineering

December 3, 2019

Town of Palm Beach
Attn: Duke Basha
Asst. Purchasing Manager
951 Okeechobee Road, Suite D
West Palm Beach, FL 33401

RE: Coastal Engineering Services, RFQ No. 2020-02

Dear Mr. Basha and Selection Committee Members:

Cummins Cederberg, Inc. (Cummins Cederberg) is pleased to submit this RFQ for Coastal Engineering Services to the Town of Palm Beach (Town) for your review and consideration. We are excited for the opportunity to present our firm's qualifications with the intent to develop a long-term relationship as a trusted consultant for coastal engineering services. *This letter confirms that we have reviewed and understand the scope of work and its requirements, which are within our Team's core services.* We also met with key Town personnel, including the Director of Public Works and the Coastal Program Manager, to better understand the needs of the Town.

History of the Firm

Cummins Cederberg was founded in Miami in 2010 by principal engineers Jason Cummins, P.E., and Jannek Cederberg, P.E. The foundation of the firm was built upon an expertise in the coastal and marine environments, and remains at the forefront of science, research, and application in this constantly evolving industry. The firm has thrived with an exclusive focus on the coastal and marine area without diluting knowledge or resources amongst other disciplines. The firm has built a team of professionals, including licensed engineers and marine scientists. We have established a reputation of success by providing quality work in a transparent manner, resulting in sustainable working relationships with many repeat clients.

Cummins Cederberg provides both public and private clients with technical services in coastal and marine engineering consulting services. We have been providing these services over the last 9 years to public-sector clients, which include the following local, State, and Federal agencies:

- Miami-Dade County
- City of Miami Beach
- City of Miami
- Monroe County
- Bay Harbor Islands
- Palm Beach County
- Town of Jupiter Island
- City of Fort Myers
- City of Deerfield Beach
- Florida Department of Transportation
- US Coast Guard

Team

We have assembled a highly qualified team, including subconsultants, with experience working in the Town. Our team includes Terraquatic (TAI) for topographic/bathymetric survey, American Vibracore Services (AVS) for offshore geology (sand searches), and Tierra South Florida (TSF) for upland geotechnical services.

Coastal Engineering Capabilities

Our goal is to foster the development of strong, long-term client relationships by consistently delivering effective solutions on time and on budget. As a certified SBE firm, clients work directly with our experienced senior project engineers and managers who dedicate themselves to providing a superior level of responsiveness and quality. The firm's work performed on this project will be managed from our Palm Beach County office, and supported from local offices in Fort Lauderdale, Miami, as well as our Tallahassee office to streamline and expedite regulatory permitting needs.

Our team of engineers and marine scientists bring a collection of unrivaled qualifications and experience working in marine and coastal environments and are recognized in the industry for their knowledge and proficiency. We work very closely with our clients to understand their needs, quickly identify resolutions, execute projects cost-effectively, and on time.

Our Coastal Engineering Areas of Services Include:

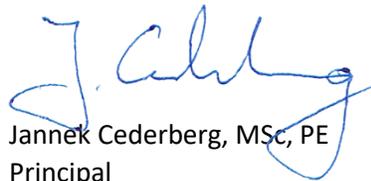
- ✓ Beach Nourishment
- ✓ Shoreline Protection
- ✓ Numerical Modeling
- ✓ FEMA Flood Mapping
- ✓ Coastal Erosion Studies
- ✓ Dredging Design
- ✓ Inlet Management
- ✓ Coastal Structure Design
- ✓ Sea Level Rise Planning
- ✓ Scour Analyses
- ✓ Coastal Resiliency
- ✓ Regulatory Permitting
- ✓ Marine Resources Surveys
- ✓ Construction Management
- ✓ Underwater Inspections
- ✓ Living Shorelines
- ✓ Aerial Drone Surveys
- ✓ Infrastructure Planning

Cummins Cederberg has not had the opportunity of working for the Town in the past, but we have key senior staff who have worked extensively with the Town in the past with their former firms and look forward to reestablishing these relationships. We appreciate the opportunity to submit our qualifications and stand by ready to assist the Town to execute services under this RFQ. Should you have any questions or require additional information, please do not hesitate to contact me at 561-210-9330 or jcederberg@CumminsCederberg.com.

Sincerely,
CUMMINS CEDERBERG, INC.



Jason Cummins, MSc, PE
Principal



Jannek Cederberg, MSc, PE
Principal

A. Consultant Credentials & Related Projects

Since our inception, we have successfully grown and established ourselves as the leading engineering firm for complex coastal and marine engineering projects in Florida and the Caribbean with offices in Miami, Fort Lauderdale, Jupiter, and Tallahassee. Cummins Cederberg is repeatedly selected ahead of larger national engineering firms due to our unique and focused qualifications combined with a hands-on approach. Our success is built on providing high quality work in a transparent manner in order to build long term relationships resulting in organic growth through repeat clients and referrals.

The Cummins Cederberg team includes Florida Registered Professional Engineers with extensive experience utilizing advanced numerical modeling tools, such as MIKE (DHI), Delft (Deltares), SBEACH, and ADCIRC, amongst others. Specific numerical modeling experience includes the analysis of wave propagation both offshore and in shallow coastal areas, FEMA risk hazard map modeling, hydrodynamic flow in inlets and estuaries, and sediment transport associated with wave and current dynamics, as well as the interactions of beaches with natural and man-made coastal structures such as jetties, groins, breakwaters, rock headlands, and offshore reefs. Our project engineers are responsible for the investigation, planning, design, and construction management of every coastal project, including shoreline stabilization, coastal structures, inlet management, biological monitoring, and restoration.



ONE OF THE LARGEST GROUPS OF COASTAL ENGINEERS IN FLORIDA

What started with two engineers has successfully grown to one of the largest groups of coastal engineers in Miami-Dade, Broward, AND Palm Beach County

In addition, Cummins Cederberg has an in-house team of marine biologists and regulatory experts with experience in local, state, and federal coastal permitting, marine resource surveys, artificial reef design and monitoring, NEPA documentation, Endangered Species Act Section 7 consultation, and Essential Fish Habitat Assessments. Our team includes former executive level Florida Department of Environmental Protection (FDEP) staff with intimate knowledge of the regulatory process and professional relationships with agency personnel. We bring project experience related to regional sand management, inlet management, beach nourishment, restoration, FEMA funding from storm impacts, and compliance with stringent sand specifications and hardbottom mitigation requirements. Our biologists work hand in hand with our engineers to ensure projects are completed on time and budget to exceed your project goals, while protecting natural coastal resources.

Our construction management staff have experience on both the contractor and design side with project management and oversight specifically for beach nourishment projects using truck haul or dredging throughout

Florida including contract terms, construction specifications, construction methodology, monitoring, permit compliance, and reviews. Having former marine contractors on staff can result in a substantial cost savings when it comes to constructability reviews and estimating. During construction planning, Cummins Cederberg can collect the bid documents for the Town, as well as manage the bid process. Our construction management process includes regular site visits and progress reports to the Town staff.

**EXPERIENCED,
RESPONSIVE,
ORGANIZED**

Cummins Cederberg will work as an extension of the Town, not just as another consultant



The Cummins Cederberg approach is to work as an extension of the Town, and we have assembled a team to fulfill your needs. Current related projects in Florida are provided to demonstrate our technical experience with similar projects, along with a detailed understanding and approach.

Lake Worth Inlet Flood Shoal Dredging

Riveria Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Bathymetric survey
- ✓ Dredge design
- ✓ Environmental permitting
- ✓ Use of ADCP

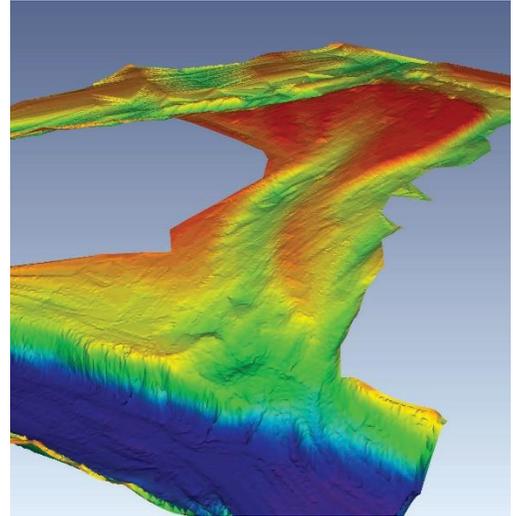
Project Client: Marine Industries Association of Palm Beach County

*Contact Info: Eric Anderson
EAnderson1@pbcgov.org
561-233-2514*

Start Date: June 2018

End Date: Ongoing

Contract Amount: \$169,000



Cummins Cederberg is providing marine engineering and environmental consulting services for the Lake Worth Inlet Flood Shoal Dredging Project, located adjacent to the Port of Palm Beach, Peanut Island Park, and the Lake Worth Inlet. The project consists of dredging a portion of the eastern perimeter and a center cut through the shoal to increase navigation and safety. The center cut will restore sediment deposition capacity in areas where sediment has historically deposited. As an additional benefit, it will increase access to the interior of the shoal and help reduce vessel density along the eastern and northern perimeters improving navigation and safety in the marked channels. The center channel will also improve access to law enforcement and first responders. The dredge material will be placed at the Tarpon Cover Restoration site, just south of the inlet. Responsibilities are bathymetric survey, current measurements, marine resource survey support, preparation of engineering plans, environmental permit application preparation and processing with the FDEP and the USACE, coordination and participation in public stakeholder meetings, and coastal engineering analysis.

The bathymetric survey and current data were used for coastal engineering design and numerical modeling. To better understand the dynamics of the flood shoal and evaluate effects post-dredging, a coastal engineering analysis was performed. The components that were evaluated were general coastal processes (waves and tidal hydrodynamic), sediment characteristics, sediment transport patterns, infilling time and anticipated dredge frequency, and impact to the Intracoastal Waterway west of the Lake Worth Inlet flood shoal based on cross-sectional profile and potential slope adjustments as well as anticipated sand movement and deposition. The bathymetric survey will also serve as a basis for the dredge design, which will be developed for reshaping of the flood shoal.

Hillsboro Club Dune Repair

Hillsboro Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Dune repair**
- ✓ **Sand samples**
- ✓ **Erosion assessment**
- ✓ **Construction administration**

Project Client: Hillsboro Club Condominium Association

*Contact Info: Susan Williams
susanw@hillsboroclub.org
954-941-2220 ext. 6001*

Start Date: 2018

End Date: 2018

Contract Amount: \$17,600



Cummins Cederberg served as the project manager, senior engineer, and marine biologist for the Hillsboro Club Dune Repair, providing emergency dune restoration and repair services, as well as sand studies at the Hillsboro Club.

Responsibilities included pre-construction sediment testing, preparation and submittal of FDEP CCCL permit application packages, development of construction documents, and coordination with the Town of Hillsboro Beach for code compliance. The dune design was based on maximizing the volume of sand seaward of the project property.

As required by the FDEP, existing dune vegetation mapping was performed, a proposed vegetation planting plan developed, and planting design parameters were prepared. The planting plans included the identifying the location of existing native dune vegetation to be preserved, buried, or replanted, proposed dune vegetation plantings for stabilization and mitigation, and areas of invasive exotic plants for removal.

Sand samples from the existing dune system were obtained and tested to identify available sand sources for the renourishment project. Cummins Cederberg was able to perform the sand testing prior to the beginning of a nearby dredging project, which was occurring concurrently. Through this expedited, out-of-the-box process, we were able to evaluate if this alternative sand source could be used for the dune repair, making the project more economically feasible for the client.

Cummins Cederberg also provided general construction administration services ranging from participation in pre-construction meetings, coordination with FDEP compliance, and periodic site visits.

Coco Plum Beach Erosion Study and Design

Marathon, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Field investigations**
- ✓ **Erosion study**
- ✓ **Beach design**
- ✓ **Coastal modeling**
- ✓ **2,500 feet of shoreline**

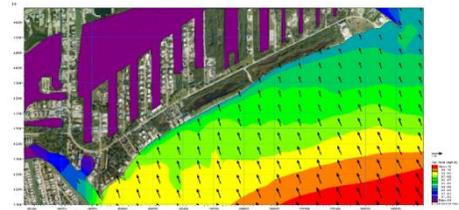
Project Client: City of Marathon

Contact Info: Carlos Solis, PE
solisc@ci.marathon.fl.us
305-289-5008

Start Date: 2016

End Date: 2017

Contract Amount: \$46,800



Coco Plum Beach is located along the southeast coast of Marathon in the Florida Keys. The beach is one of few beaches in the Florida Keys and is popular among residents and tourists. However, the beach has historically experienced significant erosion requiring costly beach fill projects, which add the nuisance of construction and periods of restricted beach use. The beach is exposed to the Atlantic Ocean but is fronted by extensive shallow seagrass habitat, which reduces direct exposure to ocean waves.

Cummins Cederberg worked with the City of Marathon to develop a beach management strategy with recommendations for implementation, prepare an erosion study, and coordinate pre-application meetings with the regulatory agencies to evaluate project feasibility. We recently submitted a CCCL permit application to the FDEP for a beach renourishment at the site with construction scheduled for this winter.

As part of the erosion study, a detailed statistical analysis of offshore wave data was conducted along with a wave propagation study. The wave modelling used the advanced MIKE21 wave model, which allowed for detailed review and comparison of the wave climate along the beach and an assessment of sediment transport rates and potential erosion, which are typically governed by the wave conditions.

The results of the numerical modeling study were used to understand the erosion trends at the site and utilized to support the beach and coastal structure design process. The area triggering the beach erosion was identified and solutions for stabilizing this area, while still providing sandy beach access, were developed. Understanding the underlying coastal processes allowed for an efficient design that works with the natural processes, thus reducing long term maintenance typically associated with projects working against nature.

Crandon Marina Sedimentation Study

Miami, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Field investigations**
- ✓ **Erosion study**
- ✓ **Coastal engineering analysis**
- ✓ **Shoreline stabilization design**
- ✓ **Marine resource assessments**
- ✓ **Public workshops**

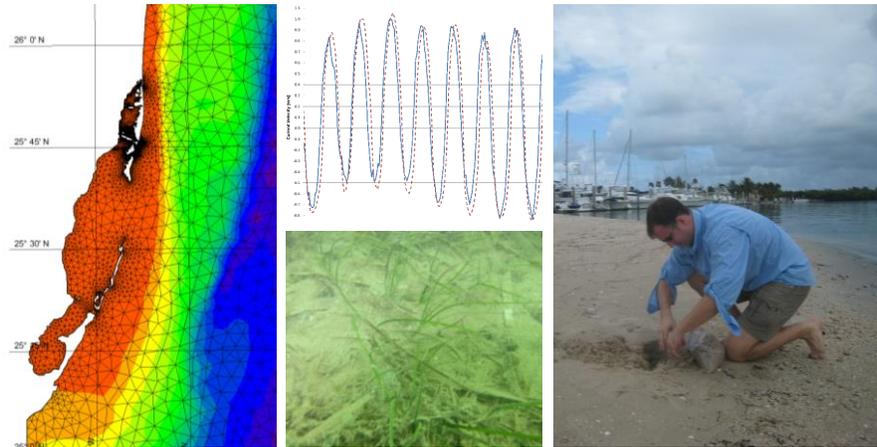
Project Client: Miami-Dade County Parks, Recreation and Open Spaces

*Contact Info: Angel Trujillo, PE
angel.trujillo@miamidade.gov
305-755-7800*

Start Date: 2012

End Date: 2013

Contract Amount: \$60,000



Crandon Marina is located along the northwest shoreline of Key Biscayne fronting Biscayne Bay and specifically adjacent to Bear Cut. Severe sedimentation occurs in the northwestern portion of the marina close to the entrance channel, preventing mooring in certain slips and consequently a loss in revenue. Cummins Cederberg was selected to determine the source and cause of the sedimentation as well as provide a solution.

The Project area is exposed to both high tidal currents and wind generated waves in Biscayne Bay. Due to the large tidal prism in Biscayne Bay, and limited flow pathways in north Biscayne Bay, high current speeds are experienced during ebb and flood tide in Bear Cut.

Field investigations including surveying, marine resource mapping, sediment sampling, and tide and current measurements were performed. A wave analysis was subsequently conducted to understand wave characteristics during normal conditions for the subsequent sediment transport assessment, and extreme wave conditions for the design of coastal structures. A detailed hydrodynamic numerical model was developed to simulate the tidal flow within Biscayne Bay and specifically the tidal flow patterns at the Project site. The numerical model was calibrated to current measurements obtained at specific locations.

Based on the results of the wave and hydrodynamic analyses, the sediment transport at the site was assessed to understand the governing mechanism in transporting excessive material into the marina.

Concepts to eliminate or reduce sedimentation were developed and compared relative to the current practice of dredging. The comparison included short and long-term costs, along with environmental and engineering constraints.

47th Street Beach Restoration

Miami Beach, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **20,000 cy beach fill**
- ✓ **Permit applications**
- ✓ **Equilibrium Toe of Fill study**
- ✓ **Sediment transport study**
- ✓ **Numerical modeling**

Project Client: Miami-Dade County Public Works

*Contact Info: Paul Voight
voightp@miamidade.gov
305-372-6849*

Start Date: 2015

End Date: 2015

Contract Amount: \$32,000



Cummins Cederberg was engaged by Miami-Dade County to design a 20,000-cubic yard beach fill project in a highly eroded area of Miami Beach. The project area experienced significant shoreline retreat following a series of winter storms causing extensive erosion of the established dune system and preventing access for emergency vehicles.

In addition, the beach area fronts several upscale condominiums and hotels, which requested prompt resolution by the County. Cummins Cederberg worked around the clock to develop concept drawings to initiate the permitting process. The design included consideration of the existing dune and berm, as well as the general federal beach design requirements and construction methods as the project site is located within the federal project footprint. Permit applications with drawings were submitted to the regulatory agencies two days after Cummins Cederberg was initially contacted by the County.

An Equilibrium Toe of Fill (ETOF) study was subsequently prepared to assess potential impacts to nearshore hardbottom as the sand is exposed to waves and varying tidal conditions. The study analyzed potential cross-shore sand movement to facilitate adjustments to the construction template.

Sea Level Rise and Flood Mitigation Roadmap

Matheson Hammock Park,
Coral Gables, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Numerical modeling
- ✓ Coastal resiliency
- ✓ Flood mitigation concept development
- ✓ Condition assessment
- ✓ Cost estimates
- ✓ Stakeholder involvement
- ✓ Implementation strategy development

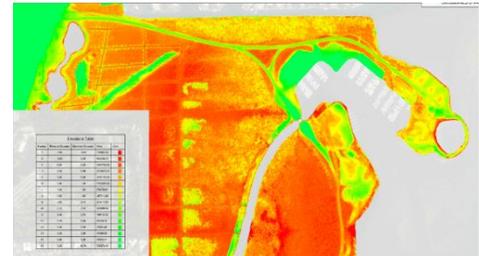
Project Client: Miami-Dade County Parks, Recreation and Open Spaces

Contact Info: Angel Trujillo, PE
angel.trujillo@miamidadade.gov
305-755-7800

Start Date: 2017

End Date: 2018

Contract Amount: \$90,000



Matheson Hammock Park is located along the western shoreline of Biscayne Bay in Coral Gables. The Park is one of few publicly accessible waterfront areas in this region of Miami-Dade County. Most of the park is relatively low lying, which results in flooding to some areas during high tide events. Flooding is a nuisance to visitors, as areas become inaccessible. In addition to the negative impact on visitor experience, flooding has financial impacts, as revenue generating components are impacted operationally and physically.

