

Meeting Date
December 6, 2016



AGENDA	
Section	Consent
Item No.	<i>II.A.L</i>

AGENDA REPORT
BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT:	Agreement Between Brevard County and University of Central Florida (UCF) for Developing a Shoreline Habitat Restoration and Management Plan – Phase I
DEPT/OFFICE:	Natural Resources Management Department (NRM)

Requested Action:

It is requested that the Board of County Commissioners authorize: 1) the Chairman to execute a Memorandum of Agreement (MOA) substantially in the form of Attachment A; 2) the County Manager or designee to execute future amendments, as required to implement the work approved under the Indian River Lagoon Council (IRL Council) Cost-Share Agreement #IRL2016-013; and 4) any necessary budget change requests.

Summary Explanation & Background:

On November 15, 2016, the Board of County Commissioners approved executing a Cost-Share Agreement with the IRL Council for Developing a Shoreline Habitat Restoration and Management Plan – Phase I. The objective of this contract is to provide cost-share dollars to facilitate the development of a shoreline habitat restoration and management plan for the Brevard County portion of the Indian River Lagoon. Phase I of this project, selected for funding during FY2016-17, will: (1) Complete a shoreline survey to collect attribute data of the IRL's coastline within Brevard County; (2) Perform a wind and wave analysis, and; (3) Create a GIS map of shorelines including model-generated "shoreline suitability".

The ultimate goals of the Plan are to: identify and prioritize environmental enhancement and erosion protection opportunities along the IRL in Brevard County; accelerate implementation of living shorelines projects to stabilize shorelines and reduce erosion; maintain, enhance and restore estuary habitat along the IRL shoreline; and protect water quality in the Lagoon.

Due to UCF having knowledge, experience and expertise in shoreline surveys, coastal habitats, and shoreline restoration projects in the Indian River Lagoon, and per the Cost-Share Agreement, the attached MOA was prepared to contract UCF to perform services pursuant to IRL Council Agreement #IRL2016-013. If authorized by the Board, Brevard County will contract with UCF to perform services outlined in the Statement of Work in the attached MOA.

Fiscal Impact:

FY 16/17: No General Fund Impact; \$99,877.00 in Contract Revenue provided by IRL Council

FY 17/18: No Fiscal Impact

Contact: Jane Hart, NRM: 321-633-2016

Clerk to the Board instruction:

Exhibits Attached:

Attachment A: MOA between Brevard County and UCF for Developing a Shoreline Habitat Restoration and Management Plan for Brevard County – Phase I (Three (3) originals)

Attachment B: Cost-share Agreement #IRL2016-013 Between IRL Council and Brevard County

Attachment C: Signed AO29 Form

Contract /Agreement (If attached): Reviewed by County Attorney		Yes	☒	No	☐	PR	☐
County Manager		Assistant County Manager		Department Director / Extension			
Stockton Whitten				 Virginia Barker/ X 5-2435			



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001

Fax: (321) 264-6972

Tammy.Rowe@brevardclerk.us

December 7, 2016

M E M O R A N D U M

TO: Virginia Barker, Natural Resources Management Office Director

RE: Item II.A.2., Agreement with the University of Central Florida (UCF) for Developing a Shoreline Habitat Restoration and Management Plan – Phase I

The Board of County Commissioners, in regular session on December 6, 2016, executed the Memorandum of Agreement (MOA) substantially in the form of Attachment A; County Manager or designee to execute future amendments as required to implement the work approved under the Indian River Lagoon Council (IRL Council) Cost-Share Agreement #IRL2016-013; and approved any necessary budget change requests. Enclosed are three executed MOAs and Cost-Share Agreements.

Upon execution by the IRL Council, the IRL General Counsel, and the Assistant County Attorney, please return the fully-executed MOA and Cost-Share Agreement to this office for inclusion in the official record.

Your continued cooperation is greatly appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe

Tammy Rowe, Deputy Clerk

/cm

Encls. (6)

cc: Contracts Administration
Finance
Budget

**DEVELOPING A SHORELINE HABITAT RESTORATION AND MANAGEMENT PLAN
FOR BREVARD COUNTY – PHASE I
MEMORANDUM OF AGREEMENT**

**BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS
AND
THE UNIVERSITY OF CENTRAL FLORIDA BOARD OF TRUSTEES**

This Memorandum of Agreement (the "Agreement") is entered into as of the date of last signature below ("Effective Date") by and between Brevard County Board of County Commissioners, whose address is 2725 Judge Fran Jamieson Way, A-219, Viera, Florida 32940 (hereafter referred to as "BREVARD COUNTY") and the University of Central Florida Board of Trustees, having offices at 12201 Research Parkway, Suite 501, Orlando, FL 32826 (hereafter referred to as "UCF"). BREVARD COUNTY and UCF are each referred to individually as "Party," or collectively, as "Parties."

WITNESSETH

WHEREAS, UCF, in furtherance of its education and research mission, has knowledge, experience and expertise in research, coastal habitats, and shoreline restoration projects in the Indian River Lagoon of interest to BREVARD COUNTY; and

WHEREAS, BREVARD COUNTY is desirous of engaging UCF to provide services as described in this Agreement, unless otherwise amended.

NOW THEREFORE, in consideration of the above recitals and of the mutual promises and other good and valuable consideration set forth below, these parties intending to be bound, agree in advance as follows to the general terms and conditions under this Agreement.

1. STATEMENT OF WORK

UCF agrees to provide services to be performed under this Agreement in accordance with the specific Statement of Work attached as EXHIBIT A.

2. PERIOD OF AGREEMENT

This Agreement shall begin upon execution by both parties and remain in effect from the Effective Date until September 30, 2017, unless otherwise amended.

3. CONSIDERATION AND PAYMENT

- (a) BREVARD COUNTY hereby agrees to pay to UCF \$99,877.00 on a fixed price basis of \$24,969.25 at the end of each quarter to perform the services associated with the "Developing a Shoreline Habitat Restoration and Management Plan for Brevard County – Phase I Project" as specifically appropriated by the IRL Council and Contract# IRL2016-013.
- (b) UCF shall submit quarterly invoices in accordance with the compensation guidelines / payment schedule as set forth in the Statement of Work attached as EXHIBIT A, to the following address:

BREVARD COUNTY
Natural Resources Management Department
2725 Judge Fran Jamieson Way, Bldg A, Room 219
Viera, FL 32940
Attn: Jane Hart

- (c) BREVARD COUNTY shall send payment of the invoice amounts to UCF within 30 days of receipt of a complete invoice and quarterly reporting package and remitted to the following address: University of Central Florida
Contracts & Grants Payment
PO Box 160118
Orlando, FL 32816-0118.

4. PERFORMANCE

UCF will provide reasonable efforts in performing the services under this Agreement and services will be rendered at a level commensurate with professional standards acceptable in the discipline and within the scope of the project as set forth in Exhibit A, to the reasonable satisfaction of BREVARD COUNTY and IRL Council.

