

**NASSAU COUNTY - SAISSA  
Task Order Memorandum  
Contract CM1852**

**To:** Olsen Associates, Inc.  
2618 Herschel St.  
Jacksonville, FL 32204

**Date:** 02 May 2018  
**Contract:** Coastal Engineering  
**Request Made By:** SAISSA  
**Request Received By:** Albert E. Browder, Ph.D., P.E.  
**Task Order No:** CM 1852-TO #32

**Task Order:** Nassau Sound Geotechnical Investigation for  
North Channel Relocation/Borrow Area Development  
South Amelia Island Shore Stabilization Project

The Consultant, via qualified subcontractor, shall collect up to 14 shallow seabed sediment Vibracores intended to describe the sediments along the historical northern channel alignments of the northern unstabilized tidal channel through Nassau Sound (see Scope of Work - Exhibit A). This area is proposed for investigation to seek to develop a beach-compatible sand borrow area for beach nourishment along the South Amelia Island shoreline and to relocate the northern tidal channel through the Sound to potentially relieve erosional pressure on the ephemeral Bird Island shoals complex. Consultant tasks include the development of the field test plan, management of contract and subcontractor activities, field work to provide on-board direction and engineering review, engineering design and analysis of results and borrow site development, and final synthesis, reporting, and submittal of results in accordance with FDEP guidelines. Specific subcontractor efforts include the mobilization of a coring vessel, the collection of sediment Vibracores, and the geotechnical logging, analyses, and reporting of the collected Vibracore data. Supplemental cultural resources analyses are included. These Services are potentially eligible for State cost-sharing, pending FDEP approval.

|   |                     |
|---|---------------------|
| Subtask A Sediment Vibracore Collection, Logging and Laboratory Analysis        | \$43,500.00         |
| Subtask B Supplemental Cultural Resources Investigation                         | \$33,200.00         |
| Subtask C Project Management, Engineering, Field Work, Final Report of Findings | \$28,800.00         |
| <b>TOTAL</b>  | <b>\$105,500.00</b> |
|   | (Lump Sum)          |

**Olsen Associates, Inc.**



Albert E. Browder, Ph.D., P.E.

Date: 02 May 2018

**SAISSA**



Mr. Andrew L. Wallace, SAISSA President

Date: May 9, 2018

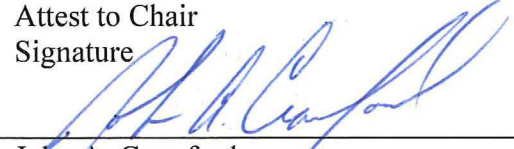
**Nassau County Board of County Commissioners**



Pat Edwards, Chair

Date: 6-11-18

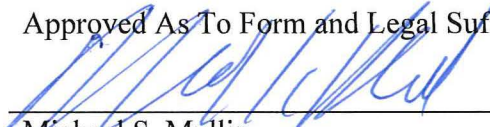
Attest to Chair  
Signature



John A. Crawford  
It's: Ex-Officio Clerk

Date: 6-15-18

Approved As To Form and Legal Sufficiency:



Michael S. Mullin

Date: 6-11-18

MES  
06-12-18

## SCOPE OF WORK

### **Nassau Sound Geotechnical Investigation for North Channel Relocation/Borrow Area Development South Amelia Island Shore Stabilization Project**