Cummins Cederberg was engaged to prepare a Sea Level Rise Flood Mitigation Study, relative to Matheson Hammock Park, with the primary objective to analyze the impacts of sea level rise on the park's infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting purposes. Cummins Cederberg compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the park; assessed the condition of existing infrastructure to understand conditions, remaining service life, and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on-site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Vizcaya Shoreline Stabilization and Wetland Restoration

Coral Gables, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ **Engineering analysis**
- ✓ **Storm surge wall design**
- ✓ **Wetland restoration**

Project Client: Vizcaya Museum and Gardens

Contact Info: Joel Hoffman, PhD
joel.hoffman@vizcaya.org
305-860-8422

Start Date: March 2011

End Date: August 2013

Contract Amount: \$30,000



Cummins Cederberg was retained to determine potential storm surge impacts and design a wall to prevent damage to a restored historic garden. The project included the design, permitting, and construction oversight of a shoreline stabilization wall as well as wetland restoration to protect a low-lying restored garden area at Vizcaya Museum and Gardens. The garden is an historical orchidarium in a highly visible area, immediately to the north of the Vizcaya Main House, directly fronting Biscayne Bay. Vizcaya is accredited by the American Association of Museums, which requires adherence to rigorous professional standards for site maintenance and educational programming.

The seawall is designed to protect a restored historical garden from storm surge, hydrodynamic, and wave impacts. As part of the seawall design, an adjacent area invaded with exotic vegetation was be restored to native conditions with planting of species native to the Biscayne Bay wetland environment. The restored wetland provided educational opportunities pertaining to Miami's native waterfront environment along with natural protection.

The wetland design will ultimately assist in dissipating wave energy in a non-intrusive way, as well as integrate into the overall master plan. The location and purpose of the wall provided opportunities for grant applications to assist Vizcaya Museum & Garden. A grant application was prepared, presented, and successfully processed with the Florida Inland Navigation District.

FDOT A1A Vulnerability Study and Roadway Stabilization Design

Indian River County, FL

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering
- ✓ Scour analysis
- ✓ Wave load analysis

Project Client: New Millennium Design Consultants, Inc.

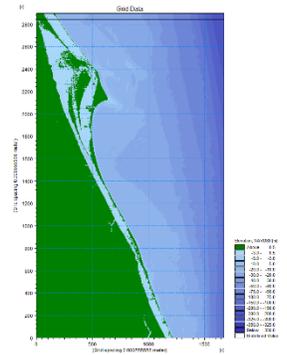
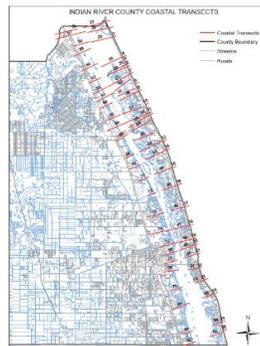
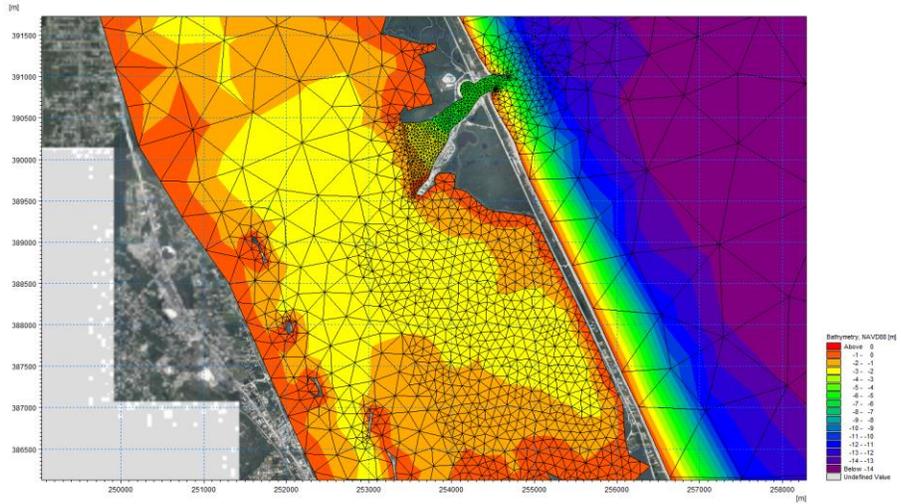
Project Owner: Florida Department of Transportation

Contact Info: Eugenio Ochoa
eochoa@nmdcenq.net
305-667-1657

Start Date: June 2017

End Date: December 2017

Contract Amount: \$55,000



Cummins Cederberg performed a scour and wave load analysis for a proposed seawall for approximately 2 miles of shoreline that experienced significant erosion during Hurricane Matthew. A hydrodynamic MIKE21 model was developed to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to stimulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme events under varying conditions and water levels.

MSC Cruises Ocean Cay Marine Reserve

Ocean Cay, The Bahamas

Relevance to Town of Palm Beach Coastal Engineering:

- ✓ Coastal engineering study
- ✓ Beach design
- ✓ Site analysis
- ✓ Shoreline configuration
- ✓ Sediment transport study
- ✓ Wave surge study
- ✓ Bathymetric survey
- ✓ Marine engineering

***Completed private project with marine construction cost over \$5M**

Project Client: Bermello Ajamil & Partners, Inc (B&P)

Project Owner: MSC Cruises

Contact Info: Scott Bakos (B&A)
sbakos@bermelloajamil.com

Start Date: 2015

End Date: Ongoing

Contract Amount: \$881,000



Cummins Cederberg was retained to lead all surveying, coastal engineering, beach and coastal structure design, as well as the Environmental Impact Analysis (EIA) and Environmental Management Plan (EMP) for this \$150M+ project. Topographic and bathymetric surveying was performed along with collecting rectified aerials photographs. Due to the remote location, existing baseline information such as control points and water levels were not available and had to be established. A long-term tidal study was performed to determine tidal levels. A marine resource survey was conducted to map marine resources, such as seagrass and corals, which could potentially be impacted by the construction. An EIA was prepared and approved by the Bahamas Environment, Science & Technology (BEST) Commission.

Detailed hurricane and wave modeling were conducted utilizing the advanced MIKE21 numerical model to determine extreme wave and storm surge conditions. A flood map with minimum finished floor elevations was prepared for use by the design team. Directly following the analysis, the island was impacted by Hurricane Matthew which was one of many hurricane events simulated during the design process. The modelled storm surge elevations were consistent with the observed impacts. A detailed sediment transport study was performed for subsequent use in the beach design. Nearly two miles of beach were created along the island's perimeter and within two interior lagoons. Water circulation modeling was performed to ensure a high rate of water exchange in the lagoons.

Wave loads during extreme conditions were determined for marine structure design. More than one mile of shoreline stabilization was designed along critical areas of the island's perimeter to ensure stability during extreme hurricane conditions. The shoreline stabilization included placement of 100,000 tons of rock, including areas with water depths up to 60 feet. Expansion of the island through reclamation and excavation was designed involving earthwork of approximately 1 million cubic yards.

B. Understanding the Town's Coastal Program

The Town of Palm Beach successfully implements a coastal management program to provide storm protection and recreational benefits along its coastline between Lake Worth Inlet and the southern Town boundary. Cummins Cederberg understands the dedication of the Town to maintain one of its most valuable assets and has the technical knowledge to support this continued effort. We have assembled a unique team of experts to support the Town's ongoing coastal management efforts, as well as to develop new, innovative solutions and approaches for the Town's coastal program.

Implementation of Comprehensive Coastal Management Plan

The Town's coastal program has evolved and grown since the Comprehensive Coastal Management Plan (CCMP) was first developed in 1986. Traditional, large-scale nourishment projects including inlet bypassing at the Sand Transfer Plant, Mid-Town Beach Nourishment, and Phipps Ocean Park Beach Nourishment have helped to stabilize large portions of the Town's coastline. Many of these projects and strategies were originally developed in the CCMP and have been refined over the years to provide tremendous benefit to the Town's beaches. As the Town moves into the 21st century, new challenges must be addressed, including sea level rise, increasing storm intensity, and reduced sand resources. Cummins Cederberg has the experience to help the Town preserve its beautiful coastline, while also working to improve coastal resiliency in the future.

Island Wide and Regional Management

The CCMP allows the Town to take both a regional and targeted approach to coastal management. Cummins Cederberg has worked with municipalities to implement both large- and small-scale coastal engineering projects that require careful consideration of multiple stakeholder interests. Our staff has experience with their former firms working with the Town on multiple projects outlined in the CCMP including development of the Beach Management Agreement (BMA), peer review of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS), preparation of the Environmental and Biological Assessment for the Reach 8 nourishment project, design of the new Mid-Town Groin, and biological monitoring for multiple CCMP projects throughout the Town. This experience positions Cummins Cederberg uniquely to understand the Town's current needs and goals moving forward.

At a regional scale, Cummins Cederberg can work with the Town to better understand existing conditions as well as plan for future changes. We have the in-house ability to support the Town by implementing many of the island-wide recommendations presented in the most recent technical review of the CCMP in 2013, including development of an island-wide sediment transport model, implementation of a coastal structures evaluation program, coordination to develop a Federal-level BMA, and refinement/expansion of the recently completed Coastal Flood Vulnerability Assessment.

Eight Reaches of the Town

The original CCMP separated the Town's coastline into eight reaches to facilitate a more targeted beach management strategy. The Cummins Cederberg team understands that each reach within the Town has been designated as critically eroded by the Florida Department of Environmental Protection (FDEP) and has different needs, with varying levels of required attention, funding, and maintenance.



Reach 1. Lake Worth Inlet to Onondaga Avenue

Reach 1 is located immediately south of Lake Worth Inlet and benefits from the efficient maintenance of the Inlet, including inlet bypassing by the Sand Transfer Plant and maintenance dredging by the Corps. Cummins Cederberg will work with the Town and relevant stakeholders to optimize sand placement locations throughout the Town, as described in the CCMP.



Reach 2. Onondaga Avenue to El Mirasol

Reach 2 is at the north end of the island and is primarily maintained by sand placement in Reach 1, which acts as a feeder beach, as extensive nearshore hardbottom limits the feasibility of nourishment project in this area. The Cummins Cederberg team can assist the Town by monitoring the upcoming Mid-Town Beach Nourishment project to evaluate the effectiveness of the extended northern taper to stabilize the southern end of Reach 2 and evaluating alternative sand placement locations within the Town.



Reach 3. El Mirasol to Via Bethesda

Reach 3 represents the northern part of the Mid-Town Beach Nourishment project, which recently received Federal funding for reconstruction. While this will be a Corps project, Cummins Cederberg can support the Town through construction support and/or monitoring. Reach 3 contains The Breakers, which is currently being studied to address erosion in front of the Breakers and downdrift along Clarke Beach. Cummins Cederberg can provide assistance and peer review of the proposed solutions to evaluate effects of private property beach management on the Town's beaches.



Reach 4. Via Bethesda to 270' South of Banyan Road

Reach 4 represents the southern part of the Mid-Town Beach Nourishment project, which recently received Federal funding for reconstruction. The proposed Project Manager for this RFQ, **Jordon Cheifet, PE, CFM, has experience working in Reach 4.** He served as Engineer-of-Record (at his previous firm) for the recently constructed Mid-Town Groin Construction project located in Reach 4 at Gulfstream Road and performed an engineering assessment of the seawall at the southern end of Mid-Town Beach.



Reach 5. 270' South of Banyan Road to 170' North of Widener's Curve

Reach 5 is located south of Mid-Town Beach and benefits from the southerly movement of sand from the Mid-Town Beach Nourishment project. This section of the Town's shoreline has been historically stable and not required nourishment. Monitoring of the beach and evaluation of the seawalls in this reach will allow the Town to maintain storm protection in Reach 5.



Reach 6. 170' North of Widener's Curve to Sloan's Curve

Reach 6 is located between Widener's Curve and Sloan's Curve and is protected by the Florida Department of Transportation (FDOT) revetment, which provides storm protection to A1A. While no dry beach is present in this section of the Town's coastline, Cummins Cederberg has experience designing and inspecting these coastal structures and could perform an independent structural assessment for the Town, consistent with the recommendations in the most recent CCMP technical review.



Reach 7. Sloan's Curve to The Ambassador Hotel

Reach 7 includes the Lake Worth Pier and is located towards the southern end of the Town. Reach 7 is maintained by the Phipps Ocean Park Beach Nourishment project. The northern part of Reach 7 remains an erosional hotspot due to the proximity to the revetment but the central and southern parts benefit from the large-scale nourishment in the reach. Like the Mid-Town project, Cummins Cederberg can support the Town through construction support and monitoring of this project during the next construction scheduled for this winter.

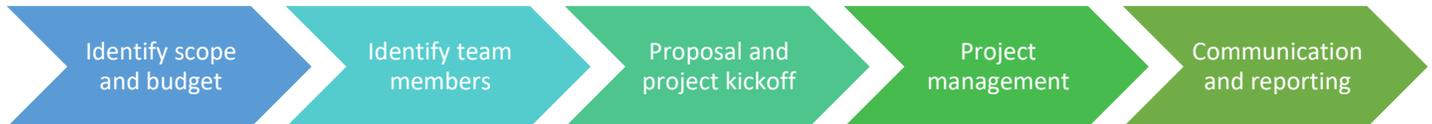


Reach 8. The Ambassador Hotel to La Bonne Vie

Reach 8 is located at the southern end of the Town and has historically been maintained through the southerly movement of sand from the Phipps project in Reach 7. The downdrift extent of these benefits is limited; therefore, the Town maintains the southern portion of Reach 8 through a successful dune restoration program. While the Town leverages the recently completed Reach 8 EIS to secure environmental permits for a Reach 8 project, Cummins Cederberg can support the town with engineering design and construction administration for an interim dune project.

C. General Approach

Our general approach utilizes a dynamic team of technical staff including coastal engineers, marine scientists, surveyors, geotechnical engineers, geologists, and regulatory experts to meet the Town's needs. Our Team is prepared to assist the Town in delivering successful projects that comply with all technical standards, while maintaining regulatory agency requirements. The Cummins Cederberg team will be an extension of the Town and is committed to assisting in all aspects of project management from initial kickoff meetings to project closeout. Our team management process will be used for managing and integrating all activities associated with each project utilizing this detailed 5-step approach:



Step 1: Identify scope and budget. The first step will include early communications with the Town to gain a full understanding of the scope of the project. We will work with the Town to identify the project needs in order to develop the scope, qualifications, staffing, and budget estimate for each task. Developing a full understanding of the needs of the project early on will help to avoid change orders as the project progresses.

Step 2: Identify team members. Upon approval of the project scope by the Town, we will immediately coordinate with the Team (e.g., coastal engineering, environmental services, geotechnical) to select the necessary team members and staff to fulfill the requirements of each task. Our goals during this step are to identify the best-suited personnel to address the task at hand, as well as to provide a highly responsive team that can conduct the requested work within the Town's desired timeframe and budget.

Step 3: Task proposal and project kickoff. Upon authorization to proceed, we will schedule a project kickoff meeting and immediately notify the Team to discuss the project assignment and to develop and issue scopes of work for each subconsultant to clearly define the roles, responsibilities, project objectives, schedules, and expected deliverables for each team member. Effective channels of communication will be established, including points of contact and procedures for feedback.

Step 4: Project management. We will regularly coordinate with the Team to monitor the progress of the individual tasks and will communicate often with Town staff to ensure that our Team is meeting or exceeding the level of quality and responsiveness the Town expects. We will communicate frequently with the Town to confirm that our Team is compliant with Town procedures and providing thorough project records.

Step 5: Communication and reporting. As part of overall project management, our Team will obtain regular progress updates from our subconsultants and provide progress reports to the Town as needed or as determined during project kickoff. At a minimum, progress reports will be provided in our monthly invoices.

D. Technical Approach

The Cummins Cederberg team of engineers, scientists, and additional technical staff are familiar with the Town's coastal program and understand the technical expertise required to along its beautiful coastline. Many of our technical staff have also gained direct experience working with the Town on many projects while with their former firms. The following summarizes our technical approach to servicing this RFQ and describes how the Cummins Cederberg team can assist the Town with each area of the scope of work described under this RFQ.





Coastal Protection Design/Resiliency

The overarching theme of the Town's CCMP is to provide protection to the Town's coastal infrastructure through a carefully planned and managed strategy, which generally includes beach nourishment and strategically placed coastal structures including groins, revetments, and seawalls. Cummins Cederberg has experience at both the regional and local scale relative to the design and implementation of resilient coastal protection projects for both public and private clients. At a regional scale, our technical staff has developed sediment budgets for both inlets and open coasts and created solutions for erosional hotspots. Cummins Cederberg will apply our Team's experience to the Town's nourishment projects to optimize the designs for the next construction event. For example, a thorough analysis of the Town's Annual Physical Monitoring Reports may show that the fill template could be modified in specific areas to extend the life of the project.

Our team is accustomed to being innovative; it is part of the company's DNA

Our team is accustomed to being innovative; it is part of the company's DNA. For most of our projects in the Caribbean, we are required to think outside-the-box due to logistical constraints and limitations relative to materials, equipment, labor, and budget. Further, the majority of the Caribbean coastline is unique, unlike the Florida east coast where the coastal processes are fairly similar throughout. This forces our engineering and permitting team to develop innovative solutions for almost all projects, rather than just reproducing previous designs.