5. REPORTS

UCF shall prepare and submit to BREVARD COUNTY all necessary technical information as reasonably required by BREVARD COUNTY in the performance of the Agreement, including quarterly reports with invoices, consistent with IRL Council Contract# IRL2016-013.

6. SUBAGREEMENTS

UCF shall not sublet, assign or transfer any work under this Agreement without the prior written consent of BREVARD COUNTY. If applicable, and upon receipt of such consent in writing, the names of the firms responsible for such sublet, assigned or transferred portions of the work shall appear on the Invoices for Services performed.

7. SUBORDINATION

This Memorandum of Agreement is subordinate to IRL Council Contract# IRL2016-013 between BREVARD COUNTY and IRL Council, attached hereto and incorporated herein by reference, and nothing in this Agreement shall conflict with or otherwise contravene the intent of the provisions of the IRL Council Grant Agreement.

Notwithstanding the above, Article 18 of this Memorandum of Agreement shall replace and supersede Article 23 of the IRL Council Grant Agreement.

8. TERMINATION

This Agreement and the performance of all work under this Agreement may be terminated by either Party with three (3) months written notice to the other Party. BREVARD COUNTY will pay all reasonable allowable costs associated with this Agreement up through the date of termination, including any non-cancellable obligations.

9. FORCE MAJEURE

- (a) No Party shall be liable for any delays in or failure of performance due to (a) fire, earthquake, hurricane, wind, flood, act of God, riot, or civil commotion or (b) any law, ordinance, rule, regulation, or order of any public or military authority stemming from the existence of economic or energy controls, hostilities, war, terrorism or governmental law and regulation, or (c) labor dispute which results in a strike or work stoppage affecting the performance under this Agreement or any other cause beyond the reasonable control of such party. The Party affected shall promptly notify the other in writing of the nature, cause, date of commencement thereof, the anticipated extent of such delay and whether it is anticipated that any completion dates will be affected thereby.
- (b) In the event of any delay resulting from such causes and provided the affected Party has promptly notified the other and exercised due diligence as provided in Section 9 (a), the time of performance of each of the Parties hereunder (including payment of monies) shall be extended for a time period equal the period of such delay.

10. AUDIT

UCF agrees to keep full, clear and accurate books and records. Within 30 days following written request by BREVARD COUNTY, UCF shall make available for inspection and/or audit any and all records related to its performance under this Agreement. Said records are subject to inspection and audit, at the sole expense of BREVARD COUNTY, by representatives of BREVARD COUNTY and the Comptroller General of the United States during reasonable business hours throughout the term of this Agreement and for the five (5) years immediately following BREVARD COUNTY'S final payment to UCF under this Agreement. In the event an audit is initiated by BREVARD COUNTY during the five (5) years following the BREVARD COUNTY'S final payment, UCF agrees to retain any and all records associated with this Agreement until such time as any disputes arising therefrom are resolved. If any provision of this section is inconsistent with BREVARD COUNTY or DEP audit requirements, the more stringent shall prevail.

11. INDEMNITY

- (a) To the extent of the waiver set forth in Florida Statute 768.28, UCF assumes any and all risks of personal injury and property damage attributable to the negligent acts or omissions of UCF and its officers, employees, servants, and agents thereof while acting within the scope of their employment by UCF, and Brevard County assumes any and all risks of personal injury and property damage attributable to the negligent acts or omissions of Brevard County and its officers, employees, servants, and agents thereof while acting within the scope of their employment by Brevard County. The Parties further agree that nothing contained herein shall be construed or interpreted as (1) denying to any party any remedy or defense available to such party under the laws of the State of Florida, or (2) or the consent of the State of Florida or its agents or agencies to be sued.
- (b) Neither Party shall be liable to the other Party for any special, indirect, incidental or, consequential damages, however caused and whether grounded in tort (including negligence), or any other theory of liability, even if such other Party has been advised of the possibility of such damages.
- (c) Both Parties shall at all times comply, through insurance or self-insurance, with all statutory workers' compensation and employers' liability requirements covering any and all employees with respect to activities performed under this Agreement.

- (d) Nothing contained in this Agreement shall be construed as a waiver of the Parties' rights to sovereign immunity under Section 768.28, *Florida Statutes*, or other limitations imposed on the Parties' potential liability under state or federal law.

12. NO WARRANTIES

OTHER THAN TO COMPLETE THE AGREEMENT IN ACCORDANCE WITH ANY STATEMENTS OF WORK, UCF MAKES NO WARRANTY, EXPRESS, IMPLIED OR OTHERWISE, WITH RESPECT TO USE, OPERATION, EFFECTIVENESS OR FITNESS FOR ANY PARTICULAR PURPOSE OF ITS SERVICES PERFORMED UNDER THIS AGREEMENT OR THEIR RESULTS OR THAT ANY RESEARCH DELIVERABLES OR INTELLECTUAL PROPERTY DEVELOPED WILL NOT INFRINGE ANY THIRD PARTY PATENT, COPYRIGHT, TRADEMARK, OR OTHER THIRD PARTY RIGHTS. UCF MAKE NO REPRESENTATION AS TO THE USEFULNESS OF RESEARCH DELIVERABLES OR INTELLECTUAL PROPERTY. IF BREVARD COUNTY CHOOSES TO EXPLOIT RESEARCH DELIVERABLES OR INTELLECTUAL PROPERTY IN ANY MANNER WHATSOEVER, IT DOES SO AT ITS OWN RISK.

13. INDEPENDENT CONTRACTOR

BREVARD COUNTY contracts for the services of UCF as an independent contractor and not as an employee. Nothing herein shall be construed to create a partnership, joint venture or agency relationship between the Parties. Neither Party shall have the authority to enter into any agreements of any kind on behalf of the other, or to bind or obligate the other to any third party.

14. PUBLICITY

Neither Party shall make reference to the other Party in any advertising or publicity matter without prior written approval of the other Party.

15. PUBLICATION

Subject to the publication acknowledgement requirements of Contract# IRL2016-013 between BREVARD COUNTY and IRL Council, any research or research results generated in conjunction herewith shall be subject to unrestricted publication or dissemination provided that such publication or dissemination will not compromise patent rights or inadvertently divulge proprietary information of a Party.