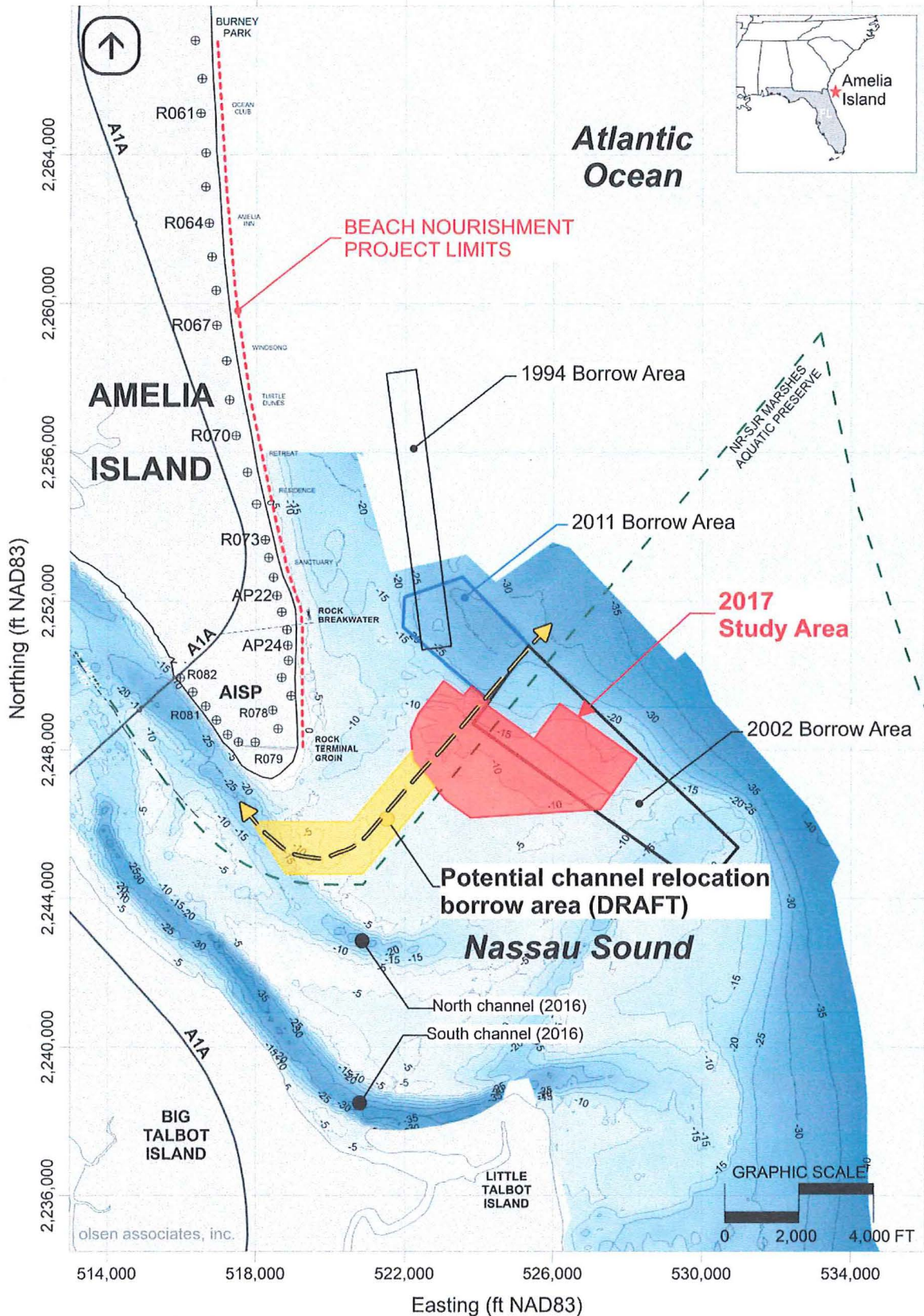
**02 May 2018**

#### **Overview**

The South Amelia Island Shore Stabilization Association (SAISSA) manages 3.0 miles of the Atlantic Ocean shoreline on the south end of Amelia Island, FL, on behalf of Nassau County, FL, through the SAIS-Municipal Services Benefit Unit (SAIS-MSBU). SAISSA partners with the Florida Park Service on behalf of Amelia Island State Park (AISP) for the adjacent 0.5 miles of Atlantic Ocean shoreline at the tip of the island to coordinate the care of both shoreline segments (**Figure 1**). The management of the overall South Amelia Island Shore Stabilization Project (FDEP R-59 to R-79) is predicated on a program of comprehensive beach nourishment, supplemented with strategic structural stabilization at the southern tip of the island. The project was initially restored via beach nourishment in 1994, and was subsequently renourished in 2002. A stabilizing 1,600-ft terminal groin and 285-ft detached rock breakwater were constructed to stabilize the south end of the project limits in 2005. The project was last renourished in 2011. Plans are ongoing for the next renourishment, presently scheduled for 2020 at the earliest.

The proposed Task includes the collection of sediment Vibracore data in the vicinity of the historical northern limits of the northern tidal channel through Nassau Sound off the south tip of Amelia Island (**Figure 1, area in yellow**). This work will supplement the larger Nassau Sound geotechnical investigation completed in 2017 (OAI, 2017, TO #17). The Task includes a supplemental cultural resources investigation to clear the added investigation area for excavation. A corresponding expansion of the overall Biological Assessment and Essential Fish Habitat documents (in prep.) will be conducted via Change Order to Task Order #23.

As depicted in **Figure 1**, Nassau Sound typically has two main tidal channels that connect the Atlantic Ocean to the Nassau and Amelia Rivers. Separating these channels is an area of ephemeral shallow shoals, known as the Bird Island shoals. Historically the shoals have included varying areas of emergent sand that have been utilized by roosting and loafing shorebirds, with occasional shorebird nesting when possible. The northern channel has a tendency to migrate southward and elongate due to shoaling pressure from sand eroding from the Amelia Island Atlantic Ocean shoreline. This southward migration result in the constriction of the shallow area between the north and south channels, creating significant erosional pressure on the Bird Island shoals and limiting the formation of dry emergent shoals for shorebird use.