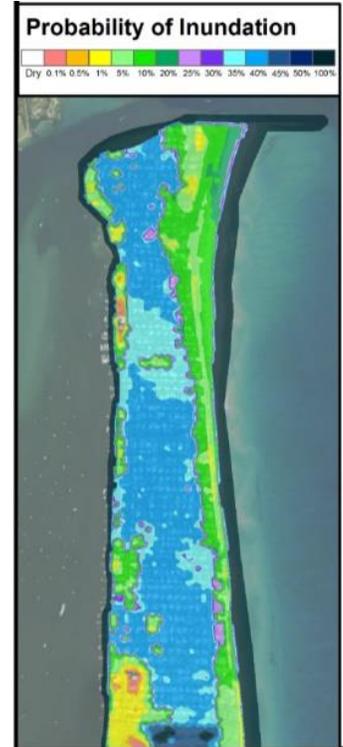
Coastal Protection

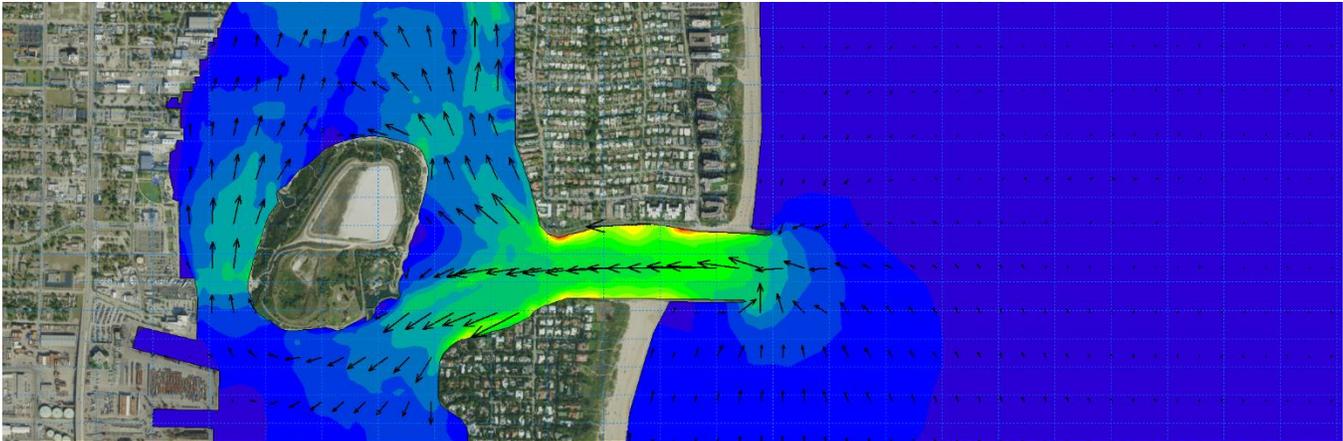
Our specific experience with coastal protection design includes work in Miami-Dade County, Village of Key Biscayne, City of Hollywood, and City of Hallandale Beach, along with multiple large-scale, private developments in the Caribbean, each with extensive beach frontage. This work ranges from small-scale, emergency dune repair projects using truck hauled sand to large-scale beach nourishment projects requiring offshore sand. Our technical staff has also evaluated, designed, and monitored many coastal structures including groins, revetments, and seawalls. This experience could be leveraged to initiate the Town's island-wide groin rehabilitation project. Our experienced team of coastal engineers has analyzed the coastal processes at inlets including Bakers Haulover Inlet, Hillsboro Inlet, and South Lake Worth Inlet. Two of our team members, **Danielle Irwin** and **Jordon Cheifet**, were members of the Bakers Haulover Inlet Technical Advisory Committee representing downdrift and updrift municipalities and thus bring state of the art understanding of inlet management strategies in Florida.

Resiliency

Cummins Cederberg recognizes that sea level rise and climate change are creating continually evolving conditions, which include a new reality to which we must adapt. With water on both the east and west side, the Town is particularly vulnerable to flooding. In fact, the Intracoastal Waterway (ICW) provides more flood risk to the Town than the Atlantic Ocean. We understand that the Town recently completed a Coastal Flood Vulnerability Assessment to identify Town assets that are vulnerable to coastal flooding and visualize where future flooding may occur (see *Probability of Inundation* map on next page). While the town only has \$120,000 budgeted for

flooding and climate change in FY2020, we can augment that budget with a grant strategy that leverages State and Federal funds for resiliency planning. Cummins Cederberg can assist the Town with the development of the Implementation Plan identified in this study to form a resiliency roadmap relative to the adaptations identified therein, future planning, infrastructure improvements, and shoreline management strategies. Our unique approach combines sea level rise projections with practical concepts and on-the-ground implementation strategies to maximize the service life of the Town's infrastructure. Our coastal engineers routinely evaluate the potential impacts of local sea level rise and create flood mitigation roadmaps to address coastal flooding and shoreline protection projects. We have specialized experience and capabilities within the coastal engineering industry, which we leverage to provide dynamic solutions that can be adapted for sea level rise. We have a team of experts who understand coastal processes and the drivers of climate change. We also have two Certified Floodplain Managers on staff who can provide the Town with expert guidance relative to compliance with the FEMA National Flood Insurance Program (NFIP) and Florida Building Code floodplain development requirements. This also provides opportunities to tie sea level rise improvements to increase in CRA rating, providing direct financial benefits to the residents. Furthermore, we have established relationships with experts in the economics of flood resiliency that can be brought in should the need arise.





Coastal Modeling

Analysis of the Town's complex shoreline can be expedited by using numerical models. The coastal area is dynamic and designs typically require some flexibility to account for variations in simulated dynamics (i.e. due to seasonal or extreme conditions). Cummins Cederberg routinely utilizes these models to conduct engineering design and evaluate performance of coastal projects. Numerical models are a tool that can assist in the engineering analyses and designs, but often require simplifications due to the computational time required to simulate the complex coastal processes. The Cummins Cederberg team understands the underlying coastal processes used by the models, which allows us to properly interpret the results, verify if the results are reliable, and determine when potential variations may occur.

Cummins Cederberg has utilized numerical models to optimize many coastal engineering projects including groins, breakwaters, beach nourishments, marinas, and piers. Our studies require the simulation of waves, currents, and sediment transport during both normal and extreme conditions (i.e. hurricanes). We will leverage this experience to assist the Town with implementation of the coastal infrastructure projects identified in the CCMP, which may include development of an island-wide numerical model to evaluate beach nourishment project performance, efficacy of groin repair/replacement, or flooding from sea level rise along Lake Worth Lagoon.

Our firm's Principal, **Jannek Cederberg**, has been utilizing the MIKE21 software package by the Danish Hydraulic Institute (DHI) for wave, hydrodynamic, and sediment transport studies since 1999 – long before numerical models were used commercially in the US. In addition to MIKE21, our staff has experience using the US-based SMS/ADCIRC model and Dutch-based Delft/Swan model. This experience proves extremely valuable in understanding the limitations and uncertainty in modeling results. We are currently using MIKE21 to simulate the changes associated with maintenance dredging of the Intracoastal Waterway adjacent to Peanut Island for Palm Beach County.



Coastal Permitting and Environmental Services

Execution of the Town's coastal construction projects can present regulatory hurdles and challenges due to the protected resources found along the Town's coastal habitat, including hardbottom, shorebirds, turtles, and dune vegetation. With two former FDEP regulators on staff, Cummins Cederberg is uniquely positioned to efficiently work through complex environmental issues, and successfully navigate the FDEP and U.S. Army Corps of Engineers (USACE) permitting process. Cummins Cederberg has extensive experience with processing Joint Coastal Permit (JPC), Coastal Construction Control Line (CCCL) Permit, Environmental Resource Permit (ERP), and Department of the Army Permit Applications for inlet management, beach nourishment, dune restoration, shoreline stabilization and marina projects. Our team of marine biologists and regulatory specialists include former FDEP regulators with strong relationships to current regulators at the State and Federal level. These senior managers are supported by a staff of marine scientists with extensive experience in permitting and biological monitoring in south Florida.

The permitting for the beach and dune projects is mainly handled through the Individual Project Authorization (IPA) process associated with the BMA at the State level. Federal permits are still required until such time as the USACE is a party to, or has a similar regulatory vehicle to, the BMA. Our experienced permitting team is familiar with the Town's projects. **Jordon Cheifet** and **Gina Chiello** reviewed the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS); **Jordon Cheifet** helped obtain a permit under the BMA for the Mid-Town Groin Construction project; **Danielle Irwin** was instrumental in the development of the BMA while working for the State, and **Jessica Ward** provided permitting support for the Reach 8 and Mid-Town Beach Nourishment projects. **Jessica Ward** also prepared NEPA documents, Biological Assessments and Essential Fish Habitat Assessments for various projects, and most recently conducted benthic monitoring throughout the Town under the BMA.

Our in-depth knowledge of the BMA can be leveraged by the Town to expedite future projects identified under the CCMP. The BMA has reached its first five-year review point with FDEP and should be reauthorized. This management document can become more powerful by incorporating the Federal review. Now that multiple years' worth of biological hardbottom monitoring data has been collected island-wide, the analysis of hardbottom exposure can provide the basis for a BMA 2.0. Focus will be put on establishing a threshold level of background variability of ephemeral hardbottom cover island-wide, so projects are not liable for burial of nearshore hardbottom if within natural variability. Cummins Cederberg marine biologist, **Jessica Ward**, has completed biological monitoring under the BMA and will bring an in-the-water level of knowledge to the discussion on the ephemeral marine resource management. BMA 2.0 will include pursuit of a programmatic environmental assessment related to dredge readiness at the Lake Worth Inlet and on the ICW. **Danielle Irwin** is involved with the USACE on a similar programmatic environmental assessment for dredge readiness on the Gulf Intracoastal Waterway that can provide some lessons learned for a similar approach to be applied to the BMA.



Topographic/Bathymetric Surveying

The collection of accurate topographic and bathymetric data is the basis of any successful coastal infrastructure project. *Terraquatic* (TAI) has provided surveying, mapping, and construction staking services to the Town during the Mid-Town Beach Groin Construction project and is familiar with working in its unique coastal environment. Whether it is surveying an easement for a new coastal structure, the as-built location of a new coastal structure, or conducting beach profiles to support the Town's ongoing annual monitoring program, our Team can provide the Town with the technical expertise required to support any coastal project.



Geotechnical Investigations

The Town's beach nourishment projects may require substantial input from geotechnical experts. The Cummins Cederberg team brings technical expertise to the Town for both upland and offshore geotechnical investigations. Our team's experience throughout South Florida allows us to be familiar with the specific requirements for project planning, permitting, construction, and monitoring. Our team can support the Town's beach nourishment projects with sediment testing, including granulometric, Munsell color, and carbonate analyses. *Tierra South Florida* (TSF), our upland geotechnical subconsultant, has extensive experience working in the Town on a variety of geotechnical projects including work on private seawalls, the Palm Beach Country Club, Flagler Memorial Bridge replacement, and Morton & Barbara Mandel Recreation Center. TSF can also provide recommendations for the design of deep foundations (e.g. pile-panel groins, seawalls, docks) and construction materials testing. Cummins Cederberg also understands that the Town periodically conducts offshore sand searches to support the Mid-Town and Phipps Ocean Park Beach Nourishment projects. *American Vibracore Services* (AVS), our offshore geotechnical subconsultant, has supported the Town's offshore sand search efforts in the past. This experience and familiarity with the Town's nearshore environment will facilitate the Town's efforts to locate a cost-effective, beach compatible sand sources for dredging and pumping onto the Town's beaches.



Bidding Assistance

Cummins Cederberg can provide the Town technical assistance throughout the bidding process. Our job does not end when we deliver construction documents to a client. We have a thorough understanding of marine construction, which allows to develop accurate Opinions of Probable Construction Cost (OPCC) for each project. An accurate OPCC allows Public Works to establish a realistic budget for a project, which is presented to the Shore Protection Board and Town Council and reduces the potential for additional budget approvals. Our team has developed professional relationships with marine contractors throughout South Florida and is familiar with which firms are qualified to perform work on the Town's projects.

Construction Management

The high-profile nature of the Town's coastline requires attention to detail throughout the construction process by both the engineer and contractor. Cummins Cederberg understands that the Town has unique challenges to manage when constructing a coastal project including limited beach access, a seasonal influx of traffic, and a beach that is continuously used by the public. The Cummins Cederberg team brings extensive experience managing coastal construction projects with engineering staff with unique contractor experience and understands how to manage a marine contractor to deliver a successful project to the Town in a safe, cost-effective, timely manner. Depending on the project scale, our team of engineers and scientists bring the ability to provide periodic or continuous site observations to a project. Our project manager for this RFQ designed and managed the recently constructed Mid-Town Beach Groin project while with his former firm, which required daily construction observations along South Ocean Boulevard and continuous communication with Town staff.



Public Outreach & State Funding Requests

Public Outreach

Town projects typically require managing the concerns of multiple stakeholders, including residents and non-profit organizations. If required for a coastal project, Cummins Cederberg can organize, moderate, or participate in workshops or meetings as part of a public outreach plan. Our marketing team can also organize print media notifications and digital campaigns (e.g. social media) to notify the public of the Town's coastal projects. We have conducted numerous outreach events to describe and solicit input from stakeholders for coastal and marine projects. Our team has significant experience with public outreach for large condominium waterfront projects, where board meetings with more than 50 people are very common.

State Funding Requests

Funding for beach and inlet projects comes in part from the State of Florida in the form of legislative appropriations. These appropriations are determined in part based on a ranked list of projects submitted to the FDEP in the form of local government funding requests (LGFRs). In the FY19/20 LGFR list of 28 projects to be funded submitted to the legislature, the Town had one project on the list, Mid-Town Beach Nourishment, that ranked 20th. The ranking is dictated by Florida Administrative Code 62b-36, a rule last updated under the direction of team member, **Danielle Irwin**. Between **Danielle's** depth of understanding of project ranking, **Jordon's** experience submitting LGFRs on behalf of local governments, and **Jacob's** experience with storm reimbursements while embedded in FEMA, our team will work to leverage the Town's projects for additional State and Federal funding.



Emergency Response & Inter-Governmental Coordination

Emergency Response

The Town's coastal location may require rapid engineering response including pre-/post-storm damage assessments, which include beach condition inspections, monitoring, and reporting. Cummins Cederberg will be servicing this RFQ from our Jupiter office, which is fully staffed with coastal/structural engineers and environmental permitting staff who are capable of quickly responding to the Town's needs. Our team has provided post-hurricane assessments to the City of Marathon and City of Miami Beach.

Our team could also provide rapid structural assessments of the Town's waterfront infrastructure including the Town docks, North Ocean Boulevard seawall, Mid-Town seawall, and other similar Town-owned assets should they sustain storm damage. Cummins Cederberg has provided these services to Clients to document storm damage and to facilitate insurance claims for repair and/or replacement efforts. Recently 20,000 feet of seawall and revetment were inspected for the entire perimeter of the Town of Bay Harbor Islands.

Inter-Governmental Coordination

While the Town successfully manages its coastline using internal staff, with technical support from outside consultants, occasional inter-governmental coordination may be required. Cummins Cederberg has experience working with local, County, State, and Federal governmental entities to execute both straightforward and complex coastal projects requiring management of each parties' interests. For example, we currently hold a contract for coastal engineering services with Palm Beach County and are familiar with their process of managing coastal projects. We could leverage this relationship to support the Town's ongoing management of the Sand Transfer Plant. While Palm Beach County operates the Sand Transfer Plant under a contract with the Town, the Town owns the Sand Transfer Plant and remains financially responsible for major repairs and upgrades.

Additionally, the BMA was built on inter-governmental coordination that can always be improved. We propose to bring the Federal agencies into the BMA through the development of a programmatic environmental assessment to aid in streamlining the Federal permitting related to coastal projects under review by NOAA's National Marine Fisheries Service and the U.S. Fish and Wildlife Service.



Coastal Data Administration

The Town's coastal program requires the collection and distribution of large data sets including aerial images, beach surveys, and monthly beach condition photographs. Management of these data is vital to the Town's continued implementation and assessment of its coastal infrastructure. More than half of the Cummins Cederberg staff has experience using Geographic Information Systems (GIS) to manage and analyze spatial data. Cummins Cederberg could leverage this experience to develop a coastal asset management tool to facilitate efficient tracking of the Town's spatial assets, maintain historical records, and sustain an accurate inventory. Our environmental staff has extensive experience managing and analyzing historical hardbottom and seagrass data as part of Joint Coastal Permit (JCP) and Environmental Resource Permit (ERP) applications, which could be incorporated into the asset management tool to evaluate historical trends in this nearshore resource. Cummins Cederberg also has established relationships with website developers who could assist with an update to the Town's Coastal Protection website.



Estuarine Enhancement

While the Town has been largely focused on its oceanfront shoreline, we also recognize that the Town has an extensive shoreline fronting Lake Worth Lagoon. In recent years, several projects have been undertaken by Palm Beach County and multiple stakeholders to improve water quality and enhance and restore the estuary's habitats. The Town itself has been involved in various projects to improvement the Lagoon's water quality and enhance estuarine habitat, such as the Par 3 Golf Course Habitat Restoration Project which involved creation of a living shoreline through installation of a mangrove planter along the existing seawall. The Town also received permits in 2017 to construct the Lake Worth Lagoon Waterway Project, which involves placement of dredged material into "Bonefish Cove" located within the Lagoon and slated for future environmental enhancement and restoration by Palm Beach County.

Cummins Cederberg is currently working with Palm Beach County Environmental Resources Management and the Marine Industries Association of Palm Beach County on the design and permitting of the Lake Worth Inlet Flood Shoal Dredging Project with an overall purpose to increase navigation and safety and to enhance water quality within the Lagoon. Cummins Cederberg collected bathymetric and current data using ADCP units for calibration of a numerical model to analyze sediment transport and flow conditions before and after the proposed dredging. In addition to this experience, we understand the multitude of ongoing restoration projects within Lake Worth Lagoon, the benefit of collaborating with stakeholders, and the need to establish strategic partnering to deliver estuarine enhancement solutions that benefit all local communities, including the Town.



Town Meetings

The Town has many decision makers involved in their coastal program, including Public Works, the Shore Protection Board, and the Town Council. Cummins Cederberg understands that keeping each of these groups up to date on project progress through meetings, presentations, or workshops helps to facilitate the exchange of project information in a clear and concise manner. We routinely meet with municipal staff to execute coastal projects from development through completion. More specifically, our staff gained experience with their former firms meeting with Town staff to support coastal project management, including presenting to the Shore Protection Board. As a result, we understand the level of support, attention, and detail required when meeting with the Town.



Additional Services

Underwater Inspections

The Town utilizes structures to stabilize and protect its shoreline on both the Atlantic Ocean and Lake Worth Lagoon waterfront through a combination of groins, revetments, and seawalls. The maintenance of these structures can significantly extend their service life and reduce capital costs incurred by the Town to replace these expensive structures. Cummins Cederberg is unique in South Florida by bringing expertise in both coastal engineering and structural engineering. We are capable of fielding two OSHA-compliant dive teams to conduct underwater investigations of coastal structures. Our staff includes six engineer-divers, five of which are registered Professional Engineers in Florida. As the Town moves forward with the Town Docks replacement project, implementation of a periodic maintenance program consisting of routine above- and underwater structural investigations could provide the Town with valuable information. Cummins Cederberg can assist the Town to develop and implement this management program, which could also include a plan for post-storm assessments of these assets.