16. CONTRACTOR REPRESENTATIVES

The following serve as the representatives of the areas indicated:

UCF:

TECHNICAL MATTERS:

Dr. Linda Walters
Dept. of Biology
4110 Libra Drive
Orlando, FL 32816-2368
Ph: 407-823-2148
Email: Linda.Walters@ucf.edu

ADMINISTRATIVE MATTERS:

Jennifer Parker
Sr. Contract Manager
12201 Research Parkway
Orlando, FL 32826-3246
Ph: 407-823-4371
Email: Jennifer.Parker@ucf.edu

BREVARD COUNTY:

TECHNICAL MATTERS:

Jane Hart
Natural Resources Management
2725 Judge Fran Jamieson Way
Bldg A, Suite 219
Viera, Florida 32940
Ph: 321-633-2016
Jane.Hart@BrevardFL.gov

ADMINISTRATIVE MATTERS:

Paul Bessler
Natural Resources Management
2725 Judge Fran Jamieson Way
Bldg A, Suite 219
Viera, Florida 32940
Ph: 321-633-2016
Paul.Bessler@BrevardFL.gov

17. REGULATORY COMPLIANCE AND GOVERNING LAW

This Agreement, and any disputes arising under it, shall be governed by and construed in accordance with the laws of the State of Florida. Where a dispute arises from a conflict between UCF's application of this Master agreement and the provisions set forth in IRL Council Contract# IRL2016-013, UCF shall be responsible for addressing the resolution of the conflict to the satisfaction of BREVARD COUNTY and in accordance with the resolutions provisions of IRL Council Contract# IRL2016-013.

18. PATENT INFRINGEMENT

UCF hereby certifies that the work, outlined in EXHIBIT A, does not, to the best of its information and belief, but without independent investigation, infringe on any patent rights.

19. SEVERABILITY AND SURVIVABILITY

The illegality or unenforceability of the whole or any part of the provisions of this Agreement will not affect the continued operation of the remaining provisions. The provisions of Sections 8, 10, 11, 12, 14, 15, 17, 18 and 19 shall survive the termination of this Agreement for a period of five (5) years.

20. ENTIRE AGREEMENT

This Agreement represents the entire understanding of BREVARD COUNTY and UCF, and may only be modified in writing and duly executed by both parties.

THE UNDERSIGNED BY THEIR AUTHORIZED AGENTS HAVE EXECUTED THIS AGREEMENT AS OF THE DATE FIRST WRITTEN BELOW.

-Signature Page Follows-

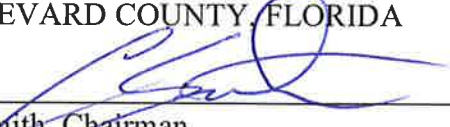
Signatures of Authorized Officials

ATTEST:



Scott Ellis, Clerk

BOARD OF COUNTY COMMISSIONERS
OF BREVARD COUNTY, FLORIDA

By: 

Curt Smith, Chairman

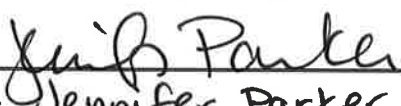
As approved by the Board on Dec. 6, 2016

Reviewed for legal form and content:



Christine Lepore, Assistant County Attorney

THE UNIVERSITY OF CENTRAL FLORIDA BOARD OF TRUSTEES

By: 

Name: Jennifer Parker
Title: Sr. Contract Manager
Date: 12/14/16

EXHIBIT A
Statement of Work

**Developing a Shoreline Habitat Restoration and Management Plan for
Brevard County – Phase I**

I. INTRODUCTION

The Indian River Lagoon (IRL) is a diverse, shallow-water estuary stretching 156 miles along more than 30 percent of Florida's east coast and is classified by the USEPA as an Estuary of National Significance. Urbanization, degradation of water quality, loss of seagrass and mangrove habitat, fisheries decline, and emerging disease and mortality of marine species have all impacted the health of the IRL in recent years. The IRL and its shoreline face additional challenges as global warming and associated sea-level rise are predicted to contribute to further habitat loss, water quality problems and stresses on plant and animal species. In addition, erosion of the shoreline is occurring as a result of strong storms, wave action, sea level rise, and development. These issues, combined with the continued rise in population along the coastal zone highlight the necessity of planning and preparation to protect coastal resources.

Traditionally, stabilization of the shoreline in many areas of the Lagoon has been accomplished with hard structures such as seawalls, bulkheads and rock revetments, creating a barrier between land and water. As an alternative, living shorelines maintain continuity of the natural land-water interface by utilizing vegetation, living and natural elements and oyster reefs or rock for added stability. Living shorelines not only provide coastal stabilization and resilience of the shoreline, they also reduce erosion, provide critical habitat for near shore species and improve water quality by filtering nutrients and sediments from overland stormwater runoff.

II. OBJECTIVE

The objective of this project will: (1) Complete a shoreline survey of 175 miles of the IRL's coastline within Brevard County; (2) Perform a wind and wave analysis, (3) Create GIS data layers that spatially represent shoreline conditions and features throughout the Brevard County portion of the IRL, (4) engage community through a live oyster propagation program, (5) install 1,180 linear feet of oyster reef living shoreline along the Indian River Lagoon in Brevard County, and (6) prepare a final report.

This objective conforms to the action plans outlined in the Indian River Lagoon Comprehensive Conservation and Management Plan to continue the restoration and rehabilitation of impacted coastal wetlands.

III. SCOPE

UCF shall perform all work required to collect data and complete shoreline assessment data listed below. Brevard County will use the data to create an Arc-GIS map of 175 miles of shoreline to identify areas suitable for establishing sustainable living shorelines.

IV. TASK IDENTIFICATION

Brevard County will contract with UCF to collect shoreline assessment data along 175 miles of Brevard County's IRL coastline by watercraft, add to an Arc-GIS shoreline map developed by county, and combine the collected data with SJRWMD wind and wave analysis tool to build a shoreline model to guide the successful placement of sustainable living shorelines. The target shoreline is the urbanized portion of the county. Federally-owned properties within the County with public access limitations are not included in the survey (see Figure 1).

Task 1. Shoreline Survey

Prior to performing the field assessment, the historic and existing shoreline location will be mapped and analyzed in the GIS environment. This data will be cross-referenced with Bing Bird's Eye View and/or Google street view to capture locations of hardened and natural shorelines. If hardened, attempts will be made to identify the material (i.e. rip rap, bulkhead, etc.). UCF will verify these lines and collect additional transect point data during the field shoreline survey. Watercraft capable of maneuvering in the near shore environment will be used. During the field survey, attribute data will be collected approximately every 100 feet in developed areas, approximately every 1,000 feet in areas with natural edges, and at every visible outfall. At these intervals, the following data will be collected and recorded:

- GPS location and latitude/longitude
- GPS point name and transect number on data sheet
- A photo to characterize shoreline combined with notation of a GPS point name on a data sheet that corresponds to naming of photos.
- Shoreline type (natural, hard-armored)
- Type of hard armoring
- Habitat type and width
- Vegetation type (natural, exotic, mix, sod, none)
- Adjacent land use (natural, commercial, residential, public)
- Severity of erosion based on the SJRWMD categories of severe, moderate, or low
- Shoreline slope
- Characterization of land use at the upland edge of the transect
- Oyster presence (Y/N)
- Water depth at 5 feet and 10 feet distance from shoreline or apparent OHW line

- Type of bottom (hard, soft, sand, muck)
- Outfall data will include photographs, approximate size (diameter) and type (i.e. concrete, metal, PVC, other), depth and approximate flow velocity of discharge water.