**Figure 1** Location Map – Proposed channel relocation borrow area. Area abuts the previously investigated borrow area (red-shaded area, Task Order #17, OAI 2017).

By relocating the northern channel northward, via dredge excavation, to the northern limits of its historical range (specific orientation and position to be determined), the sand abandoned between the old and new north channel alignments is thus free to migrate southward and contribute to the coalescing of new, larger shoal features in the historical area of the Bird Island shoals. The sand excavated as part of the channel relocation would be used for the nourishment of the SAISSA/FPS project. Upon completion of the dredging project, the cycle of beach erosion over the 8-10 year renourishment interval of the SAISSA/FPS project is expected to cause the northern channel to again migrate southward. In this regard, the channel relocation borrow area is expected to regenerate, in part or in full, over the life cycle of the renourishment project, thus providing a recyclable source for future renourishment efforts. It is opined that additional sand could be excavated from the previously-developed areas (red-shaded areas) to provide supplemental sand volumes for future renourishment. Numerical modeling of the proposed channel-like excavation will be conducted under separate Task Orders to investigate the hydrodynamics and sediment transport potential of the potential excavation (Task Orders #30 and #31).

The proposal includes the collection of up to 14 shallow seabed sediment Vibracores, each extending up to 20 feet into the seabed. The Vibracores will be collected in the roughly 150-acre yellow shaded area in the vicinity of prior northerly locations of the north tidal channel. In this way the new data will supplement the previously collected data (shaded in red) in order to allow for a new tidal channel to be connected to deep water offshore. Work will be guided by historical records of the location of the north channel, as well as updated bathymetry proposed for collection in Spring 2018 (under separate Task Order).

Once the Vibracores have been collected, an additional supplement cultural resources investigation will be required to assess the new channel area and clear the site for excavation (or identify areas for avoidance). This work would supplement the work performed for the 2017 investigation area (Task Order #22). Lastly, supplemental information shall be prepared to augment the ongoing Biological Assessment (BA) and Essential Fish Habitat (EFH) Assessment documents currently in preparation (performed under Change Order to Task Order #23).

### **Subtask A - Field Vibracore Data Collection**

Shallow Seabed Vibracore Collection - Through a qualified marine subconsultant, it is proposed to collect as many as 14 sediment Vibracores in selected areas in the northern limits of the historical range of the northern tidal channel through Nassau Sound – roughly between 1,000 2,000 ft seaward of the south tip of Amelia Island. Vibracores will consist of three-inch galvanized steel tubes, vibrated into the seabed for approximately 20 feet (or to refusal) to extract the sample sediments in the upper seabed. The cores are acquired from a 35-ft open-deck

pontoon boat. The Vibracores are labeled, sectioned and capped on deck, and then transported to a geotechnical laboratory.

The Vibracores will be analyzed by a professional geologist, who will slice the tubes longitudinally to photograph and prepare a geologic log to describe the vertical distribution of sediments within the core, before collecting samples of the sediments within the various strata of the core. Sample selection shall be made in consultation with the Engineer (Consultant). Samples will be analyzed for grain size distribution, shell content (carbonate content), color, and fines content. In a typical Vibracore, the photographs and log shall be utilized to create one composite sample along the upper sand lens (that portion that could potentially be excavated), and to select three to four discrete samples shall be collected to describe the vertical variation in sediments, including any stratification. These data shall be prepared and submitted in accordance with Florida Department of Environmental Protection (FDEP) guidelines via a sand source development report of findings.

Deliverables: Geological subconsultant report, including map of Vibracores collected, summary table of Vibracore locations, lengths, and summary characteristics, photographs and logs of Vibracores, plots and table of sediment grain size and other characteristics, and electronic data submittal for Consultant's further use. Data will be provided in PDF, EXCEL, and GIS shape file formats.

### **Subtask B - Supplemental Cultural Resources Investigation**

Consultant shall coordinate with a qualified marine archaeological subconsultant to survey and evaluate the proposed Nassau Sound tidal channel relocation borrow area (yellow-shaded area in **Figure 1**, with buffer zone) for the presence of potentially significant cultural resources. This work shall supplement similar work performed in 2017 for the investigation area on the offshore edge of the ebb shoal (Task Order #22). The proposed borrow area (with a buffer zone) lies along the northeast edge of Nassau Sound (red shaded area in **Figure 1**). The survey, led by a qualified marine archeologist (subconsultant) acceptable to the State of Florida, will include side-scan sonar and magnetometer sweeps of the borrow area. The work shall rely upon background research on the area prepared under Task Order #22 to assist in determining the likelihood of encountering culturally significant materials. This shall include a check of the Florida Department of State, Division of Historical Resources (DHR), Master Site File. The findings of the field survey and background research shall be submitted to DHR to seek approval from the State Historic Preservation Officer (SHPO – also serves as Division Director for DHR) for dredging of the proposed borrow area. The report findings, and the correspondence from the SHPO, shall be used in the permitting process for submittal to FDEP and the U.S. Army Corps of Engineers.