Drones/Aerial Photography

The Town's use of aerial photography provides an invaluable tool to observe changes to the Town's coastline. Cummins Cederberg owns and operates an Unmanned aerial Vehicle (UAV), or drone, which we routinely use to collect data (e.g. photography, elevations) along the shoreline and in other difficult to access locations for our projects. We could deploy our drone to rapidly assess shoreline changes after a coastal storm, monitor beach/dune construction progress, or to supplement the Town's monthly beach condition update to the Shore Protection Board. Our technical staff includes a Federal Aviation Administration (FAA) certified remote pilot for small unmanned aircraft systems (drone pilot) who can not only efficiently operate the drone, but is familiar with the legal requirements for filing a flight plan with the FAA and applying for the appropriate permits to work in the Town's airspace.



Cummins Cederberg utilizes UAV's for surveying shoreline and dune systems

Key Personnel

Cummins Cederberg will serve as the Prime consultant and overall Project Manager under this RFQ. We have built a team with extensive experience in coastal engineering projects throughout Florida, including in the Town. Many of these projects included similar objectives, implementation opportunities, and challenges that will be encountered relative to the Town's coastal engineering needs. Our team of highly skilled professionals were hand-selected based upon their focused areas of expertise to address the key elements listed in the detailed scope of work, including coastal engineering, beach restoration/nourishment, coastal modeling, resiliency, and environmental permitting. We understand the needs of the Town and the necessity for an industry-leading team of professionals committed to delivering projects on time and on budget.

With more than 14 years of experience, ***our team will be led by Jordon Cheifet, PE, CFM.*** He will serve as Project Manager and will be ultimately accountable for ensuring we understand and apply the appropriate resources to meet the Town's needs. Jordon will maintain high-level contact with the Town staff throughout the course of this contract.



Jordon Cheifet, PE, CFM
Project Manager, Coastal Engineer

Team Member Highlights:

- Experience with the Town of Palm Beach
- Expertise in beach programs, waterfront structures, FEMA floodplain mapping, numerical modeling, and shoreline protection
- Significant experience in underwater investigations and GIS/GPS data collection

Jordon is a Coastal/Marine Engineer with technical and project management experience, including beach programs, waterfront structure design, FEMA coastal floodplain mapping, shoreline restoration/protection design, numerical modeling, and marina design. His field experience includes underwater waterfront facility inspections, GIS/GPS data collection and analysis, surveying, and construction administration. Jordon is a registered Professional Engineer in the State of Florida and a Certified Floodplain Manager. He has worked for the Town with his former firms, including serving as Engineer of Record for the Mid-Town Groin Construction project, performing a structural investigation of the Mid-Town seawall, assisting with obtaining permits for the Groin Rehabilitation project, and performing technical peer reviews of the Reach 8 EIS, Port of Palm Beach Expansion EIS, and the Breakers/Clarke Avenue Beach Shore Protection Design Report. He has also designed and inspected waterfront facilities for multiple municipalities including the City of West Palm Beach, City of Deerfield Beach, City of Miami, Martin County, and City of Dania Beach. These projects include bulkheads, docks, jetties, revetments, beach nourishments, and kayak/boat launch ramps. ***Jordon is available to work immediately on the Town's projects*** without any conflict of interest or on-compete restrictions from former firms.



Jason Cummins, PE
Principal in Charge, Coastal Engineer

Team Member Highlights:

- Expertise in coastal engineering, coastal modeling, surveying, ADCPs, seawall design, dredging, beach construction, and marinas
- Significant experience in planning, engineering, regulatory permitting, and construction of coastal projects

Jason is a native Floridian and is intimately familiar with the local waterfront and the Town of Palm Beach; he has spent a great deal of his life fishing and boating in the area. He earned his bachelor's and master's degrees in Civil and Coastal Engineering from the University of Florida and has been practicing coastal engineering in South Florida ever since. His experience ranges from project inception to construction, including field investigations, inspections, feasibility studies, regulatory permitting, cost estimates, comprehensive coastal engineering analyses, numerical modeling, engineering design, construction drawings, technical specifications, and construction oversight. Jason has designed shoreline stabilization and coastal structure projects including beach nourishments, dredging, steel sheet pile bulkheads, breakwaters, groins, jetties, fixed docks, and wave attenuators. He is proficient in the application of numerical models to simulate coastal processes including tidal hydrodynamics, wave propagation, sediment transport, hurricanes, and storm surge.



Jannek Cederberg, PE
Technical Advisor, Coastal Engineer

Team Member Highlights:

- Expertise in advanced coastal modeling, sediment transport, coastal structures, beach nourishment design, beach management, shoreline stabilization, and resiliency
- Served as expert witness in \$100M+ sedimentation lawsuit for 300,000 cy dredging project

Jannek is originally from Denmark and earned his master's degree in coastal engineering from the Technical University of Denmark. He has more than 17 years of experience in marine field investigations, hydrodynamics, linear and nonlinear wave dynamics, sediment transport, hurricanes, numerical modeling, coastal structure design, sea level rise, environmental permitting, and infrastructure projects. He has also conducted hurricane modeling in Florida and throughout the Caribbean creating flood maps and determining base flood elevations. Jannek has unparalleled experience with the coastal dynamics on the southeast coast of Florida, as he developed a detailed analysis of sediment transport and beach management strategies for all Miami-Dade County. The analyses include evaluating local and regional wave conditions, morphological trends, erosional hot spot assessments, shoreline response, and sediment budgets. In addition, he was the lead engineer for the Sunny Isles Shoreline Stabilization Project conducted in 2008 for the City, which evaluated local coastal dynamics and provided recommendation for long term beach management. Jannek was recently selected to participate in an expert group for PIANC related to marina design, Working Group 134 – *“Design and Operational Guidelines for Superyacht Facilities”*.



Danielle H. Irwin, CFM, PWS, LEED AP
Regulatory Review

Team Member Highlights:

- Former Chief of FDEP Bureau of Beaches & Coastal Systems
- Led the coordination of the Beach Management Agreement for the state
- Experience applying for and managing grant funding

Danielle specializes in water resource management in the State of Florida and has extensive expertise in waterfront development, shoreline erosion prevention, coastal management, stormwater practices, resiliency planning, sovereignty submerged lands regulations, marinas/ports/inlets, and seagrass, coral reef, and wetland habitat assessments. She was instrumental in the establishment of the pilot Palm Beach Island Beach Management Agreement (BMA), a regional master agreement involving the management of the beach/dune/inlet system across multiple municipalities and the County. It took a series of public meetings involving stakeholders to hash out agreement on sand specifications, ephemeral hardbottom resources, sea turtle management, and dune enhancement. Net environmental benefits were gained by reducing the number of outfalls leading to the beach, as well as through annual long-term hardbottom monitoring. Prior to joining Cummins Cederberg, Danielle served at the Florida Department of Environmental Protection (FDEP) as Director of the Division of Water Resource Management overseeing nine, state-wide regulatory programs. In addition, she held the position of Chief of FDEP's Bureau of Beaches & Coastal Systems, leading the State's coastal management program including its regulatory, funding, policy, and rulemaking aspects.



Zachary Sherman, PE
Coastal Construction Engineer

Team Member Highlights:

- Former project engineer for international dredging contractor
- Managed survey, positioning, dredge production, quality and safety for South Florida beach specific projects

Zachary brings a unique background and skillset that blends coastal construction projects from the contractor side, dredging, and coastal modeling experience. He is a Coastal Engineer who specializes in the construction administration of beach projects. He has experience in planning, engineering analysis, construction management, dredging, and inspection for marine and waterfront projects. He holds a master's degree in Coastal and Oceanographic Engineering and a bachelor's degree in Civil Engineering with a Construction Management concentration from University of Florida. He has more than 9 years of marine construction experience focused on dredging projects involving beach disposal working with Great Lakes Dredge and Dock, one of the largest dredging companies in the US. He has completed and assisted with marine construction and dredging projects in the United States, Caribbean, and Australia.



Leonard Barrera, EI
Coastal Engineer

Team Member Highlights

- Experience conducting beach nourishment projects
- Experience with numerical models for coastal processes
- Experience with floodplain modification studies

Leonard is a coastal engineer with significant experience in the planning, engineering analysis, and design of coastal and waterfront development projects in Florida and throughout the Caribbean and Latin America. His experience, ranging from project inception to construction, includes field investigations, inspections, feasibility studies, marine resources, regulatory permitting, cost estimates, comprehensive coastal engineering analyses, numerical modeling, structural design, construction drawings, technical specifications, and construction management. Leonard has conducted beach nourishment and vulnerability assessment reports throughout South Florida, as well as developing numerical models for coastal processes and floodplain modification studies.



Jacob Rice, EI
Coastal Engineer

Team Member Highlights

- Former FEMA program delivery manager – reviewing funding applications
- Beach nourishment design experience
- Experience managing FEMA Public Assistance applications for federal funded projects

Jacob is a coastal engineer who specializes in beach nourishment, coastal engineering analyses, numerical modeling, and the design of coastal structures. He was the project engineer for the Village of Key Biscayne nourishment, which included approximately 20,000 cy of fill material, and prepared the beach nourishment design to replace lost area, conducted construction administration throughout construction, and provided pre- and post-construction permitting compliance. Jacob also managed and coordinated with FEMA for the Public Assistance application to secure funding for the recent Hillsboro Beach nourishment project. He compiled permit applications for Broward County EPDMG, Florida Department of Environmental Protection, and U.S. Army Corps of Engineers and fulfilled post-construction reporting, permitting requirements, compiled bid package documents for public bid of project, and assisted in coordination with awarded contractor from pre- to post-construction. Jacob was also the FEMA Program Delivery Manager assigned to Houston following Hurricane Harvey. Jacob is uniquely experienced in managing Public Assistance applications for FEMA and working with local applicants to compile information for the application, as well as coordinating with FEMA employees to conduct site visits and gather necessary information.



Gina Chiello
Environmental Permitting

Team Member Highlights:

- Former reviewer for FDEP
- Strong background in regulatory proceedings
- Extensive experience performing marine resource surveys
- Performed peer review of Reach 8 nourishment project

Gina oversees engineering and environmental permitting projects from start to finish, including all environmental fieldwork, environmental permit processing, and permit compliance. As a former reviewer with the FDEP, she has a strong background in the permitting of dune restoration, beach nourishment, inlet management and marina type projects, as well as environmental and land use regulations at the local, state, and federal levels. Gina also has extensive experience conducting marine resource surveys and performing fieldwork throughout South Florida, including hardbottom edge mapping, hardbottom monitoring and artificial reef monitoring in compliance with permit conditions for beaches and other coastal works projects.



Jessica Ward
Biological Monitoring

Team Member Highlights:

- Specializes in marine benthic habitats in relation to beach projects
- Extensive experience performing marine monitoring
- Former Director of biological department at beach engineering firm
- Performed benthic surveys and nearshore hardbottom for Mid-Town Beach

Formerly the Director of the Marine Science & Biological Research Department at a coastal engineering firm in South Florida specializing in beach nourishment, Jessica is deeply familiar with the regulatory process for beach projects, including the JCP process and required analysis, NEPA documentation, ESA Section 7 consultation, and Essential Fish Habitat consultation. She has extensive experience preparing nearshore hardbottom monitoring plans and conducting hardbottom and artificial reef monitoring programs in compliance with permit conditions for beaches and other coastal works projects. Jessica has frequently worked with engineers on environmentally friendly designs that avoid impacts to hardbottom resources, seagrass, mangroves and listed species.

Town of Palm Beach Personnel Experience

We offer an unmatched team with members who have specific experience working on projects in the Town of Palm Beach consistently since 2012.



2012 | 30-50 Blossom Way

Jordon performed coastal engineering review for an oceanfront residential property to evaluate shoreline stability



2016 | Breakers/Clarke Ave. Beach Shore Protection

Jordon performed a coastal engineering peer review on behalf of the Town to ensure consistency with the Town's CCMP



2017 | Groin Rehabilitation

Jordon provided coastal engineering support to the Town to address public comments associated with USACE environmental permits



2017 | Mid-Town Beach Groin Construction

Jordon served as EOR and provided structural/coastal engineering design and construction administration services for a 140-foot rubble mound groin



2012-2015 | Coordination of the Beach Management Agreement

Danielle coordinated the Beach Management Agreement while serving as Chief of FDEP's Bureau of Beaches & Coastal Systems



2013 | Lake Worth Inlet

Jordon performed coastal engineering peer review on behalf of the Town for proposed channel deepening and widening as part of the Port of Palm Beach expansion



2016 | Southern Palm Beach Island Comprehensive Shoreline Stabilization

Gina and Jordon perform a peer review of the EIA for the Reach 8 nourishment project



2017 | Mid-Town Seawall Post-Irma Assessment

Jordon performed a structural investigation of the seawall to evaluate the condition after a hurricane, and provided recommendations for repair/replacement

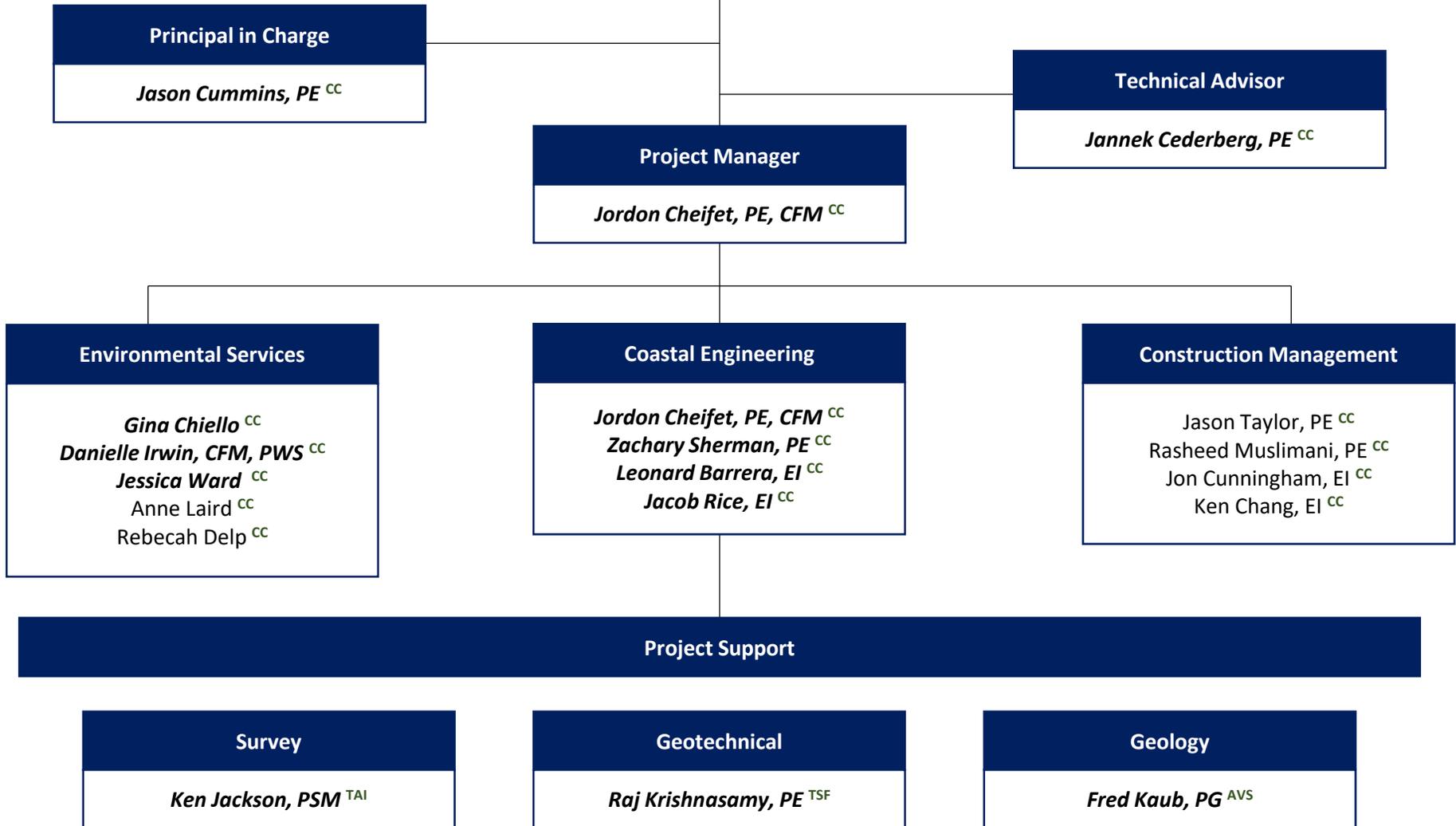


2018 | Benthic Surveys under Beach Management Agreement

Jessica performs benthic surveys and nearshore hardbottom mapping for the Mid-Town Beach Nourishment Project and Phipps Ocean Park Beach and Dune Restoration Project

TEAM ORGANIZATIONAL CHART

Legend:
Name Bold/Italic - Key Personnel, Resume Included



Jordon P. Cheifet, PE, CFM

Project Manager, Coastal Engineer

CUMMINS | CEDERBERG
Coastal & Marine Engineering



SKILLS & EXPERTISE

- Waterfront Structural Design
- Underwater Inspection Planning
- Engineering and Modeling
- Construction Plans and Specifications
- Construction Oversight
- Feasibility Studies of Marine and Coastal Engineering Projects

EDUCATION

- M.Sc. Ocean and Resources Engineering, University of Hawaii
- B.Sc. Civil Engineering, Pennsylvania State University

YEARS OF EXPERIENCE

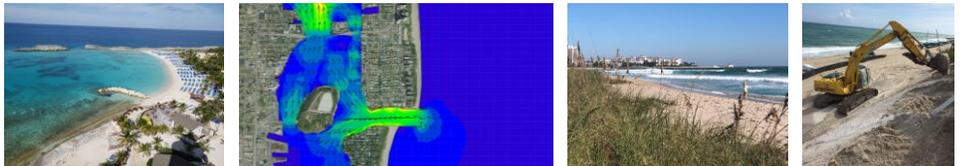
- 13

CERTIFICATIONS

- Professional Engineer – Florida No. 72876
- Certified Floodplain Manager
- Certified Video Ray ROV Operator
- Surface Supplied Air Underwater Inspection Certification
- Advanced/Rescue/Nitrox SCUBA

PROFESSIONAL AFFILIATIONS

- Association of State Floodplain Managers, Member
- Florida Floodplain Managers Association, Member



RELEVANT EXPERIENCE

Mid-Town Beach Groin Construction, Town of Palm Beach, FL (2017-2018). Mr. Cheifet provided structural/coastal engineering design for a 140-foot rubble mound groin to provide shoreline stabilization along a severely eroded portion of the Atlantic Ocean shoreline. The project included armor stones, a marine mattress foundation, and a beach fill to serve as a dry work area. Services performed included scour analyses, wave load analyses, bidding support, and construction administration. Mr. Cheifet was the Engineer-of-Record for the project.

Mid-Town Seawall Post-Irma Assessment, Town of Palm Beach, FL (2017-2018). Mr. Cheifet performed a structural engineering assessment of the Mid-Town Seawall to evaluate the current condition after damage sustained during Hurricane Irma. Engineering data obtained was used to provide recommendations for repair design including concrete hardness testing and non-destructive testing of the steel sheet pile thickness using an ultrasonic gauge. Mr. Cheifet provided engineering recommendations to the Town for possible repair and replacement of the structure.