The assessment will include the presence and species composition of terrestrial, intertidal, or subtidal vegetation, oysters, mudflat, etc. and width of each habitat type. Erosion severity shall be described using three categories established by SJRWMD (severe, moderate, low) based on depth of eroded shoreline and presence/absence of vegetation. Adjacent land use shall be classified as natural, commercial, or residential property. Shoreline slope shall be estimated using width of intertidal habitat vs. known local tidal range. In areas of the lagoon where the astronomical tide is effectively absent, the nearshore slope shall be estimated using the measured water depth at 5 feet and 10 feet distance from shoreline or apparent OHW line.

Deliverable 1: Quarterly updates on extent of surveyed shorelines.

Due Date/Performance Period: Shoreline surveys should be complete and ready to enter into the map and model (Task 2) by June 30, 2017.

Figure 1



Task 2. Wind and Wave Analysis

St. Johns River Water Management District (SJRWMD) engineering staff will provide the modeling protocol for the wind and wave analysis to UCF. Brevard County Natural Resources Management Department will contract with University of Central Florida to conduct the wind and wave analysis in accordance with SJRWMD protocols. Boat wake energy will be estimated by calculating the distance between shoreline points and nearest boating channel. Publicly available wind data will be used to estimate range of wind speeds and frequencies of directions. A SWAN (Simulating Waves Nearshore) model grid will be created using mean sea level and water level associated with storm surge. Model runs will be conducted using wind speeds at both water levels to evaluate wind energy along shorelines throughout Brevard County. Wind and wave analysis results will be compared to published data on *Spartina alterniflora* thresholds (i.e. Roland and Douglas 1995) to guide restoration planning.

Deliverable 2: Quarterly updates on wind and wave analysis protocol development.

Due Date/Performance Period: Development of wind and wave analysis by UCF will be completed by August 31, 2017. The results of the shoreline model that will result from this analysis plus from data collected in Task 1 will be submitted by September 30, 2017.

Task 3. GIS Mapping

Brevard County Natural Resources Management Department will contract with UCF to supplement a shoreline map created by Brevard County. UCF staff will combine the data from Task 1 with the IRL wind and wave data (Task 2) to create a geodatabase in Geographic Information System (GIS) using ESRI ArcGIS 10.1. Shoreline attribute data will be converted into GIS layers for subsequent analyses and mapping. Maps created will spatially display shoreline attributes of the study area.

Deliverable 3: GIS map of shorelines from UCF data (Tasks 1 and 2).

Due Date/Performance Period: GIS map of shorelines will be submitted by July 30, 2017. GIS map of shorelines including model-generated “restoration suitability” will be submitted by September 30, 2017.

Task 4. Final Report

University of Central Florida will prepare a final report describing tasks completed during this project. The report will include a summary of UCF’s assessment methodology and field challenges and successes.

Deliverable 4: Final Report

Due Date/Performance Period: Final report will be submitted by September 30, 2017.

V. TIME FRAMES and DELIVERABLES

Proposed Schedule:

- **Task 1 - Shoreline Survey**

Deliverable 1: Progress updates on field data collection: due on 12/31/16, 3/31/17 and 6/30/16.

Due Date/Performance Period: Shoreline surveys should be complete and ready to enter into the model as of June 30, 2017.

- **Task 2 - Wind and Wave Analysis**

Deliverable 2: Quarterly updates on wind and wave analysis protocol development due on 12/31/16, 3/31/17 and 6/30/17.

Due Date/Performance Period: Development of wind and wave analysis should be completed by August 31, 2017.

- **Task 3 - GIS Mapping**

Deliverable 3: GIS map of shoreline that includes data from Tasks 1 and 2, plus GIS map of shorelines that includes “stabilization suitability”.

Due Date/Performance Period: GIS map of shorelines will be submitted by July 30, 2017. GIS map of shorelines including model-generated “shoreline suitability” will be submitted by September 30, 2017.

- **Task 4 – Final Report**

Deliverable 4: Final Report

Due Date/Performance Period: September 30, 2017

VI. BUDGET

Task Line Item	Task Description	IRL Funding Amount
1	Shoreline Survey	\$70,937
2	Wind and wave analysis	\$14,169
3	GIS Map	\$13,511
4	Final Report	\$1,260
	Project Total Cost	\$99,877

PI Name: Linda Walters
 Agency: Brevard County
 Proposal Title: Developing a Shoreline Habitat Restoration and Management Plan for Brevard County - Phase I
 Project Dates: 10/01/2016 - 09/30/2017

Budget Cost Category	RATE	Funds Requested	
		Year 1	Total Project
A. Direct Labor - Key Personnel			
PI: Linda Walters	0.5	\$ 6,744	
Co-PI: Kelly Kibler	0.5	\$ 4,278	
Subtotal Salary		\$ 11,022	\$ 11,022
Direct Labor - Other Personnel			
Post Doctoral Associate	0.5	\$ 25,000	
Graduate Student	0	\$ -	
Undergraduate Student	3	\$ 18,000	
OPS	1	\$ 7,000	
Subtotal OPS		\$ 50,000	\$ 50,000
B. Fringe Benefits			
Faculty	28.95%	\$ 3,191	
Post Doc	34.35%	\$ 8,588	
Students	0.65%	\$ 117	
OPS	2.25%	\$ 158	
Subtotal Fringe		\$ 12,053	\$ 12,053
Total Labor Costs (A+B)		\$ 73,075	\$ 73,075
C. Direct Costs - Equipment		\$ -	\$ -
D. Direct Costs - Travel			
Domestic Travel		\$ 2,888	
Foreign Travel		\$ -	
Total Travel Costs		\$ 2,888	\$ 2,888
E. Direct Costs - Participant/Trainee Support Costs	1	\$ -	
Tuition/Fees/Health Insurance			
Stipends		\$ -	
Travel			
Subsistence			
Other			
Total Participant/Trainee Support Costs		\$ -	\$ -
F. Other Direct Costs			
Materials and Supplies		\$ 1,000	
Publication Costs		\$ -	
Consultant Services		\$ -	
ADP/Computer Services		\$ -	
Subawards		\$ -	
Facility Rental		\$ -	
Tuition	0	\$ -	
Other (boat gas and maintenance)		\$ 2,305	
Total Other Direct Costs		\$ 3,305	\$ 3,305
G. Total Direct Costs (A+B+C+D+E+F)		\$ 79,267	\$ 79,267
Modified Total Direct Costs		\$ 79,267	\$ 79,267
H. Indirect Costs	26%	\$ 20,610	\$ 20,610
I. Total Direct and Indirect Costs (G+H)		\$ 99,877	\$ 99,877
TOTAL CUMULATIVE BUDGET		\$	\$ 99,877

Budget Justification

Personnel

Key Personnel

Dr. Linda Walters, Principal Investigator, salary support is requested for 0.5 summer month for the year for work performed as delineated in the Statement of Work. The salary calculation is based on the PI's current academic year contract.

Dr. Kelly Kibler, Co-Principal Investigator, salary support is requested for 0.5 summer month for the year for work performed as delineated in the Statement of Work. The salary calculation is based on the PI's current academic year contract.