Deliverables Deliverables shall include a report of findings, prepared by the marine archaeological subconsultant, and any relevant correspondence from the State of Florida. All products shall be provided to SAISSA in electronic \*.PDF format. Hardcopies of the report shall be printed upon request.

**Subtask C - Project Management, Engineering, Field Work, Final Report of Findings**

Consultant tasks include the management of contract and subcontractor activities, the development of the field test plan, field work to provide on-board direction and engineering review of Vibracore collection, engineering design and analysis of results and preliminary borrow area development, incorporation of results into the existing geotechnical database, and final synthesis, reporting, and submittal of sand search report of findings in accordance with FDEP guidelines.

Deliverables: Deliverables shall include hardcopy and electronic versions of final report of findings, including geotechnical report, maps, Vibracore logs, photos and sample data, in the appropriate PDF and gINT formats consistent with the FDEP ROSS database.

**BUDGET & POTENTIAL STATE COST-SHARE**

**Nassau Sound Geotechnical Investigation  
for North Channel Relocation/Borrow Area Development  
South Amelia Island Shore Stabilization Project**

**02 May 2018**

| Subtasks  | Total Fee           | Potential State<br>Cost-Share* (40.80%) | Local<br>Cost-Share (59.20%) |
|---|---------------------|---|------------------------------|
| a) Vibracore collection and sampling<br>(14 Vibracores) | <b>\$43,500.00</b>  | \$17,748.00                             | \$25,752.00                  |
| b) Supplemental Cultural Resources                      | <b>\$33,200.00</b>  | \$13,545.60                             | \$19,654.40                  |
| c) Project Mgmt, Final Report                           | <b>\$28,800.00</b>  | \$11,750.40                             | \$17,049.60                  |
| Totals  | <b>\$105,500.00</b> | \$43,044.00                             | \$62,456.00                  |

\*Based on most recent calculation, percentage may change in the future.

|                               |   |  |                  |
|-------------------------------|---|--|------------------|
| <b>South Amelia Island</b>    | <b>Nassau Sound Supplemental Geotechnical Investigation</b> | <b>ESTIMATED TOTAL \$ 105,500.00</b>           | <b>EXHIBIT B</b> |
| T.O. CM 1852-#32              | Field Vibracore Data Collection / Reporting                 | <b>State Cost-Share Eligible \$ 105,500.00</b> | <b>1-May-18</b>  |
| ESTIMATE: LABOR & SUBCONTRACT | <b>Channel Relocation Borrow Area</b>                       |  |                  |
|                               |   | Subtotal \$ 105,500.00                         |                  |

| DIRECT LABOR                 |                     |                    |            |                          |                          |  |             |           |                     |
|------------------------------|---------------------|--------------------|------------|--------------------------|--------------------------|--|-------------|-----------|---------------------|
| LABOR CATEGORY               | Project Mngmt/Coord | Engineering Design | Field Work | Data Assembly & Analysis | Supp. Report Preparation |  | TOTAL HOURS | 2016 RATE | COST                |
| Principal                    | 8                   | 16                 |            | 8                        | 8                        |  | 40          | \$ 192    | \$ 7,680.00         |
| Senior Engineer              |                     |                    |            |                          |                          |  | 0           | \$ 155    | \$ -                |
| Coastal Engineer I           |                     |                    |            |                          | 40                       |  | 40          | \$ 137    | \$ 5,480.00         |
| Coastal Engineer II          |                     |                    |            |                          |                          |  | 0           | \$ 100    | \$ -                |
| Coastal Engineer III         |                     |                    | 40         | 40                       | 80                       |  | 160         | \$ 90     | \$ 14,400.00        |
| Draftsman/Designer (CADD)    |                     |                    |            |                          |                          |  | 0           | \$ 73     | \$ -                |
| Administrative Assistant     | 8                   |                    |            |                          | 8                        |  | 16          | \$ 77     | \$ 1,232.00         |
| <b>SUBTOTAL DIRECT LABOR</b> |                     |                    |            |                          |                          |  |             |           | <b>\$ 28,800.00</b> |

| OUTSIDE SVCS/SUB-CONTRACTORS |              |
|------------------------------|--------------|
| SERVICE                      | COST         |
| Athena Technologies          | \$ 43,500.00 |
| TAR (Cultural Rcs.)          | \$ 33,200.00 |
| Coastal Eco-Group            | \$ -         |
|                              |              |
| subtotal                     | \$ 76,700.00 |