Southern Palm Beach Island Comprehensive Shoreline Stabilization, Town of Palm Beach, FL (2016-2018). Mr. Cheifet provided coastal engineering support to respond to public comments associated with the USACE Environmental Impact Statement review process. Technical responses were prepared based on a review of the basis of design and technical documentation used to prepare the draft and final EIS documents.

Groin Rehabilitation, Town of Palm Beach, FL (2016-2017). Mr. Cheifet provided coastal engineering support to respond to public comments associated with the USACE environmental permit review process. Technical responses were prepared based on a review of the basis of design and technical documentation used to prepare the draft and final EIS documents. Mr. Cheifet prepared and submitted Individual Project Authorization (IPA) application materials to the FDEP to secure environmental permits under the Beach Management Agreement (BMA).

Lake Worth Inlet, Palm Beach Harbor EIS, Town of Palm Beach, FL. Performed a coastal engineering peer review on behalf of the Town of the proposed channel deepening and widening associated with the Port of Palm Beach expansion. The peer review included a review of the EIS for general and technical soundness relative to the Town's interests. The peer review included a review of the EIS to identify data gaps and inconsistencies to be included in the public record.

Breakers/Clarke Avenue Beach Shore Protection, Town of Palm Beach, FL. Mr. Cheifet performed a coastal engineering peer review on behalf of the Town of the proposed improvements along the Breakers/Clarke Avenue Beach to evaluate consistency with the Town's CCMP. The peer review included a review of the technical report, which identified data gaps and provided recommendations for areas of further evaluation to the Town.

30-50 Blossom Way, Town of Palm Beach, FL. Mr. Cheifet performed coastal engineering for an oceanfront residential structure. Services performed include a due diligence investigation of published technical reports, historical shorelines, and detailed review of the Town's CCMP to evaluate the long-term viability of shoreline stability along the properties.

Bakers Haulover Inlet Feasibility Study, City of Sunny Isles Beach, FL. Mr. Cheifet performed a coastal engineering peer review of the Feasibility Study on behalf of the City for the proposed Inlet Management Plan update. The peer review included a review of the Feasibility Study for general and technical soundness relative to the City's interests; specifically, updrift impacts and conservation of sand local resources. The peer review included a review of the Feasibility Study to identify data gaps and inconsistencies to be included in the final Inlet Management Plan.

Vessel Exclusion Zone, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering design and permitting services for a vessel exclusion zone. Services provided include coordination with the Corps, FDEP, FWC, and Broward County to permit a series of buoys along the City shoreline. The project included sediment probes to determine buoy foundation requirements, engineering design, and preparation of plans and specifications. Mr. Cheifet also provided construction administration services including an underwater post-construction inspection.

Hurricane Irma Pier Repairs, City of Deerfield Beach, FL. Mr. Cheifet performed a structural engineering assessment of the International Fishing Pier to evaluate the current condition after damage sustained during Hurricane Irma. Engineering data obtained was used to provide recommendations for repair design. Mr. Cheifet provided structural engineering design and construction administration services for the repair of the structure.

Artificial Reef, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering design and permitting services for construction of a recreational artificial reef in the nearshore along the Deerfield Beach shoreline. A materials assessment of an existing boulder stockpile was completed along with sediment probes to determine sand depth in the project area. The project included a stability analysis to size the stone size for the design storm and preparation of plans and specifications. Mr. Cheifet also provided construction administration services including an underwater post-construction inspection.

Storm Berm Nourishment, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering permitting and design services for a nourishment project along the shoreline damaged by Hurricane Matthew. Services provided include preliminary design and submittal of an FDEP Coastal Construction Control Line (CCCL) permit application. Mr. Cheifet also prepared and submitted a Storm Impact Assessment Report to FEMA for funding assistance.

FEMA Coordination, City of Deerfield Beach, FL. Mr. Cheifet provided coastal engineering services to support a FEMA storm damage claim from Hurricane Matthew. Mr. Cheifet prepared and submitted a Storm Impact Assessment Report to FEMA for funding assistance which included a review of pre-and post-storm surveys, volume calculations, and preparation of cost estimates for the project. Processing of the FEMA damage claim is ongoing.



EDUCATION

- M.Sc. Coastal Engineering, Technical University of Denmark

YEARS OF EXPERIENCE

- 17

CERTIFICATIONS

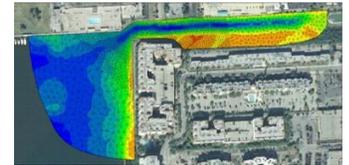
- Professional Engineer – Florida No. 69839

PROFESSIONAL AFFILIATIONS

- Permanent International Association of Navigation Congress
- Member of PIANC Working group
- Design and Operational Guidelines for “Superyacht Facilities”
- Danish Society of Hydraulic Engineering
- Florida Association of Environmental Professionals
- Urban Land Institute

SKILLS & EXPERTISE

- Waterfront Engineering and Planning
- Coastal Resiliency
- Numerical Modeling
- Environmental Permitting
- Coastal and Marine Structures
- Coastal Processes - Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Matheson Hammock Park Sea Level Rise Flood Mitigation Study, Coral Gables, FL. Mr. Cederberg served as Senior Project Manager to prepare a Sea Level Rise Flood Mitigation Study to analyze the impacts of sea level rise on the park’s infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting. Compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the Park; assessed the condition of existing infrastructure to understand conditions, remaining service life and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Town of Bay Harbor Islands Resiliency and Seawall Condition Assessment, Bay Harbor Islands, FL. Shoreline assessment and island resiliency study for the entire Town of Bay Harbor Islands. The shoreline assessment included 20,000 feet of shoreline, including seawalls, rock revetment, residential areas, bridges, and they causeway that connects the town to the mainland. LiDAR survey data was processed to provide 3D elevation map, and an analysis of the water levels to predict sea level rise, along with tidal data analysis.

Crandon Park Marina, Key Biscayne, FL. Field investigations including bathymetric surveying, tide and current measurements, marine resource survey, and sediment sampling. Tidal hydrodynamic modeling along with wave and sediment transport analyses conducted to determine source and magnitude of marina sedimentation problem. Alternatives assessment of potential coastal structures to inhibit sedimentation and need for periodic dredging.

Vizcaya Museum & Gardens, Miami, FL. Site plan for storm surge protection wall, environmental wetland restoration and public space. Grant application, regulatory permitting, and engineering design for marine works. Wall design

for reinforced concrete able to withstand storm surge and high wave loads associated with tropical storm event.

Regional Sediment Transport Study, Miami, FL. Shoreline and sediment transport studies performed on the coast of Miami-Dade County between Bakers Haulover Inlet and Government Cut. Numerical modeling conducted utilizing Danish Hydraulics Institute (DHI) MIKE 21 and LITPACK software to simulate waves and nearshore coastal processes.

FDOT Manatee Bridge Repair, Pinellas County. Review of hurricane and storm surge analysis completed to determine peak water level and extreme wave conditions for proposed bridge repair project. Comparison of calculated values with historical observations. Evaluated the potential impacts of dredging on wave conditions.

Village of Key Biscayne Beach Nourishment, Key Biscayne. Coastal engineering and environmental permitting for 120,000 cy beach fill and dune restoration project. Beach profile and hydrographic surveys conducted, along with sand source search, jet probes, vibrocores, and sediment compatibility analysis. Coordination of dune vegetation planting and exotic removal plan.

North District Wastewater Treatment Plant. Assessment of coastal resiliency of important infrastructure components relative to flooding and sea level rise. Analyzed storm surge impacts from historical hurricane events as well as assessed potential and magnitude of future impacts. Evaluated risk and probability of various events.

Miami Beach Emergency Truck Haul, Miami Beach. Performed surveying, data collection, volumetric and equilibrium toe of fill analysis based on available historical beach profiles for four segments of beach. This information was utilized in designing the expansion of beach segments for maintenance nourishment.

Aquazul Condominium Risk Mapping, Lauderdale-by-the-Sea, Florida. Longshore and cross-shore erosion assessment based on existing beach conditions and potential 100-year storm event. Evaluation of dune volume and consistency over 10,000 feet of shoreline north and south of subject property. Numerical modeling of wave propagation, storm surge and potential wave run up impacts. Revised flood risk mapping, processing and approval through FEMA.

Rickenbacker Causeway Recreation Area, Miami. Design of shoreline stabilization and associated public recreation area improvements along 2.5 miles of shoreline of the Rickenbacker Causeway across Biscayne Bay. Marine resource and hydrographic surveys completed, and coastal engineering analysis conducted to assess design wave conditions, sediment transport and optimum shoreline stabilization methods. Design elements included landscaping, invasive species removal with native species restoration, parking improvements, storm water management and vendor kiosks for waterfront activities.

FDOT A1A Vulnerability Study and Roadway Stabilization Design, Indian River County. Scour and wave load analysis for proposed seawall from almost 2 miles of shoreline that experienced significant erosion during Hurricane Matthew. A hydrodynamic MIKE21 model was established to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to stimulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme event under varying conditions and water levels.

32nd Street Morphological Change Study, Florida. GIS analysis of morphological changes related to the construction of three shoreline attached breakwaters at the 32nd street erosional hotspot. GIS database was established, and the morphological changes was reviewed relative to coastal processes. Based on the study, recommendations were provided for short- and long-term beach management.



SKILLS & EXPERTISE

- Planning and Feasibility of Marine Infrastructure Projects
- Underwater Investigations (SCUBA)
- Coastal Design Criteria - Tides, Waves, Currents and Hurricanes
- Structural Design of Steel and Concrete Marine Structures
- Bathymetric Surveying



EDUCATION

- B.Sc. & M.Sc. Coastal and Oceanographic Engineering, University of Florida

YEARS OF EXPERIENCE

- 15

CERTIFICATIONS

- Professional Engineer – Florida No. 71538
- Certified Diver
- FHWA A-NHI 130091 Underwater Bridge Inspection – National Highway Institute and Association of Diving Contractors

PROFESSIONAL AFFILIATIONS

- Urban Land Institute (ULI) SE Florida/Caribbean, Member
- American Society of Civil Engineers, ASCE
- American Institute of Architects
- South Florida Association of Environmental Professionals

RELEVANT EXPERIENCE

MSC Cruises Ocean Cay Marine Reserve, Bimini Islands, Bahamas. Topographic and bathymetric surveying rectified aerial photography and mapping for proposed out-island cruise destination. Environmental resource surveys and preparation of Environmental Impact Assessment (EIA) for proposed land and marine works. Detailed coastal engineering analysis, including numerical modeling of hurricane impacts. Engineering design of beach improvements and shoreline stabilization of reshaped island perimeter. Processing of EIA through government regulatory agencies.

North District Wastewater Treatment Plant, Miami, Florida. Assessment of coastal resiliency of important infrastructure components relative to flooding and sea level rise. Analyzed storm surge impacts from historical hurricane events as well as assessed potential and magnitude of future impacts. Evaluated risk and probability of various events.

Sunny Isles Coastal Analysis, Sunny Isles, Florida. Assessment of local sediment transport characteristics and the potential for shoreline stabilization along Sunny Isles Beach. An evaluation of nearshore coastal processes and sediment transport characteristics in the Project vicinity was completed. Based on the assessment, a beach management plan was prepared for long-term beach planning.

Miami Beach Emergency Truck Haul, Miami Beach, Florida. Performed surveying, data collection, volumetric and equilibrium toe of fill analysis based on available historical beach profiles and proposed fill volumes for four segments of beach. Designed fill template to maximize emergency truck haul nourishment based on observed eroded conditions. Survey stake-out of proposed fill template.

Fort Zachary Taylor State Park, Key West, Florida. Above and below water inspection of breakwaters, terminal groin, as well as topographic survey to accurately identify rock displacement and settlement. Coastal engineering design and environmental permitting for truck-haul beach fill project.

Village of Key Biscayne Beach Nourishment, Key Biscayne, Florida. Coastal engineering and environmental permitting for 120,000 cy beach fill and dune restoration project. Beach profile and hydrographic surveys conducted, along with sand source search, jet probes, vibracores, and sediment compatibility analysis. Coordination of dune vegetation planting and exotic removal plan.

Vizcaya Museum & Gardens, Miami, Florida. Site plan for storm surge protection wall, environmental wetland restoration and public space. Grant application, regulatory permitting, and engineering design for marine works. Wall design for reinforced concrete able to withstand storm surge and high wave loads associated with tropical storm event.

Dade Boulevard Seawall Replacement, Miami Beach, Florida. Marine engineering and construction drawings for 2,670 linear feet of shoreline stabilization associated with a linear park and bike path. Structural design of steel sheet pile and reinforced concrete cap, including barrier wall connection, and utility crossover detail for FPL 69KV oil-filled transmission line.

FDOT A1A Seawall, Indian River County, Florida. Scour and wave load analysis for proposed seawall for almost 2 miles of shoreline that experienced significant erosion during Hurricane Mathew. A hydrodynamic MIKE21 model was established to simulate tidal and storm surge flow. The model was calibrated relative to site specific current measurements obtained. A MIKE21 wave model was developed to simulate the wave conditions during extreme events. The scour associated with a 100-year event was determined and proper scour protection was designed. Wave loads were calculated for the proposed seawall for extreme event under varying conditions and water levels.

14th Street End Seawall Project, Miami Beach, Florida. Marine engineering for new seawall in association with street-end and storm water pump station improvements. Seawall constructed at increased design elevation from concrete piles and panels with reinforced concrete cap, as well as opening for outfall. Construction inspection performed for concrete pours and pile/panel installation.

FDOT Manatee Bridge Repair, Pinellas County, Florida. Review of hurricane and storm surge analysis completed to determine peak water level and extreme wave conditions for proposed bridge repair project. Comparison of calculated values with historical observations. Evaluated the potential impacts of dredging on wave conditions.

FDOT I-275 Seawall Repair, Pinellas County, Florida. Review of seawall design and scour protection for a proposed seawall repair and replacement project. Review of storm conditions as well as soil and wave loadings.

Tides Condominium Risk Mapping, Hollywood, Florida. Erosion and scour assessment based on existing beach and seawall conditions. Numerical modeling of wave propagation, storm surge and potential wave run up impacts. Prepared and processed letter of map revision (LOMR) based on detailed survey information and coastal design conditions.

Cap Juluca Beach Restoration, Anguilla. Evaluate sediment transport and storm impacts. Perform hydrographic and beach profile surveys. Subsurface investigations of nearshore borrow area. Design of dredge plan and beach fill template. Provide construction administration for emergency beach restoration.

Sediment Study, Turks & Caicos. Field investigations to collect sediment core samples from the seabed in multiple locations. Collected samples were tested for grain size and composition. Conducted coastal study to evaluate wind, wave and tidal forcing mechanisms relating to sediment transport.



SKILLS & EXPERTISE

- Beach Nourishment & Nearshore Hardbottom
- Coastal Construction Permitting & Mitigation
- Hardbottom Impacts & Mitigation
- Sustainable Waterfront Systems
- Seal Level Rise and Coastal Resiliency
- Marine Construction (mooring fields, seagrass, seawalls)
- Riparian Rights & Recreational Waterways



EDUCATION

- M.Sc. Oceanography, Florida State University
- B.A. Environmental Studies, University of Southern California
- B.Sc. Biology, University of Southern California

YEARS OF EXPERIENCE

- 22

CERTIFICATIONS

- Flood Plain Manager
- Professional Wetland Scientist
- LEED Accredited Professional BD&C

PROFESSIONAL AFFILIATIONS

- Florida Association of Environmental Professionals, Tallahassee Area Chapter Board Member
- Florida Floodplain Managers Association
- Association of State Floodplain Managers
- Florida Shore and Beach Preservation Association
- Society of Wetland Scientists

RELEVANT EXPERIENCE

Hillsboro Inlet Management, Broward County, FL. Assisted the District with their inlet management activities including their annual bypass reporting, permitting of their inlet improvements to the jetty, marine resource mapping and compliance assistance. Negotiated the sovereignty submerged lands easement for the jetty improvements. Transplanted corals from the jetty to an artificial reef and monitored.

Hollywood Beach Nourishment, Hollywood, FL. Provided consulting services related to the permitting and compliance assistance for the City's beach nourishment project. Services include the development of their biological monitoring plan, permit modifications at the local, state, and federal level, and compliance assistance following the biological monitoring.

St. Lucie Inlet, Martin County, FL. Coordinated and oversaw the FDEP review and approval of the update to the sediment budget, sand bypassing volume, and Inlet Management Plan. Negotiated agreements with the County, City of Jupiter Island, and residents on inlet dredging and beach placement frequency and locations.

Sebastian Inlet District State Lands, Miami-Dade County, FL. Coordinate with the FDEP Division of State Lands to reauthorize expired submerged land and upland easements, as well as adding new easement areas in the upland for pipeline staging and dredged materials management, all related to maintenance of the inlet.

Bal Harbour Coastal Program Management, Village of Bal Harbour, FL. Provided ongoing coastal management support for the Village including development of a Village-wide dune restoration plan, permitting and design of a beach nourishment project, providing drone aerial surveys of the Village shoreline, and representing the Village on the Bakers Haulover Inlet Technical Advisory Committee.

Post Hurricane A1A Reconstruction, Ft. Lauderdale, FL. Coordination of FDEP staff review for re-construction of storm damaged North Ocean Blvd. (aka

State Road A1A). The project included reconstruction of the road, dune enhancement and plantings, sidewalk, curb and gutter demolition and reconstruction, construction of a decorative and retaining wall with pedestrian cut outs, new stormwater runoff management system, hot spot nourishment, and reconstruction of street accesses, and driveways.

Summerhaven River Restoration, St. Augustine Port, Waterway & Beach District, St. Johns County, FL. Coordinated the FDEP review and approval of the Joint Coastal Permit for restoration of a historical river in St. Johns County. Project involved shorebird mitigation coordination with FFWCC, sand excavation, and dune and beach nourishment for sand disposal.

PortMiami Environmental Monitoring, Miami, FL. Performed biological monitoring of the artificial reef associated with Port Deepening. Analyzed field data and drafted the monitoring report for permit compliance. Oversaw biological monitoring and reporting associated with hardbottom impacts and seagrass mitigation monitoring/reporting. Assist in environmental permit compliance efforts.

Martin County Artificial Reefs, Marin County, FL. Performed sidescan sonar surveys of artificial reef structure to comply with FWC grant requirements and biological assessment of the health of the artificial reef in compliance with monitoring requirements in the County's permits from the U.S. Army Corps of Engineers.

City of Miami DDA Resiliency Guidelines, City of Miami, FL. Drafted shoreline resiliency guidelines for the City's Downtown Development Authority including recommended seawall elevation standards and living shoreline best management practices.