Other Personnel

Postdoctoral Associate: salary support is requested to support the project research efforts. The salary amount was determined using Post Doc pay for similar projects in the College of Sciences Biology department. Post Doc will work under the supervision of PI for the specific aims of the project as described in the Statement of Work. The post doc will lead the field data collection and final model creation.

Students: salary support is requested to support three undergraduate students and one hourly student employee for the project research efforts. The salary amount was determined using student and hourly employee pay for similar projects in the College of Sciences. All students will work under the supervision of PI/Co-PI for the specific aims of the project as described in the Statement of Work. Students will assist with field data collection and data entry.

Fringe Benefits.

The fringe rate is 28.60% for faculty, 34.35% for Post Doc, 0.65% for all students and 2.25% for hourly employees.

Fringe Benefit rates are ESTIMATES for budget proposal preparations only. The Payroll Matching fringe benefits are charged to each contract or grant during the payroll process based on the ACTUAL cost of individual employee benefit elections. The current rates are effective October 1, 2014. Documentation of rates may be found at the following website:

http://www.fa.ucf.edu/CG/Publications/Fringe_12_2015.pdf

Travel

Funds to support conference travel to project site have been included.

Other

Materials and Supplies: Costs to cover costs of consumables and research equipment, such as stadia rods, transect tapes, waterproof paper, etc.

Boat usage and maintenance: Costs to cover boat fuel and any needed repairs.

F & A (Indirect Costs)

Facilities and Administrative costs are calculated at 26% on a Modified Total Direct Cost basis (off campus rate): excluding equipment over \$5,000/item, tuition, and that portion of each subcontract in excess of \$25,000. UCF's has a current federally negotiated indirect cost rate agreement with DHHS. The current rates are effective June 21, 2013. Documentation of rates may be found at the following website: <http://www.fa.ucf.edu/CG/Publications/FARA2013.pdf>

**AGENCY COST-SHARE AGREEMENT
BY AND BETWEEN THE IRL COUNCIL AND
THE BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY, FLORIDA, FOR
DEVELOPING A SHORELINE HABITAT RESTORATION AND MANAGEMENT PLAN FOR
BREVARD COUNTY – PHASE I**

THIS AGREEMENT ("Agreement") is entered into by and between the IRL COUNCIL ("Council"), whose address is 1235 Main Street, Sebastian, Florida 32958, and the BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY ("Recipient"), whose address is 2725 Judge Fran Jamieson Way, Building A, Viera, Florida 32940. All references to the parties hereto include the parties, their officers, employees, agents, successors, and assigns.

RECITALS

The waters of the state of Florida are among its basic resources, and the Council has been authorized by the United States Environmental Protection Agency to be the local sponsor for the Indian River Lagoon National Estuary Program.

Pursuant to the IRL Council Interlocal Agreement, the Council is responsible for managing the Indian River Lagoon National Estuary Program.

The Council has determined that providing cost-share funding to Recipient for the purposes provided for herein will benefit the management of the water resources of the Indian River Lagoon.

The parties have agreed to jointly fund the following project to benefit the water resources in accordance with the funding formula further described in the Statement of Work, Attachment A (hereafter "the Project"):

This project will: (1) Complete a shoreline survey of 175 miles of the IRL's coastline within Brevard County; (2) Perform a wind and wave analysis, (3) Create GIS data layers that spatially represent shoreline conditions and features throughout the Brevard County portion of the IRL, (4) engage community through a live oyster propagation program, (5) install 1,180 linear feet of oyster reef living shoreline along the Indian River Lagoon in Brevard County.

In consideration of the above recitals, and the funding assistance described below, Recipient agrees to perform and complete the activities provided for in the Statement of Work, Attachment A. Recipient shall complete the Project in conformity with the contract documents and all attachments and other items incorporated by reference herein. This Agreement consists of all of the following documents: (1) Agreement, (2) Attachment A- Statement of Work; and (3) all attachments, if any. The parties hereby agree to the following terms and conditions.

1. TERM; WITHDRAWAL OF OFFER

- (a) The term of this Agreement is from the date upon which the last party has dated and executed the same ("Effective Date") until September 30, 2017 ("Completion Date"). Recipient shall not commence the Project until any required submittals are received and approved. Recipient shall commence performance within fifteen (15) days after the Effective Date and shall complete performance in accordance with the time for completion stated in the Statement of Work. Time is of the essence for every aspect of this Agreement, including any time extensions. Notwithstanding specific mention that

certain provisions survive termination or expiration of this Agreement, all provisions of this Agreement that by their nature extend beyond the Completion Date survive termination or expiration hereof.

- (b) This Agreement constitutes an offer until authorized, signed and returned to the Council by Recipient. This offer terminates forty-five (45) days after receipt by Recipient; provided, however, that Recipient may submit a written request for extension of this time limit to the Council's Project Manager, stating the reason(s) therefor. The Project Manager shall notify Recipient in writing if an extension is granted or denied. If granted, this Agreement shall be deemed modified accordingly without any further action by the parties.

- 2. **DELIVERABLES.** Recipient shall fully implement the Project, as described in the Statement of Work, Attachment A. Recipient is responsible for the professional quality, technical accuracy, and timely completion of the Project. Both workmanship and materials shall be of good quality. Unless otherwise specifically provided for herein, Recipient shall provide and pay for all materials, labor, and other facilities and equipment necessary to complete the Project. The Council's Project Manager shall make a final acceptance inspection of the Project when completed and finished in all respects. Upon satisfactory completion of the Project, the Council will provide Recipient a written statement indicating that the Project has been completed in accordance with this Agreement. Acceptance of the final payment by Recipient shall constitute a release in full of all claims against the Council arising from or by reason of this Agreement.

- 3. **OWNERSHIP OF DELIVERABLES.** Unless otherwise provided herein, the Council does not assert an ownership interest in any of the deliverables under this Agreement.

- 4. **AMOUNT OF FUNDING.**

- (a) For satisfactory completion of the Project, the Council shall pay Recipient approximately thirty-six percent (36%) of the total cost of the Project, but in no event shall the Council cost-share exceed \$99,877. The Council cost-share is not subject to modification based upon price escalation in implementing the Project during the term of this Agreement. Recipient shall be responsible for payment of all costs necessary to ensure completion of the Project. Recipient shall notify the Council's Project Manager in writing upon receipt of any additional external funding for the Project not disclosed prior to execution of this Agreement.

- (b) **In-Kind Services.** Recipient agrees to provide \$180,000 in the form of cash and/or in-kind services for the Project, as further described in the Statement of Work, which shall count toward Recipient's cost-share obligation.

- 5. **PAYMENT OF INVOICES**

- (a) Recipient shall submit one invoice upon successful completion of the Project by one of the following two methods: (1) by mail to the IRL Council, 1235 Main Street, Sebastian, Florida 32958, or (2) by e-mail to sakuma@irlcouncil.org. The invoice shall be submitted in detail sufficient for proper pre-audit and post-audit review. It shall include a copy of contractor and supplier invoices to Recipient and proof of payment. Recipient shall be reimbursed for approximately thirty-six percent (36%) of approved costs or the not-to-exceed sum of \$99,877, whichever is less. The Council shall not withhold any retainage from this reimbursement. If necessary for audit purposes, Recipient shall provide additional supporting information as required to document invoices.