Boca Chica Mooring Field, Monroe County, FL. Provided consulting services related to the permitting of a proposed public mooring field project in Boca Chica basin. Services include oversight of the field services (bathymetric and marine resource surveys), conceptual mooring field design and drafting the permitting feasibility study.

Ocean Villas at Serenata Shoreline Stabilization, St. Johns County, FL. Assist the Association with determining the feasibility of obtaining armoring of their shoreline. Prepare and submit the CCCL Permit Application and Variance Petition for coastal armoring to FDEP.

Indigo Branch Drainage Basin, Clay County, FL. Bank evaluation of channelized stream through urban communities including riparian wetland assessment. Evaluated proposed flow attenuation approaches and bank stabilization methods in conjunction with the project engineer. Permit processing involving SJRWMD & ACOE.

Long Bar Pointe Mitigation Bank, Manatee County, FL. Coordination of FDEP staff review for proposed mitigation bank with enhancement of seagrasses and mangrove areas. Involvement included coordination with permit reviewer and applicant, Division of State Lands and other governing agencies, policy and applicable regulation review, review of mitigation plan and service area in a pre-application manner.

Florida Gulf Coast Mitigation Bank, Levy County, FL. Coordination of FDEP staff review for proposed ~1587 acre mitigation bank with enhancement of salt marshes, freshwater marshes, coastal scrub, and mesic flatwoods in Cedar Key. Involvement included coordination with permit reviewer and applicant, Division of State Lands and other governing agencies, policy and applicable regulation review, review of mitigation plan and service area.

Fisher Island Club Visitor Marina Improvements, Miami, FL. Environmental Permitting for marina improvements including maintenance dredging, pier replacements, and consolidation/expansion of the multiple sovereignty submerged lands easements and lease covering the marina, breakwater and jetty.

Zachary Sherman, M.Sc., P.E.

Coastal Construction Engineer

CUMMINS | CEDERBERG
Coastal & Marine Engineering



EDUCATION

- M.Sc. International Transportation Management, SUNY Maritime
- M.Sc. Coastal & Oceanographic Engineering, University of Florida
- B.Sc. Civil Engineering, Construction Management, University of Florida

YEARS OF EXPERIENCE

- 11

CERTIFICATIONS

- Professional Engineer – Florida No. 78550
- Third Mate Unlimited Oceans, USCG
- USACE QC Management for Contractors
- Association of Ship Brokers and Agents Charter Party Certificate
- Tankerman Barge Person in Charge
- Crane Rigging Awareness
- PADI SCUBA

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- Tau Beta Pi Engineering Honor Society
- Chi Epsilon Civil Engineering Honor Society

SKILLS & EXPERTISE

- Waterfront Engineering and Planning
- Construction Management, Administration, and Inspections
- Capital and Maintenance Dredging Management
- Beach Nourishment Management
- Hydrographic and Topographic Surveying



RELEVANT EXPERIENCE

MSC Cruises Ocean Cay Marine Reserve, Bimini Islands, The Bahamas. Dredging, turbidity management, and planning for proposed out-island cruise destination. Coastal armor and construction review for proposed land and marine works. Detailed coastal engineering analysis and site assessment for hurricane impacts. Engineering design of beach nourishment plan and shoreline stabilization of reshaped island perimeter.

Miami Harbor Deepening, Miami, Florida. Provided site engineering management for the Dredge Texas on the environmentally sensitive \$205.6M Port Miami Deep Dredge Project. Led an engineering team responsible for daily field engineering tasks including survey works, dredge positioning and planning, daily production monitoring, and adherence to contract quality control requirements. Provided assistance with seagrass mitigation area material placement and monitoring.

Great Stirrup Cay Development, Exumas, The Bahamas. Pier design and analysis for cruise ship private island destination improvements to accommodate 5,000 passenger cruise ships. Evaluated potential cruise ship pier alternative locations, and island infrastructure improvements.

Sunset Harbour Yacht Club, Miami Beach, Florida. Repairs of concrete slabs, caps and piles for 125 slip yacht marinas. Provided construction administration services to review in accordance with construction documents and environmental permits, specifically the replacement of timber marginal dock and concrete pile/panel repair.

Seahaven Superyacht Marina, Dania Beach, Florida. Site inspections for new marina design consisting of approximately 1,200 feet of new bulkhead for a deep-water yacht basin located in the Dania Cut-Off Canal. Part of the canal was excavated in order to create a new marina basin connected to the canal for this 40-slip superyacht marina. Bulkhead consists of steel sheet piling with concrete batter piles and reinforced concrete capping beams.

Derecktor Megayacht Yard Travel Lift Piers, Dania Beach, Florida. Managed the bidding process, assisted and made recommendations for contractor selection. Cummins Cederberg provided marine engineering services for the

extension and relocation of existing travel lift piers located at the Derecktor shipyard, and designed pier extensions associated with 900-ton travel lift and new piers for relocation of a 200-ton travel lift.

Truck Haul Beach Nourishment, Sunny Isles and Hillsboro, FL. Provided construction administration and oversight of 28,500 CY and 37,200 CY projects. Coordinated permit compliance requirements for both Coastal Construction and Joint Coastal Permits.

Crandon Park Marina Shoreline Stabilization, Miami, Florida. Construction administration of rock revetment shoreline protection and mangrove planter system. Coordinated meetings, submittal review, payment application certifications, RFI's permitting modifications and close-out.

Dinner Key Marina, Miami, Florida. Conducted post-Hurricane Irma waterfront structures' and utilities' inspections, assessments, and summary reports.

Eden Isles, Miami, Florida. Construction bidding and review for new construction of fixed docks and seawall.

Wheatstone LNG Project, Onslow, Western Australia, AUS. Engineer in charge of environmental field operations consisting of several subcontractors on \$1.2B remote Western Australian capital dredging project removing 25M cubic meters of material for 16 km long shipping channel and protected harbor basin. Led mobilization of environmental monitoring scope, provided environmental vessel operations management, conducted environmental incident investigations and issued recommendations, developed environmental plans and procedures to prevent and/or mitigate project impacts during construction, and designed an IALA compliant temporary navigation aid system.

Duval County Beaches, Miami Beach Nourishment, Panama City Beach Nourishment, Florida. Quality Control Systems Manager ensured project works were completed in adherence with contract documents. Compiled and reviewed submittal documents, maintained submittal database and tracked government review timelines, lead weekly stakeholder meetings, interfaced with environmental monitoring firms, city and state officials, private interests, and technical divers.

BP Oil Berm, LA, Bethany Beach, DE, Ocean City, New Jersey. Provided engineering, survey, quality control, reporting, and safety support for hydraulic cutter suction, trailing suction hopper, clamshell dredging, and beach nourishment operations. Utilized state of the art surveying equipment and software to document dredging and beach fill progress including hydrographic and beach profile surveys



EDUCATION

- M. Sc. Ocean Engineering, University of Miami,
- B. Sc. Civil Engineering, University of Miami

YEARS OF EXPERIENCE

- 5

REGISTRATION

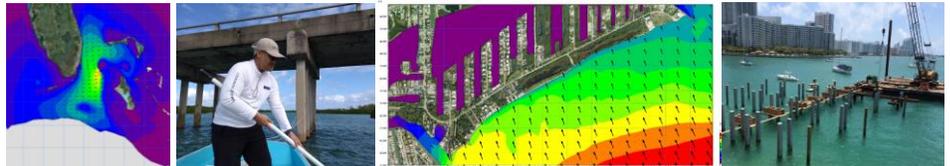
- Engineering Intern, E.I. – Reg. No. 1100019727

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)
- Society of Hispanic Professional Engineers (SHPE)
- Urban Land Institute (ULI) SE Florida/Caribbean

SKILLS & EXPERTISE

- Waterfront Structural Engineering
- Coastal Resiliency
- Numerical Modeling
- Coastal Siting and Design
- Marine and Coastal Structures
- Coastal Processes – Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Higgs Beach Sand Replenishment, City of Key West, FL. Conducted a benthic survey to document the general extent, species, and density of seagrasses and other potential marine resources of concern (e.g., corals), that may be growing on the submerged substrate within the proposed fill template, as well as, conducted an equilibrated toe-of-fill (ETOF) analysis, to estimate the seaward location of the sand placement and profile adjustment, referred to as the ETOF, based on the profile translation method. Based on the proposed fill conditions, a representative equilibrium profile was established for three profiles, based on an equilibrium of the proposed beach fill template and seaward translation of the native beach profile. This information was summarized into a report, along with recommendations for design adjustments.

Town of Bay Harbor Islands Resiliency and Seawall Condition Assessment, Bay Harbor Islands, FL. Shoreline assessment and island resiliency study for the entire Town of Bay Harbor Islands. The shoreline assessment included 20,000 feet of shoreline, including seawalls, rock revetment, residential areas, bridges, and they causeway that connects the town to the mainland. LiDAR survey data was processed to provide 3D elevation map, and an analysis of the water levels to predict sea level rise, along with tidal data analysis.

Matheson Hammock Park Sea Level Rise Flood Mitigation Study, Coral Gables, FL. Assisted in preparing a Sea Level Rise Flood Mitigation Study to analyze the impacts of sea level rise on the park's infrastructure and operations, as well as develop flood mitigation concepts for planning and budgeting. Compiled existing survey data within the Park and LiDAR data for the area to prepare a general topographic map for the Park; assessed the condition of existing infrastructure to understand conditions, remaining service life and adaption feasibility relative to sea level rise; performed an assessment of the environmental conditions on site to generally understand and document current conditions, as it would relate to environmental permitting; conducted an engineering analysis to provide extreme tide water levels; developed flood mitigation concepts and preliminary cost estimates; coordinated stakeholder involvement; developed an implementation strategy; and presented the results and findings into a report.

Coco Plum Beach Erosion Study and Beach Design, Marathon, FL. Prepared an erosion study for the City of Marathon in Monroe County. Services under this project included the implementation, recommendations from the erosion study, assisting the City by coordinating with the regulatory agencies, and the preparation and submittals of the necessary permits. As part of the erosion study, a detailed statistical analysis of offshore wave data was conducted along with a wave propagations study. Based on the results of the wave modeling and sediment transport study, the underlying coastal processes of the erosion trends were documented and utilized in the beach and coastal structure design process. The area triggering the beach erosion was identified and solutions for stabilizing this area, while still providing sandy beach access, was developed.

Brickell Key Island Coastal Resiliency Study, Brickell Key Island, FL. Site inspection to identify vulnerable areas, including the perimeter of the entire Brickell Key Island. Analyses of sea level rise and extreme tide events were conducted to understand water level design conditions. The potential for increased storm impacts was assessed. Recommendations for long term planning was provided along with mitigation options. Construction documents and environmental permitting was conducted for the design. The design focused on adapting existing infrastructure to provide a cost-effective solution.

Ocean Pointe FEMA Coastal Vulnerability Study, Tavernier, FL. Performed a coastal vulnerability study and analysis with respect to the feasibility of a FEMA Letter of Map Revision (LOMR) which would revise the flood zones within the property of Ocean Pointe Condominiums. It was unclear if the vegetation coverage was enough in density and cross-sectional width, so a vegetation assessment and feasibility study was conducted for the FEMA LOMR. FEMA approved the LOMR and the modified flood hazard information for the community.

Sheraton Key West FEMA Coastal Vulnerability Study, Key West, FL. Performed a coastal vulnerability study and analysis with respect to the feasibility of a FEMA Letter of Map Revision (LOMR) which would revise the flood zones within the property of Sheraton Key West. Based on a review of the site conditions and 100-year storm surge level, it appeared feasible to modify the flood insurance rate map which would reduce construction and term insurance costs. Cummins Cederberg prepared and submitted the LOMR which was approved and the proposed revision to the existing flood insurance rate map was adopted.

Key West by the Sea FEMA Coastal Vulnerability Study, Key West, FL. Coastal engineering studies and risk mapping according to FEMA standards to determine the risk for coastal flooding along the shoreline of Key West by the Sea. Data collection of offshore wind and wave data was conducted, and statistical analysis of extreme events was performed. Based on wave and beach conditions, an erosion analysis was conducted to assess wave and flood conditions during a 100-year storm. A wave propagation study was conducted based on the eroded profile to determine the shallow water effects on wave height and specifically the wave crest elevation. The vulnerability analysis and the coastal risk mapping were reviewed, approved and adopted by FEMA.

MSC Ocean Cay Marine Reserve, Bimini Islands, Bahamas. Topographic and bathymetric surveying rectified aerial photography and mapping for proposed out-island cruise destination. Environmental resource surveys and preparation of Environmental Impact Assessment (EIA) for proposed land and marine works. Detailed coastal engineering analysis, including numerical modeling of hurricane impacts. Engineering design of beach improvements and shoreline stabilization of reshaped island perimeter. Processing of EIA through government regulatory agencies.

Coastal Engineering Analysis for Pearns Point Development, St. Johns, Antigua. Cummins Cederberg was retained to prepare a coastal engineering analysis relative to a proposed development located along the western shoreline of Antigua. The primary components of the proposed development include the construction of several beaches along the southern shoreline of Pearns Point. The coastal engineering analysis evaluated the coastal process at the site relating to the construction of beaches and shoreline stabilization as well as conceptual designs.

Jacob Rice, E.I.

Coastal Engineer

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Coastal & Marine Engineering



EDUCATION

- M. Sc. Ocean Engineering, University of Miami
- B. Sc. Civil & Environmental Engineering, Carnegie Mellon University

YEARS OF EXPERIENCE

- 3

REGISTRATION

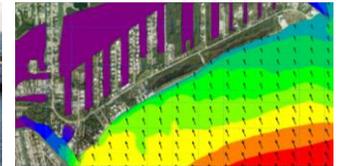
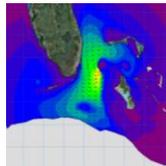
- Engineering Intern, E.I. – Reg. No. ET021632

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)

SKILLS & EXPERTISE

- Waterfront Structural Engineering
- Coastal Resiliency
- Numerical Modeling
- Coastal Sitting and Design
- Coastal Processes – Waves, Currents, Sediment Transport and Hurricanes



RELEVANT EXPERIENCE

Key Biscayne Beach Nourishment, Key Biscayne, FL. Designed a beach layout on Key Biscayne's beach that was impacted by Hurricane Matthew of approximately 20,000 cubic yards of fill material. Assisted in coordination with Miami-Dade DERM, Florida Department of Environmental Protection, and U.S. Army Corps of Engineers for permit modifications and compliance. Assisted in compiling construction and construction specifications for construction. Provided construction administration throughout duration of construction of the project. Provided post-construction close out and reporting for compliance with public agencies.

FEMA Program Delivery Manager, Houston, TX. Assigned to Houston, Texas as a Program Delivery Manager to coordinate and manage Public Assistance (PA) applications for FEMA as a result from Hurricane Harvey. Communicated and coordinated calls and meetings with local applicants to compile (PA) applications and assist through application process. Coordinated with other FEMA employees to conduct site visits and gather necessary information required for the applications.

Great Stirrup Cay Lagoon Design, Modeling, and Survey, Great Stirrup Cay, Bahamas. Provided wave forcing calculations on a pier structure utilizing site wave conditions from MIKE21 Spectral Wave numerical model. Preliminary design of new lagoon beach area, including rock sizing for new breakwaters and beach design. Surveys northern side of Great Stirrup Cay using RTK survey equipment.

Walker's Cay Breakwater Design, Abacos, Bahamas. Walker's Cay is a marina and breakwater redesign and reconstruction in the north Abacos, The Bahamas. Provided a flushing analysis of the project utilizing MIKE21 Spectral Wave numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave conditions in the proposed marina. Analyzed results to determine if the marina fulfilled flushing requirements.

Briland Development Coastal Analysis, Harbour Island, Bahamas. Briland Development includes creation of an inland canal to provide coastal access to a lot development. Provided a flushing analysis utilizing MIKE21 Spectral Wave

numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave condition in the proposed canal. Analyzed results to determine if the canal fulfilled flushing requirements and canal layouts to produce optimal flushing.

Windermere Island Club Marina Coastal Analysis and Modeling, Eleuthera, Bahamas. Windermere Island Club Marina includes the creation of an internal basin and docking facility with small flushing 'creeks.' Provided a flushing analysis utilizing MIKE21 Spectral Wave numerical model and MIKE21 hydrodynamic model to determine hydrodynamic and wave conditions in the proposed basin and 'creeks.' Analyzed results to determine if the proposed basin and 'creeks' fulfilled flushing requirements.

Hillsboro Beach Nourishment (FEMA – Hurricane Matthew), Town of Hillsboro Beach, FL. Served as Project Engineer during the post Hurricane Matthew beach nourishment project. Designed a beach layout on the northern beach area of Hillsboro Beach that was impacted by Hurricane Matthew or approximately 30,000 cubic yards of beach fill material. Coordinated with FEMA for a Public Assistance application for federal funding for project. Compiled permit applications for Broward County EPDMG, Florida Department of Environmental Protection and U.S. Army Corps of Engineers and fulfilled post-construction reporting and permitting requirements. Compiled bid package documents for public bid of project and assisted in coordination with awarded contractor from pre- to post-construction.

Gina Chiello, B.Sc.

Marine Scientist, Environmental Permitting

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Coastal & Marine Engineering



SKILLS & EXPERTISE

- Environmental Permitting
- Sovereign Submerged Lands Issues
- Marine Resource Assessments and Mapping
- Environmental Impact Assessment / Environmental Impact Statement
- Mitigation Assessment and Planning



EDUCATION

- Graduate Certificate Geographic Information Systems, Florida Atlantic University
- B.S. Marine Biology, University of West Florida

YEARS OF EXPERIENCE

- 11

CERTIFICATIONS

- NAUI Rescue Dive Certification
- American Academy of Underwater Sciences (AAUS) Scientific Diver Certified

PROFESSIONAL AFFILIATIONS

- American Academy of Underwater Sciences (AAUS)
- Florida Association of Environmental Professionals (FAEP), Treasure Coast Chapter (TCC), Treasurer
- Urban Land Institute (ULI) SE Florida/Caribbean, Member

RELEVANT EXPERIENCE

Coco Plum Beach Erosion Study and Beach Design, Marathon, Florida Keys. Coastal engineering study of erosional hot spot and development of shoreline stabilization concepts to provide long term stability for the City of Marathon. Detailed statistical analysis of offshore wave data was conducted along with a wave propagations study utilizing the advanced MIKE21 wave model. Sediment transport study conducted based on local wave dynamics. A marine resources survey and beach vegetation survey was performed to identify potential impacts by Project construction.

Hillsboro Inlet District Maintenance Dredging & Sand Bypassing, Broward County, Florida. Managed project and secured permit modifications from the USACE, DEP, and Broward County. Several permit conditions were modified to better suit the ongoing nature of the maintenance dredging and sand bypassing activities of the Hillsboro Inlet District. Provided as needed environmental and engineering consulting services with regards to permit compliance.

Currie Park Boat Ramp, West Palm Beach, Florida. Conducted a marine resource assessment of the submerged lands, as required by the environmental regulatory agencies to evaluate impacts related to the proposed project consisting of a boat ramp, new navigation channels, and staging docks, and as required to secure permits for the proposed project. A Field Observation Report was prepared documenting the extent, species, and density of existing marine resources. Secured permits from the USACE, DEP, USCG and FWC.

Village of Key Biscayne Beach Re-nourishment, Village of Key Biscayne, Florida. Conducted marine resource assessments of the nearshore seagrass habitat using the Braun Blanquet method to monitor twenty-seven 35-meter-long transects and conducted nearshore seagrass edge mapping, to evaluate any unanticipated project related impacts. Monitoring Reports were prepared, per the project specific permit requirements, documenting the findings of the nearshore seagrass edge surveys and Braun Blanquet monitoring data.

City of Lake Worth Outfall Projects, FDOT District 4, Florida. Conducted a marine resource survey and seagrass assessment to identify potential seagrasses growing within the project limits. Project site is located within Johnson Seagrass (*Halophila johnsonii*) Range, therefore the National marine Fisheries Service (NMFS) recommendations for sampling *Halophila johnsonii* were followed. A Field Observation Report was produced documenting the presence of seagrass, seagrass species and density, as well as the dominant species, corals, vegetation, and other marine resources of significance along the project shoreline.

Higgs Beach, 1000 Atlantic Boulevard, City of Key West, Monroe County, Florida. A marine resource survey was performed along approximately 570 linear feet of shoreline. The purpose of this survey was to document the general extent, species, and density of seagrasses and other potential marine resources of concern (e.g., corals), that may be growing on the submerged substrate within the proposed fill template. The findings of the marine resource survey were summarized in a Field Observation Report, which will be furnished to the relevant environmental permitting agencies and referenced as to avoid and minimize impacts to marine resources.

Matheson Hammock Park, Miami, Florida. Performed a preliminary assessment of the condition of existing natural resources (mangroves and seagrass) to document species, extent and adaption feasibility relative to sea level rise for Miami-Dade County Parks, Recreation and Open Spaces. Identified potential environmental constraints relative to flood mitigation improvements. The observations were summarized in the Sea Level Rise Mitigation Study Report.

Bakers Haulover Inlet, Village of Bal Harbour, Florida. Conducted marine resource assessment of existing jetty and proposed footprint of reconfigured jetty as required by environmental regulatory agencies to evaluate impacts related to proposed Project and as required to secure permits for proposed Project. A Field Observation Report was prepared documenting extent, species, and density of existing marine resources.

Hollywood Beach Re-nourishment, Hollywood, Florida. Conducted pre-construction transect installation and biological monitoring including hardbottom mapping, *Acropora cervicornis* health tracking, and assessment of the nearshore reef using BEAMR, and conducted post construction hardbottom and epifaunal edge surveys. Monitoring reports were prepared per the project specific permit conditions.

Hillsboro Beach Re-nourishment, Town of Hillsboro Beach, Florida. Conducted marine and coastal surveys including marine resource investigations, pipeline corridor surveys, hardbottom mapping, *Acropora* sp. Surveys, in-water sea turtle surveys, weekly escarpment surveys, and year-long shorebird monitoring.

U.S. Coast Guard Sector Key West, Key West, Florida. Under contract to conduct an updated marine resource assessment of the existing submerged bottom, dock and bulkhead structures, in accordance with the NMFS recommendations for sampling *Halophila johnsonii*, the Recommended Survey Protocol for *Acropora spp.*, and the FKNMS Protocol for Benthic Surveys for Coral Resources in FKNMS, to document the extent, species, and density of corals, sponges, and seagrasses growing within the Project area, necessary to evaluate impacts related to the proposed marine improvements and assist with concept planning. A Field Observation Report will be prepared.

Ocean Cay Development, Bahamas. completed marine resource surveys to provide an understanding of the existing conditions of the marine environment surrounding Ocean Cay. The assessment included roving and transect surveys, detailed habitat mapping, and photo and video surveillance. Data was analyzed to identify species abundance and diversity, habitat complexity, as well as overall resource complexity and health at the Project site. Ms. Chiello also assisted in preparing the Environmental Impact Assessment for the BEST Commission. She supported conducting additional marine resource surveys and coastal vegetation surveys to identify potential excursions that the cruise line could offer to their patrons. As part of construction administration services, Ms. Chiello reviewed consistency with the EMP.

Jessica C. Ward, M.Sc.

Marine Scientist, Environmental Permitting

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Coastal & Marine Engineering



EDUCATION

- M.Sc. (Dual) Marine Biology and Coastal Zone Management, Nova Southeastern University, Oceanographic Center
- B.Sc. Marine Biology, University of West Florida

YEARS OF EXPERIENCE

- 22

CERTIFICATIONS

- PADI Divemaster; Drysuit Diver; Rescue Diver; Enriched Air Nitrox Diver (IAND/EANx); Specialty Diver; Open Water Diver
- TBOSIET offshore safety
- NOAA/MMS Protected Species Observer for the Gulf of Mexico

PROFESSIONAL AFFILIATIONS

- Florida Association of Environmental Professionals
- Society of Wetland Scientists

SKILLS & EXPERTISE

- Environmental permitting
- Marine resource assessments and mapping
- Environmental Impact Assessment/NEPA
- Impact avoidance and mitigation planning/design
- Artificial reef design and monitoring
- ESA Section 7 Consultation



RELEVANT EXPERIENCE

Beach Management Agreement (BMA), Mid-Town Beach Nourishment Project, Phipps Ocean Park Beach and Dune Restoration Project, Town of Palm Beach, Florida (2018). Conducted benthic surveys of nearshore hardbottom communities within the BMA Agreement Area in Palm Beach County, and along regulatory monitoring transects for the Mid-Town Beach Nourishment Project and Phipps Ocean Park Beach and Dune Restoration Project. Contributed to data analysis and report preparation.

Wiggins Pass Inlet Management Study, Collier County, Florida (2011). Participated in the 2011 inlet management study for Wiggins Pass, to compile data regarding its coastal processes and inlet and shoreline dynamics. Acted as liaison coordinating with adjacent parks managers, conducted natural resource data collection including benthic resource surveys, and worked with project engineer on elevation designs to protect mangroves within the inlet. Also contributed to the JCP application for interim dredging of the inlet.

2006 Collier County Renourishment Project, Florida (2006-2010). Post-construction monitoring was conducted for the 2006 beach project which placed sand on Vanderbilt Beach, Park Shore Beach, and Naples Beach via hopper dredge. In addition to the 2006 beach fill project, channel dredging of Doctor's Pass in 2006, Wiggins Pass in 2005 and 2007, and Clam Pass in 2007 resulted in the additional placement of sand between R18 and R-62. Monitoring involved *in situ* evaluation of hardbottom communities in the vicinity of the project area to evaluate potential impacts to marine resources from sand placement. Conducted nearshore hardbottom monitoring as per permit requirements and reviewed monitoring reports and permit-required deliverables to the FDEP.

Town of Longboat Key Beach Renourishment Project, Florida (2005-2011; 2018). Five years of post-construction monitoring of nearshore hardbottom resources was conducted to detect any unanticipated impacts associated with the 2005-06 renourishment project for the Town. Also conducted nearshore hardbottom mapping and monitoring in 2018 for the *Longboat Pass Navigational Maintenance Dredging Project*.

Environmental Assessment for the Town of Longboat Key Beach Renourishment Project, FL, 2011. An Environmental Assessment (EA) report was prepared according to NEPA for the Bureau of Ocean Energy Management (BOEM, formerly Marine Minerals Service). The project entailed the use of an offshore sand source on the Outer Continental Shelf and thus under BOEM jurisdiction. The EA document was prepared in support of obtaining a BOEM lease for the sand source, or borrow area. The borrow area is planned to be hopper dredged for placement along the Longboat Key shoreline for the Town's next beach nourishment.

Mitigation Reefs for the Town of Longboat Key Beach Renourishment Program, FL (2005-2011; 2018). Series of artificial reefs made from limestone boulders placed as compensatory mitigation for beach nourishment activities along Longboat Key. Active management techniques and coral recruitment enhancers (larval attractants, grazers) were implemented to aid in establishment of target epibenthic communities, and reduction of temporal lag in habitat function. Macroalgae, coral colonies and urchins were transplanted to designated areas of artificial reefs.

Nearshore and Borrow Area Monitoring for Siesta Key Beach Renourishment Project, Siesta Key, FL (2005-2011; 2018). Pre-construction and post-construction monitoring of nearshore hardbottom habitat was conducted in accordance with permit conditions for the Siesta Key beach renourishment projects (2007; 2016). Offshore monitoring of hardbottom resources surrounding the project borrow areas was also conducted weekly for the duration of dredging during the 2007 project. Also conducted emergency coral rescue through transplantation of damaged coral near the borrow area.

Manatee County Artificial Reef (Enhancement Reefs) Biological Monitoring, Manatee County, FL (2011). A series of artificial reefs constructed from multiple materials and installed in both bay and offshore areas, were placed by Manatee County for the purposes of fisheries enhancement. Ms. Ward was responsible for the design of a comprehensive monitoring program that examined the colonization of both benthos and fish to the reef installations. She also led the field surveys, conducted all statistical analyses and was responsible for the preparation of the report to the County.

Broward County Segment III Shore Protection Project, Florida (2005-2011; 2018). In support of permitting the next County nourishment project, a baseline characterization of nearshore hardbottom resources was conducted. Benthic resources were first mapped and then characterized using an *in situ* quadrat-based methodology. Quantitative fish censuses were conducted at each sample location and towed video documentation of the entire project length was collected. Surveys for juvenile green sea turtles (*Chelonia mydas*) were also conducted. A comprehensive GIS deliverable was prepared along with a baseline report. Ms. Ward took part in the characterization and oversaw the production of deliverables.

Broward County Segment II Shore Protection Project, Florida (2011; 2018). Extensive pre-construction and post-construction monitoring were conducted in association with the County renourishment. Fifty-two transects were monitoring using an *in situ* quadrat method. Sedimentation and coral health were also monitored. Data were placed into an interactive GIS deliverable for the client. Ms. Ward took part in every monitoring event for seven years, assisted in statistical analyses and write-up, and oversaw the production of later reports and deliverables. She was also responsible for attending monthly beach team meetings and coordination with the client.

Hollywood Interim Beach Nourishment Project, Florida (2018). Conducted benthic community biological monitoring, data analyses, impact evaluation, and permit-required reporting for nearshore hardbottom habitats for the 2017 Hollywood Interim Beach Nourishment Project.

Lake Worth Lagoon Comprehensive Seagrass Mapping Project, Palm Beach County, FL (2018). Conducted extensive groundtruthing for seagrass distribution throughout the entire Lake Worth Lagoon resulting in comprehensive seagrass map of the Lagoon. Survey is conducted every five years for Palm Beach County.

Terraquatic, Inc.
6836 Bayshore Drive
Lantana, Florida 33462



Professional Resume - Kenneth C. Jackson, P.S.M.

Title: President

Contract Assignment: Director of Surveying

Education:

Palm Beach Community College,
Land Surveying

Registration:

Licensed Professional Land Surveyor, Florida, 1988

Continuing Education:

Florida Minimum Technical Standards
Florida Laws, surveying and mapping
Mean High Water Determination

Corporate Experience:

Terraquatic, Inc. – Surveying & Mapping **President & Director of Surveying**

2014 - Present

- For over five years Mr. Jackson has been not only the president of Terraquatic, Inc. and responsible for managing and conducting normal business functions but is still actively involved in all field surveys either directly or overseeing specific projects.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils.
- The client base at Terraquatic, Inc. covers a wide array of private dredging firms, government agencies, coastal engineering firms and home owner associations and private home owners.

Sea Diversified, Inc. – Surveying & Engineering

Vice-President / Director of Surveying

2004 to 2014

- Mr., Jackson was responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils, underwater utility locations, including jet probe and electronic tracking of utilities related to bridge design projects. Mr. Jackson was also involved and directed several wave, current and tide studies for coastal engineering design projects, cruise ship port design and vertical datum determination for chart datums in remote locations throughout North and South America including the Bahamas and the Caribbean.
- Surveys were conducted for a diverse group of public and private clients such as the State of Florida, FDOT, several Florida Counties, large dredging firms, coastal engineering firms, port and coastal engineers and local contractors.

Terraquatic, Inc.
6836 Bayshore Drive
Lantana, Florida 33462



Sea Systems Corporation. – Surveying & Engineering
Vice-President / Director of Surveying

1992 to 2004

- In 2004 SSC partners split the company which produced Sea Diversified, Inc., so most responsibilities and field surveys tasks were an extension from SSC, with the exception of a large amount of experience with the US Army Corps of Engineers in the Jacksonville District (USACE-Jax).
- Mr., Jackson was responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys both single beam and multibeam, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils, underwater utility locations, including jet probe and electronic tracking of utilities related to bridge design projects. Mr. Jackson was also involved and directed several wave, current and tide studies for coastal engineering design projects, cruise ship port design and vertical datum determination for chart datums in remote locations throughout North and South America including the Bahamas and the Caribbean.
- Surveys were conducted for a diverse group of public and private clients such as the USACE-jax. District, State of Florida, FDOT, several Florida Counties, large dredging firms, coastal engineering firms, port and coastal engineers and local contractors.

Coastal Planning & Engineering, Inc. – Surveying & Engineering
Vice-President / Director of Surveying

1989 to 1992

- Mr. Jackson was qualifying the firm as a licensed surveyor and responsible for all surveying operations, planning, directing and performing field operations on specific projects. Responsibilities included managing field personnel, marketing, processing, reviewing and responsible for all surveys produced and certified.
- The specific survey he performs on a normal basis, include but are not limited to, bathymetric surveys, remote sensing survey and investigations such as side scan sonar, magnetometer and geotechnical investigations, related to sediment thickness and sampling for classification of soils primarily related to beach nourishment and re-nourishment projects.
- Surveys were primarily focused on beach projects typically for municipalities and government agencies.

City of Boca Raton – Surveying Department
Survey Technician, Survey Crew Chief and Survey crew Manager

1983 to 1989

- Mr, Jackson started as a survey technician within the survey department and soon worked his way to directing the survey crews. In 1988 Mr. Jackson obtained his professional license in the State of Florida.
- While with the City Mr. Jackson was involved in several municipal projects such as road widening or route surveys, property acquisitions, preparing utility and specific purpose sketch and descriptions. He was also involved in preparing and establishing a citywide vertical control network for utility projects.

Professional Experience:

For forty-two (42) years of experience in the surveying and mapping industry with specific expertise in hydrographic and remote sensing surveys, large scale wave current and tide studies, topographic surveying, boundary surveying and geodetic control surveying. Mr. Jackson has been involved with numerous large-scale mapping projects encompassing beach and nearshore surveys, citywide canal systems bathymetric surveys, dredging projects encompassing pre and post-conditions dredge surveys, charting and volumetric evaluations. His experience also includes remote sensing surveys such as side scan sonar, magnetometer and sub-bottom profile surveys. For underwater investigations, Mr. Jackson is a certified Nitrox Diver, participating in underwater video and inspections, underwater mapping for environmental projects, tide/wave/ current investigations, and various other diver-assisted surveys.

Locations:

Mr Jackson not only has experience working throughout the entire state of Florida but also in the following locations:

- ✓ Bahamas, including fiber optic cable as-built surveys throughout over 18 individual islands.
- ✓ Turks & Caicos
- ✓ Haiti, five separate projects for cruise ports, port development and hurricane assessment surveys
- ✓ Dominican Republic two projects hurricane assessment and dredge survey for the Carnival Port built in 2016
- ✓ Puerto Rico, multiple projects for the USACE, San Juan Harbor, aerial target placement large scale mapping surveys and the re-alignment of the Rio De Manati in Barceloneta (river survey and city-wide mapping for flood protection)
- ✓ British and US Virgin Islands including, St Thomas, St. John's, Tortola, Virgin Gorda
- ✓ St Maarten. Cruise & Cargo Port monitoring surveys, port hurricane clearance bathymetric and remote sensing surveys.
- ✓ St. Kitts, Nevis & Antigua, dredging projects for shipping and cruise ports
- ✓ Panama, 1999 aerial mapping for new canal design coast to coast aerial target placement and geodetic control survey.
- ✓ Roatan Honduras, cruise port development and private cable surveys
- ✓ Maracaibo, Venezuela, oil spill survey assessment on behalf of Lloyd's of London Insurance.
- ✓ French Guyana, Cayenne, route survey near the mouth of the amazon river for a fiber optic cable design.

Client Base:

- Palm Beach county, DERM
- Town of Palm Beach
- Miami Dade County
- Broward County
- City of Sanibel
- Lee County
- Collier County
- Florida DOT
- USACE, Jacksonville District
- Great Lakes Dock & Dredge
- Weeks Marine
- Orion Construction
- Moss / Kiewit Joint Venture, Port Everglades
- Olsen & Associates
- Cedarburg / Cummins

FRED KAUB
PROFESSIONAL GEOLOGIST



PROJECT ASSIGNMENT

Geotechnical Investigation

YEARS OF EXPERIENCE

With this firm: 17

With other firms: 13

PROFESSIONAL REGISTRATION

Florida Registered Geologist #1344

Florida Licensed Water Contractor

#11236

Louisiana Geoscientist #1107

EDUCATION

B.S., Geology, Indiana University, 1987
(white Star Endowment Scholarship)

CERTIFICATIONS:

SafeGulf; SafeLand; OSHA; ISNetworld; Huet

OTHER:

Member of American Institute of Professional Geologists

Professional Member of ASBPA and FSBPA

Named Business Leader Magazine's 2012

Entrepreneur of the Year

CONTACT INFORMATION

Email: Fred@americanvibracore.com

Cell: 561-414-7631

KEY QUALIFICATIONS

Mr. Kaub co-founded American Vibracore Services (AVS) and served as CEO since its inception in 2002 until 2019. During Mr. Kaub's tenure, his work has involved leading the company and directing environmental and geotechnical field investigations including conducting pre-dredge studies, subsurface and subaqueous soil investigations, hydrogeological studies, vibracore investigations, grab sample investigations, CPT investigations, geophysical investigations and other studies through the application of sound theoretical concepts and a practical knowledge of earth materials and marine science.

RELEVANT PROJECT EXPERIENCE

Lake Worth Lagoon Waterways, Town of Palm Beach, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. Vibracore sampling operations were conducted in the Lake Worth Lagoon Intracoastal Waterway to determine the characteristics of collected sediments in support of a channel dredging project. A shallow platform and vibracore equipment were used for the near shore operations. A total of 6 vibracores to depths of -6 MLW or until refusal were collected to within 50 feet of the proposed locations. Sediments sampled were split, logged, photographed, sampled and preserved.