- (b) **End of Council Fiscal Year Reporting.** The Council's fiscal year ends on September 30. Irrespective of the invoicing frequency, the Council is required to account for all encumbered funds at that time. When authorized under the Agreement, submittal of an invoice as of September 30 satisfies this requirement. The invoice shall be submitted no later than October 30. If the Agreement does not authorize submittal of an invoice as of September 30, Recipient shall submit, prior to October 30, a description of the additional work on the Project completed between the last invoice and September 30, and an estimate of the additional amount due as of September 30 for such Work. If there have been no prior invoices, Recipient shall submit a description of the work completed on the Project through September 30 and a statement estimating the dollar value of that work as of September 30.
- (c) **Final Invoice.** The final invoice must be submitted no later than 45 days after the Completion Date; provided, however, that when the Completion Date corresponds with the end of the Council's fiscal year (September 30), the final invoice must be submitted no later than 30 days after the Completion Date. **Final invoices that are submitted after the requisite date shall be subject to a penalty of 10 percent of the invoice. This penalty may be waived by the Council, in its sole judgment and discretion, upon a showing of special circumstances that prevent the timely submittal of the final invoice. Recipient must request approval for delayed submittal of the final invoice not later than ten (10) days prior to the due date and state the basis for the delay.**
- (d) All invoices shall include the following information: (1) Council contract number; (2) Council encumbrance number; (3) Recipient's name and address (include remit address, if necessary); (4) Recipient's invoice number and date of invoice; (5) Council Project Manager; (6) Recipient's Project Manager; (7) supporting documentation as to cost and/or Project completion (as per the cost schedule and other requirements of the Statement of Work); (8) Progress Report (if required); (9) Diversity Report (if otherwise required herein). Invoices that do not correspond with this paragraph shall be returned without action within twenty (20) business days of receipt, stating the basis for rejection. Payments shall be made within forty-five (45) days of receipt of an approved invoice.
- (e) **Travel expenses.** If the cost schedule for this Agreement includes a line item for travel expenses, travel expenses shall be drawn from the project budget and are not otherwise compensable.
- (f) **Payments withheld.** The Council may withhold or, on account of subsequently discovered evidence, nullify, in whole or in part, any payment to such an extent as may be necessary to protect the Council from loss as a result of: (1) defective work not remedied; (2) failure to maintain adequate progress in the Project; (3) any other material breach of this Agreement. Amounts withheld shall not be considered due and shall not be paid until the ground(s) for withholding payment have been remedied.
- (g) **Annual budgetary limitation.** For multi-fiscal year agreements, the Council must budget the amount of funds that will be expended during each fiscal year as accurately as possible. The Statement of Work, Attachment A, includes the parties' current schedule for completion of the Work and projection of expenditures on a fiscal year basis (October 1 – September 30) ("Annual Spending Plan"). If Recipient anticipates that expenditures will exceed the budgeted amount during any fiscal year, Recipient shall promptly notify the Council's Project Manager and provide a proposed revised work schedule and Annual Spending Plan that provides for completion of the Work without increasing the Total

Compensation. The last date for the Council to receive this request is August 1 of the then-current fiscal year. The Council may in its sole discretion prepare a Council Supplemental Instruction Form incorporating the revised work schedule and Annual Spending Plan during the then-current fiscal year or subsequent fiscal year(s).

6. **LIABILITY AND INSURANCE.** Each party is responsible for all personal injury and property damage attributable to the negligent acts or omissions of that party, its officers, employees and agents. Nothing contained herein shall be construed or interpreted as denying to any party any remedy or defense available under the laws of the state of Florida, nor as a waiver of sovereign immunity of the state of Florida beyond the waiver provided for in section 768.28, Fla. Stat., as amended. Each party shall acquire and maintain throughout the term of this Agreement such liability, workers' compensation, and automobile insurance as required by their current rules and regulations, which may include participation in a self-insurance program.
7. **FUNDING CONTINGENCY.** This Agreement is at all times contingent upon funding availability, which may include a single source or multiple sources, including, but not limited to: (1) revenues appropriated by the Council's Board of Directors; (2) annual appropriations by the Florida Legislature, or (3) appropriations from other agencies or funding sources. Agreements that extend for a period of more than one Fiscal Year are subject to annual appropriation of funds in the sole discretion and judgment of the Council's Board of Directors for each succeeding Fiscal Year. Should the Project not be funded, in whole or in part, in the current Fiscal Year or succeeding Fiscal Years, the Council shall so notify Recipient and this Agreement shall be deemed terminated for convenience five (5) days after receipt of such notice, or within such additional time as the Council may allow. For the purpose of this Agreement, "Fiscal Year" is defined as the period beginning on October 1 and ending on September 30.
8. **PROJECT MANAGEMENT**

- (a) The Project Managers listed below shall be responsible for overall coordination and management of the Project. Either party may change its Project Manager upon three (3) business days prior written notice to the other party. Written notice of change of address shall be provided within five (5) business days. All notices shall be in writing to the Project Managers at the addresses below and shall be sent by one of the following methods: (1) hand delivery; (2) U.S. certified mail; (3) national overnight courier; (4) e-mail or, (5) fax. Notices via certified mail are deemed delivered upon receipt. Notices via overnight courier are deemed delivered one (1) business day after having been deposited with the courier. Notices via e-mail or fax are deemed delivered on the date transmitted and received.

COUNCIL

Kathy Hill, Project Manager
IRL Council
1235 Main Street
Sebastian, Florida 32958
(772) 742-2858 ext. 102
E-mail: hill@irlcouncil.org

RECIPIENT

Jane Hart, Environmental Specialist
Brevard County Natural Resources
Management Department
2725 Judge Fran Jamieson Way, Bldg A
Viera, FL 32940
(321) 633-2016 ext. 56721
E-mail: jane.hart@brevardfl.gov

- (b) The Council's Project Manager shall have sole responsibility for transmitting instructions, receiving information, and communicating Council policies and decisions regarding all matters pertinent to performance of the Project. The Council's Project

Manager may issue a Council Supplemental Instruction (CSI) form, Attachment B, to authorize minor changes in the Project that the parties agree are not inconsistent with the purpose of the Project, do not affect the Council cost-share or Completion Date, or otherwise significantly modify the terms of the Agreement.

9. **PROGRESS REPORTS AND PERFORMANCE MONITORING**

- (a) **Progress Reports.** Recipient shall provide to the Council Project update/status reports as provided in the Statement of Work. Reports will provide detail on progress of the Project and outline any potential issues affecting completion or the overall schedule. Reports may be submitted in any form agreed to by Council's Project Manager and Recipient, and may include emails, memos, and letters.
- (b) **Performance Monitoring.** For as long as the Project is operational, the Council shall have the right to inspect the operation of the Project during normal business hours upon reasonable prior notice. Recipient shall make available to the Council any data that is requested pertaining to performance of the Project.

10. **TERMINATION.** The IRL Council may terminate this Agreement without cause upon 10 days written notice. In such event Recipient shall be compensated for all Work performed in accordance with this Agreement to the effective date of termination. If Recipient materially fails to fulfill its obligations under this Agreement, including any specific milestones established herein, the Council shall provide Recipient written notice of the deficiency by forwarding a Notice to Cure, citing the specific nature of the breach. Recipient shall have thirty (30) days to cure the breach. If Recipient fails to cure the breach within the thirty (30) day period, the Council shall issue a Termination for Default Notice and this Agreement shall be terminated upon receipt of said notice. In such event, Recipient shall refund to the Council all funds provided to Recipient pursuant to this Agreement within thirty (30) days of such termination. The Council may also terminate this Agreement upon ten (10) days written notice in the event any of material misrepresentations in the Project Proposal.

ADDITIONAL PROVISIONS (Alphabetical)

11. **ASSIGNMENT.** Recipient shall not assign this Agreement, or any monies due hereunder, without the Council's prior written consent. Recipient is solely responsible for fulfilling all work elements in any contracts awarded by Recipient and payment of all monies due. No provision of this Agreement shall create a contractual relationship between the Council and any of Recipient's contractors or subcontractors.
12. **AUDIT; ACCESS TO RECORDS; REPAYMENT OF FUNDS.**
- (a) **Maintenance of Records.** Recipient shall maintain its books and records such that receipt and expenditure of the funds provided hereunder are shown separately from other expenditures in a format that can be easily reviewed. Recipient shall keep the records of receipts and expenditures, copies of all reports submitted to the Council, and copies of all invoices and supporting documentation for at least five (5) years after expiration of this Agreement. In accordance with generally accepted governmental auditing standards, the Council shall have access to and the right to examine any directly pertinent books and other records involving transactions related to this Agreement. In the event of an audit, Recipient shall maintain all required records until the audit is completed and all questions are

resolved. Recipient will provide proper facilities for access to and inspection of all required records.

- (b) **Repayment of Funds.** Council funding shall be subject to repayment after expiration of this Agreement if, upon audit examination, the Council finds any of the following: (1) Recipient has spent funds for purposes other than as provided for herein; (2) Recipient has failed to perform a continuing obligation of this Agreement; (3) Recipient has received duplicate funds from the Council for the same purpose; and/or (4) Recipient has received more than one hundred percent (100%) contributions through cumulative public agency cost-share funding.
13. **CIVIL RIGHTS.** Pursuant to chapter 760, Fla. Stat., Recipient shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin, age, handicap, or marital status.
14. **DISPUTE RESOLUTION.** Recipient is under a duty to seek clarification and resolution of any issue, discrepancy, or dispute involving performance of this Agreement by submitting a written statement to the Council's Project Manager no later than ten (10) business days after the precipitating event. If not resolved by the Project Manager, the Project Manager shall forward the request to the Council's General Counsel, which shall issue a written decision within ten (10) business days of receipt. This determination shall constitute final action of the Council and shall then be subject to judicial review upon completion of the Project.
15. **DIVERSITY REPORTING.** The Council is committed to the opportunity for diversity in the performance of all cost-sharing agreements, and encourages Recipient to make a good faith effort to ensure that women and minority-owned business enterprises (W/MBE) are given the opportunity for maximum participation as contractors. The Council will assist Recipient by sharing information on W/MBEs. Recipient shall provide with each invoice a report describing: (1) the company names for all W/MBEs; (2) the type of minority, and (3) the amounts spent with each during the invoicing period. The report will also denote if there were no W/MBE expenditures.
16. **GOVERNING LAW, VENUE, ATTORNEY'S FEES, WAIVER OF RIGHT TO JURY TRIAL.** This Agreement shall be construed according to the laws of Florida and shall not be construed more strictly against one party than against the other because it may have been drafted by one of the parties. As used herein, "shall" is always mandatory. In the event of any legal proceedings arising from or related to this Agreement: (1) venue for any state or federal legal proceedings shall be in Indian River County; (2) each party shall bear its own attorney's fees, including appeals; (3) for civil proceedings, the parties hereby consent to trial by the court and waive the right to jury trial.
17. **INDEPENDENT ENTITIES.** The parties to this Agreement, their employees and agents, are independent entities and not employees or agents of each other. Nothing in this Agreement shall be interpreted to establish any relationship other than that of independent entities during and after the term of this Agreement. Recipient is not a contractor of the Council. The Council is providing cost-share funding as a cooperating governmental entity to assist Recipient in accomplishing the Project. Recipient is solely responsible for accomplishing the Project and directs the means and methods by which the Project is accomplished. Recipient is solely responsible for compliance with all labor and tax laws pertaining to Recipient, its officers, agents, and employees.

18. **INTEREST OF RECIPIENT.** Recipient certifies that no officer, agent, or employee of the Council has any material interest, as defined in chapter 112, Fla. Stat., either directly or indirectly, in the business of Recipient to be conducted hereby, and that no such person shall have any such interest at any time during the term of this Agreement.
19. **NON-LOBBYING.** Pursuant to section 216.347, Fla. Stat., as amended, Recipient agrees that funds received from the Council under this Agreement shall not be used for the purpose of lobbying the Legislature or any other state agency.
20. **PERMITS.** Recipient shall comply with all applicable federal, state and local laws and regulations in implementing the Project and shall include this requirement in all subcontracts pertaining to the Project. Recipient shall obtain any and all governmental permits necessary to implement the Project. Any activity not properly permitted prior to implementation or completed without proper permits does not comply with this Agreement and shall not be approved for cost-share funding.
21. **PUBLIC ENTITY CRIME.** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for CATEGORY TWO (\$35,000) for a period of 36 months following the date of being placed on the convicted vendor list.
22. **PUBLIC RECORDS.** Records of Recipient that are made or received in the course of performance of the Project may be public records that are subject to the requirements of chapter 119, Fla. Stat. If Recipient receives a public records request, Recipient shall promptly notify the Council's Project Manager. Each party reserves the right to cancel this Agreement for refusal by the other party to allow public access to all documents, papers, letters, or other material related hereto and subject to the provisions of chapter 119, Fla. Stat., as amended.
23. **ROYALTIES AND PATENTS.** Recipient certifies that the Project does not, to the best of its information and belief, infringe on any patent rights. Recipient shall pay all royalties and patent and license fees necessary for performance of the Project and shall defend all suits or claims for infringement of any patent rights and save and hold the Council harmless from loss to the extent allowed by Florida law.