Boca Raton Sand Search (North & South Search Areas), Offshore Boca Raton, Florida (2016) - Mr. Kaub served as the principal in charge and the professional geologist. We performed sand searches at locations offshore of Boca Raton in the North and South search areas during June 16, 2016 - June 25, 2016. For the vibracore sampling operations, 50 vibracore samples to depths of 20' below sea bottom or refusal were collected. A final report provided field logs, penetrometer reports, generalized subsurface profiles, core logs, particle size distribution reports and a summary of the laboratory test results of the physical parameters, all to FDEP standards.

Vibracore Sampling, Offshore Juno Beach, Florida (2016) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were the development of an offshore borrow site for beach renourishment purposes along northern Palm Beach County beaches. Sand

searches were performed offshore of Juno Beach with our 85' research vessel which was equipped with an A-frame, winch and DGPS for the coring operations. We collected 20 vibracore samples to depths of 20' below sea bottom or refusal at the designated offshore locations. All field operations were summarized in a brief report, including penetrometer graphs.

Vibracoring and Analysis – Offshore Lake Worth, Florida (2014) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were to establish geotechnical characteristics of borrow area sediments from a potential borrow area offshore of Lake Worth. All cores collected from the project were split, logged, photographed, sampled, and preserved. Laboratory tests conducted included grain size analysis, carbonate content, post carbonate grain size analysis, visual shell content, and Munsell color designation. Collected 15 vibracore samples at the designated locations.

Town of Palm Beach Geotechnical Investigation, Palm Beach County, Florida (2011) - Mr. Kaub served as the principal in charge and the professional geologist. The purpose of this geotechnical investigation was to characterize the quality and beach compatibility of sand in potential borrow areas for beach nourishment projects in the Town of Palm Beach. The project collected 20 vibracores from offshore areas immediately north and south of the Lake Worth Inlet, and from 500' to 3,500' offshore of the Town of Palm Beach and Singer Island, Florida.

Golden Triangle Marsh Creation Project, Lake Borgne, Louisiana (2018) - Mr. Kaub served as the principal in charge and the professional geologist. The Golden Triangle wetlands is an important natural buffer that is one of the multiple lines of defense protecting vulnerable communities in and around the city of New Orleans from storm surge. The project goal was to identify a borrow area containing 6 - 9 million cubic yards of suitable marsh fill material and design a project to create new wetland habitat, restore degraded marsh, and reduce wave erosion outside of the Inner Harbor Navigation Canal surge barrier. Our geotechnical investigation collected vibracores and grab samples within the borrow area.

Town of Oak Island, Offshore of Oak Island, North Carolina (2019) - Mr. Kaub served as the principal in charge and the professional geologist. To assist the Town of Oak Island in their master plan for shore protection and beach nourishment efforts, we performed geological field investigations consisting of vibracore sampling and laboratory analyses to evaluate potential borrow sources. Borrow areas surveyed include offshore sources, inlets, navigation channels and upland disposal areas. The investigation consisted of a minimum of 150 cores and maximum of 200 cores, providing flexibility to shift cores from borrow areas that contained undesirable material based on the field inspections.

U.S. Geological Survey Sediment Vibracore Sampling, Offshore Breton Island, Louisiana (2015) - Mr. Kaub served as the principal in charge and the professional geologist. Our responsibility was the collection of marine sediment vibracores at 52 locations around Breton Island. The purpose of the project was to provide base level geologic and morphologic information to support the restoration of bird habitats.

Jacksonville Beach Fishing Pier Geotechnical Exploration, Jacksonville, Florida (2018) - Mr. Kaub served as the principal in charge and the professional geologist. Our role consisted of providing the design team with geotechnical services to support the reconstruction of the Jacksonville Beach Fishing Pier. Site and subsurface data were collected within the proposed offshore pier footprint area. Laboratory testing was performed to facilitate classification of samples and to determine engineering indexes. Testing included Atterberg limit testing, particle size distribution and unit weight determinations. A geotechnical engineering data report summarized

soil characteristics for pile design considerations for unit weight, effective unit weight, internal friction angles, undrained shear strength, subgrade modulus, shear modulus, unit skin friction and ultimate end bearing capacity.

Vibracore Borings and Laboratory Testing, St. Johns County, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. For St. Johns County's shore protection project in St. Augustine Beach, a sand search investigation was performed by collecting vibracores within the proposed offshore borrow area. The work was performed within state waters, off the southeast coast of Florida, approximately 30 miles south of Jacksonville and adjacent to the city of St. Augustine, Florida. Vibracore sampling occurred at two locations. Twelve borings were collected on the eastern edge of the St. Augustine Inlet ebb shoal and twelve additional borings were collected approximately 1 to 2 miles offshore of the town of Vilano Beach. Water depths in these areas were approximately 30' to 60'.

Big Carlos Pass Channel Dredging in Lee County, Florida (2017) - Mr. Kaub served as the principal in charge and the professional geologist. To support a channel dredging project, we performed vibracore sampling in the Big Carlos Pass location. A 28' shallow draft vessel and an electric coring machine were utilized for the operations. A penetrometer measured coring advance rates and penetration depths. Collected 8 vibracore samples below the sea floor to an elevation of at least -14' NAVD.

Charleston Harbor Vibracoring, Charleston, South Carolina (2016) - Mr. Kaub served as the principal in charge and the professional geologist. Vibracore boings and washprobe soundings were taken within the reaches of Charleston Harbor and within the harbor entrance. The resulting geotechnical and laboratory analysis was evaluated by the USACE Wilmington and Charleston Districts for developing their Beneficial Use of Dredged Material Plan for the Preliminary Engineering and Design (PED) of the Charleston Harbor Post-45 Deepening.

Subsurface Investigation and Geotechnical Laboratory Testing Results, NC 12 S-Curves and Vicinity – Rodanthe, North Carolina (2013) - Mr. Kaub served as the principal in charge and the professional geologist. Project objectives were to establish geotechnical characteristics from potential offshore borrow areas near Rodanthe in Dare County, North Carolina, with the intent to restore barrier island beaches. A total of 100 vibracores were collected. Cores were then analyzed per USACE project guidelines with a report prepared of the findings.



RAJ KRISHNASAMY, P.E.

PRESIDENT, PRINCIPAL ENGINEER
32 Years of Experience



PROFESSIONAL QUALIFICATIONS

EDUCATION

- MS in Geotechnical Engineering, University of Memphis, 1995
- BS in Civil Engineering, Christian Brothers University, 1987
- Diploma in Electronic Engineering, Malaysian Air Force Institute, 1984

PROFESSIONAL ORGANIZATION AND REGISTRATION

- Professional Engineer: Florida, 53567
- Water Well Contractor, Florida, 11346
- Certified OSHA Supervisor
- Certified Environmental Consultant

PROFESSIONAL EXPERIENCE

Mr. Raj Krishnasamy, P.E., President and Principal Engineer of TSF, is a Florida State registered Geotechnical Engineer with over 32 years of experience. Mr. Krishnasamy oversees the geotechnical engineering, construction materials testing, and inspection services operations. His experience consists of successfully completing over 5,000 public and private projects. He serves as Project Manager for continuing contracts with over 20 Florida public agencies. He has a history of repeatedly retaining those contracts through successful, cost-effective and prompt execution of each task order. Mr. Krishnasamy's daily involvement with the in-house and field operations of the construction and geotechnical services departments provides him the "hands-on" experience and knowledge of current construction codes and construction practices throughout the State of Florida. Mr. Krishnasamy and his highly experienced team focus on providing the client with a consistently accurate, cost-effective quality product that is delivered on time and within budget.

TOWN OF PALM BEACH PROJECT EXPERIENCE

- Bradley Park Improvements
- Rapaport Seawall Soil Improvements
- Community Center
- Flagler Memorial Bridge (SR A1A)
- PBC South County Tennis Center
- Morton & Barbara Mandel Recreation Center
- 2175 Ibis Isle Road
- Palm Beach Four Seasons Exterior Renovation
- TOPB Roadway Rehabilitation #2
- Seaview Park and Recreation Center
- Palm Beach Country Club
- 125 Casa Bendita
- R.G. Kruesler Park Restroom Building
- Drainage Improvements for Town of Palm Beach
- Flagler Memorial Bascule Bridge
- Pine Walk Transfer Facility Ramp Repairs
- Southern Boulevard Bascule Bridge
- Southern Boulevard Watermain Crossing
- Mast Arms at Wells Road and North County Road
- Port of Palm Beach - Bulkhead Reconstruction/Slip Dredging at Slip No. 3
- Port of Palm Beach - Siwertell Ship Unloader
- Temple Emanu-El

My Accountant

Tax & Financial Services

100 E Granada Blvd #214B • Ormond Beach, FL 32176

Tel: 954-972-3776 • Fax: 800-987-6470

kylee.miller.e.a@gmail.com

April 9, 2019

To whom it concerns,

This letter is to confirm that Cummins Cederberg Inc has an adequate accounting system in place to support the needs of the Department's audit requirements. I am not aware of any material modifications that would be necessary to be in accordance with generally accepted accounting principles.

Cummins Cederberg Inc's accounting system provides for proper segregation of direct costs from indirect costs, identification and accumulation of direct costs by contract, a timekeeping system that identifies employees labor by intermediate or final cost objectives, interim determination of costs charged to a contract through routine posting of books of account.

Their billing system allows for timely notification to prime contractor of overpayments/underpayments, segregation of incurred costs that may be non-billable, adjusting submissions for final rates or indirect billing rates that differ from billed rates, identifies costs that require specific approvals, and segregation and exclusion of unallowable costs, as required.

Sincerely,



Kylee Miller #91509

Workload and Scheduling

Cummins Cederberg will work closely with the Town to *ensure all schedules and budgets are met and meet the Town's operational and administrative requirements*. The applicability of the services offered in this contract are within our core services.

Workload

Our company workload allows us to quickly respond to the Town's needs and our technical staff has the availability to service any task orders that may arise under this RFQ. Cummins Cederberg's experienced project management team allows us to efficiently manage current workload with new opportunities. Our project team's familiarity with the Town's procurement and proposal procedures also allows us to effectively service both large and small task orders under this RFQ. We will service this RFQ from our fully staffed Palm Beach County office, which includes the Project Manager for this RFQ, with support from other offices to allow rapid response to the Town, regulatory agencies, and contractors who may be involved in projects under this RFQ.



ON
TIME



ON
BUDGET

Scheduling

To ensure that schedules are met in accordance to the Town's timeframe, a project schedule will be developed immediately upon the issuance of a notice to proceed from the Town. ***Our Project Manager for this RFQ, Jordon Cheifet, will be responsible for ensuring the overall schedule requirements for a project under this contract are met.*** Cummins Cederberg believes in having a strong Project Manager, as well as project management approach, where all lines of communication are funneled directly through the Project Manager. Our Project Manager will be responsible for maintaining a thorough understanding of a project, to provide one point of contact to the Town so project details can be effectively disseminated to the Team.



MEETS THE
TOWNS
NEEDS

Volume of Previous Work

Category: Awards totaling less than 5%

Cummins Cederberg does not have any previous work awarded from the Town of Palm Beach as a firm, and we look forward to the opportunity to provide quality coastal engineering services to the Town.

Litigation Statement

There is no action, suit, proceeding, investigation or litigation pending or, to the best of our knowledge threatened against Cummins Cederberg which may have an adverse effect on our ability to perform its obligations to the Town.



TOWN OF PALM BEACH

DRUG-FREE WORKPLACE CERTIFICATION FORM

Whenever two (2) or more bids/proposals, which are equal with respect to price, quality, and service, are received by the Town of Palm Beach for the procurement of commodities or contractual services, a bid/proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. In order to have a drug-free workplace program, a business shall:

- (1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of controlled substances is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- (2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
- (3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in number (1).
- (4) In the statement specified in number (1), notify the employees that as a condition for working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction on or plea of guilty or nolo contendere to any violation of Chapter 893, Florida Statutes or of any controlled substance law of the United States or any singular state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- (5) Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community by any employee who is so convicted.
- (6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of Section 287.087, Florida Statutes.

This Certification is submitted by Jannek Cederberg the
(Individual's Name)

President of Cummins Cederberg
(Title/Position with Company/Vendor) (Name of Company/Vendor)

Who does hereby certify that said Company/Vendor has implemented a drug-free workplace program, which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

12/2/2019
Date

[Signature]
Signature

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TOWN OF PALM BEACH

LIST OF CURRENT & PERTINENT PROFESSIONAL REFERENCE FORM

The following is a list of **at least FIVE (5)** current (within last two years) and pertinent professional references that the Town can contact in relation to Bidder's qualifications, financial stability, and experience. Failure to furnish this information may be grounds for rejection of the proposal.

1. Name and Address of Firm, City, County, or Agency	Scope of Work:	
	Date(s):	
	Amount:	
	Contact:	
	Telephone No:	
	Email:	
For Town Use Only: Reference Verified: Yes ___ No ___		Comments:

2. Name and Address of Firm, City, County, or Agency	Scope of Work:	
	Date(s):	
	Amount:	
	Contact:	
	Telephone No:	
	Email:	
For Town Use Only: Reference Verified: Yes ___ No ___		Comments:

3. Name and Address of Firm, City, County, or Agency	Scope of Work:	
	Date(s):	
	Amount:	
	Contact:	
	Telephone No:	
	Email:	
For Town Use Only: Reference Verified: Yes ___ No ___		Comments:

4. Name and Address of Firm, City, County, or Agency	Scope of Work:	
	Date(s):	
	Amount:	
	Contact:	
	Telephone No:	
	Email:	
For Town Use Only: Reference Verified: Yes ___ No ___		Comments:

5. Name and Address of Firm, City, County, or Agency	Scope of Work:	
	Date(s):	
	Amount:	
	Contact:	
	Telephone No:	
	Email:	
For Town Use Only: Reference Verified: Yes ___ No ___		Comments:



TOWN OF PALM BEACH
SCRUTINIZED COMPANIES

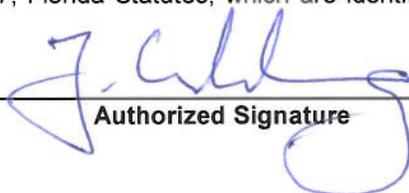
By execution of this Agreement, in accordance with the requirements of F.S. 287-135 and F.S. 215.473, Contractor certifies that Contractor is not participating in a boycott of Israel. Contractor further certifies that Contractor is not on the Scrutinized Companies that Boycott Israel list, not on the Scrutinized Companies with Activities in Sudan List, and not on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has Contractor been engaged in business operations in Syria. Subject to limited exceptions provided in state law, the Town will not contract for the provision of goods or services with any scrutinized company referred to above. Submitting a false certification shall be deemed a material breach of contract. The Town shall provide notice, in writing, to Contractor of the City's determination concerning the false certification. Contractor shall have five (5) days from receipt of notice to refute the false certification allegation. If such false certification is discovered during the active contract term, Contractor shall have ninety (90) days following receipt of the notice to respond in writing and demonstrate that the determination of false certification was made in error. If Contractor does not demonstrate that the Town's determination of false certification was made in error then the Town shall have the right to terminate the contract and seek civil remedies pursuant to Section 287.135, Florida Statutes, as amended from time to time.

This Certification is submitted by Jannek Cederberg, PE
the (Individual's Name)

President of Cummins Cederberg, Inc.
(Title/Position with Company/Vendor) (Name of Company/Vendor)

Who does hereby certify that said Company/Vendor has implemented a drug-free workplace program, which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

12/2/2019
Date


Authorized Signature

State of Florida

Department of State

I certify from the records of this office that CUMMINS CEDERBERG, INC. is a corporation organized under the laws of the State of Florida, filed on March 16, 2010, effective March 17, 2010.

The document number of this corporation is P10000023540.

I further certify that said corporation has paid all fees due this office through December 31, 2019, that its most recent annual report/uniform business report was filed on January 9, 2019, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

*Given under my hand and the
Great Seal of the State of Florida
at Tallahassee, the Capital, this
the Ninth day of January, 2019*



A. [Signature]
Secretary of State

Tracking Number: 0890632869CC

To authenticate this certificate, visit the following site, enter this number, and then follow the instructions displayed.

<https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication>



TOWN OF PALM BEACH

LIST OF PROPOSED SUBCONTRACTORS FORM

The undersigned bidder hereby designates, as follows, all major subcontractors whom he/she proposes to utilize for the major areas of work for the project. The bidder is further notified that all subcontractors shall be properly licensed, bondable and shall be required to furnish the TOWN with a Certificate of Insurance in accordance with the contract general conditions. Failure to furnish this information shall be grounds for rejection of the bidder's proposal. (If no subcontractors are proposed, state "None" on first line below.)

Name and Address of Subcontractor	Scope of Work	License #
1. Terraquatic Inc. 121 SE 24th Ave Boynton Beach, FL 33435	Survey	LB7324
2. American Vibracore Services (AVS) A Marine Division of Amdrill, Inc. 19498 Fort Dade Ave Brooksville, FL 34601	Offshore Geotech	PG1344
3. Tierra South Flroida, Inc. 2765 Vista Pkwy, Ste 9 West Palm Beach, FL 33411	Onshore Geotech	CA28073
4.		
5.		

Signature and Date J. White 12/2/2019

Title/Company President, Cummins Cederberg

TRUTH-IN-NEGOTIATIONS CERTIFICATE

TOWN OF PALM BEACH, FLORIDA
COUNTY OF PALM BEACH, FLORIDA

Before me, the undersigned authority, personally appeared Affiant, Jannek Cederberg, who being first duly sworn, deposes and says:

1. That the undersigned firm is furnishing this Truth-in-Negotiation Certification pursuant to Section 287.055(5)(a) of the Florida Statutes for the undersigned firm to receive an agreement for professional services with the Town of Palm Beach, Palm Beach County, Florida.
2. That the undersigned firm is a corporation which engages in furnishing professional engineering services and is entering into an agreement with the Town of Palm Beach to provide professional Continuing Consulting Services.
3. That the undersigned firm will furnish the Town of Palm Beach a detailed analysis of the cost of the professional services that will be required to perform various tasks as each work order is proposed.
4. That the wage rates and other factual unit costs supporting the compensation for this project's agreement will be accurate, complete and current at the time the undersigned firm and the Town of Palm Beach enters into the agreement for professional continuing consulting services and at the time of execution of each work order.
5. The undersigned firm agrees that the original agreement price and any additions thereto shall be adjusted to exclude any significant sums by which the Town of Palm Beach determines the agreement price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such agreement adjustments shall be made within one (1) year following the end of the agreement. For the purpose of this certificate, the end of the agreement shall be deemed to be the date of final billing or acceptance of the work by the Town of Palm Beach, whichever is later.

Name of Firm/Consultant: Cummins Cederberg, Inc.

By: [Signature]
Authorized Signature

12/2/2019
Date

Title: President

Attest: [Signature] (Seal)



Notary

The foregoing instrument was acknowledged before me by Jannek Cederberg who has produced _____ as identification or is personally known to me.

WITNESS my hand and official seal in the State last aforesaid this 2 day of December, 2019