IN WITNESS WHEREOF, the IRL Council has caused this Agreement to be executed on the day and year written below in its name by its Executive Director, and Recipient has caused this Agreement to be executed on the day and year written below in its name by its duly authorized representatives, and, if appropriate, has caused the seal of the corporation to be attached. This Agreement may be executed in separate counterparts, which shall not affect its validity. Upon execution, this Agreement constitutes the entire agreement of the parties, notwithstanding any stipulations, representations, agreements, or promises, oral or otherwise, not printed or inserted herein. This Agreement cannot be changed by any means other than written amendments referencing this Agreement and signed by all parties.

IRL COUNCIL

BOARD OF COUNTY COMMISSIONERS OF
BREVARD COUNTY, FLORIDA

By: _____
Duane E. De Freese, Ph.D., Executive Director

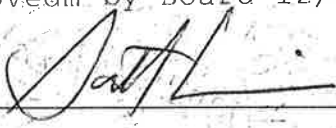
By:  _____
CURT SMITH - CHAIRMAN

Date: _____

Typed Name and Title
Date: DECEMBER 6, 2016

APPROVED BY THE IRL
GENERAL COUNSEL

Approvedm by Board 12/6/16

Attest:  _____
SCOTT ELLIS, CLERK
Typed Name and Title

Carolyn S. Ansay, General Counsel

ATTACHMENTS

Attachment A – Statement of Work
Attachment B – Council Supplemental Instruction Form

Cost-share: Agency general
Last updated: 09-27-2016

ATTACHMENT A - STATEMENT OF WORK

Developing a Shoreline Habitat Restoration and Management Plan for Brevard County – Phase I

I. INTRODUCTION

The Indian River Lagoon (IRL) is a diverse, shallow-water estuary stretching 156 miles along more than 30 percent of Florida's east coast and is classified by the USEPA as an Estuary of National Significance. Urbanization, degradation of water quality, loss of seagrass and mangrove habitat, fisheries decline, and emerging disease and mortality of marine species have all impacted the health of the IRL in recent years. The IRL and its shoreline face additional challenges as global warming and associated sea-level rise are predicted to contribute to further habitat loss, water quality problems and stresses on plant and animal species. In addition, erosion of the shoreline is occurring as a result of strong storms, wave action, sea level rise, and development. These issues, combined with the continued rise in population along the coastal zone highlight the necessity of planning and preparation to protect coastal resources.

Traditionally, stabilization of the shoreline in many areas of the Lagoon has been accomplished with hard structures such as seawalls, bulkheads and rock revetments, creating a barrier between land and water. As an alternative, living shorelines maintain continuity of the natural land-water interface by utilizing vegetation, living and natural elements and oyster reefs or rock for added stability. Living shorelines not only provide coastal stabilization and resilience of the shoreline, they also reduce erosion, provide critical habitat for near shore species and improve water quality by filtering nutrients and sediments from overland stormwater runoff.

II. OBJECTIVE

The objective of this project will: (1) Complete a shoreline survey of 175 miles of the IRL's coastline within Brevard County; (2) Perform a wind and wave analysis, (3) Create GIS data layers that spatially represent shoreline conditions and features throughout the Brevard County portion of the IRL, (4) engage community through a live oyster propagation program, (5) install 1,180 linear feet of oyster reef living shoreline along the Indian River Lagoon in Brevard County, and (6) prepare a final report.

This objective conforms to the action plans outlined in the Indian River Lagoon Comprehensive Conservation and Management Plan to continue the restoration and rehabilitation of impacted coastal wetlands.

III. SCOPE

UCF shall perform all work required to collect data and complete shoreline assessment data listed below. Brevard County will use the data to create an Arc-GIS map of 175 miles of shoreline to identify areas suitable for establishing sustainable living shorelines.

IV. TASK IDENTIFICATION

Brevard County will contract with UCF to collect shoreline assessment data along 175 miles of Brevard County's IRL coastline by watercraft, add to an Arc-GIS shoreline map developed by county, and combine the collected data with SJRWMD wind and wave analysis tool to build a shoreline model to guide the successful placement of sustainable living shorelines. The target shoreline is the urbanized portion of the county. Federally-owned properties within the County with public access limitations are not included in the survey (see Figure 1).

ITEM 1. Task 1. Shoreline Survey – UCF

Prior to performing the field assessment, the historic and existing shoreline location will be mapped and analyzed in the GIS environment. This data will be cross-referenced with Bing Bird's Eye View and/or Google street view to capture locations of hardened and natural shorelines. If hardened, attempts will be made to identify the material (i.e. rip rap, bulkhead, etc.). UCF will verify these lines and collect additional transect point data during the field shoreline survey. Watercraft capable of maneuvering in the near shore environment will be used. During the field survey, attribute data will be collected approximately every 100 feet in developed areas, approximately every 1,000 feet in areas with natural edges, and at every visible outfall. At these intervals, the following data will be collected and recorded:

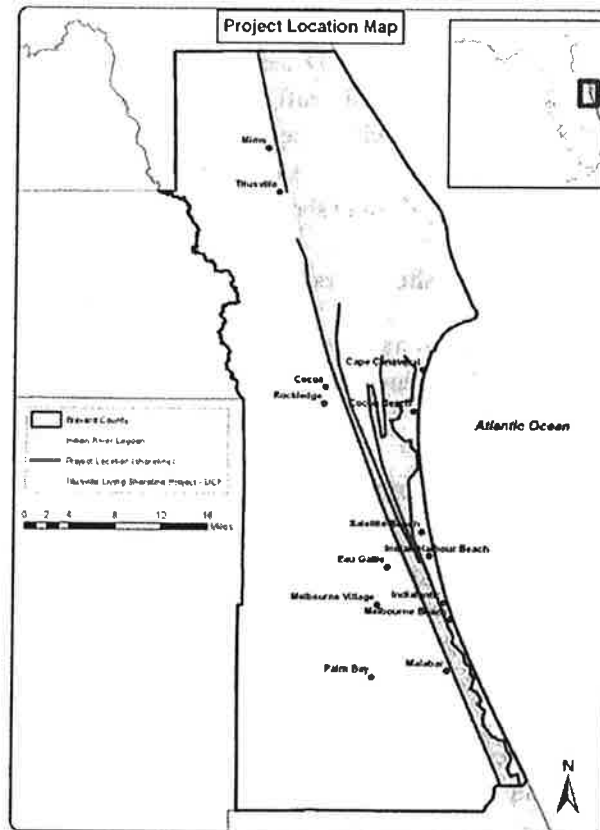
- GPS location and latitude/longitude
- GPS point name and transect number on data sheet
- A photo to characterize shoreline combined with notation of a GPS point name on a data sheet that corresponds to naming of photos.
- Shoreline type (natural, hard-armored)
- Type of hard armoring
- Habitat type and width
- Vegetation type (natural, exotic, mix, sod, none)
- Adjacent land use (natural, commercial, residential, public)
- Severity of erosion based on the SJRWMD categories of severe, moderate, or low
- Shoreline slope
- Characterization of land use at the upland edge of the transect
- Oyster presence (Y/N)
- Water depth at 5 feet and 10 feet distance from shoreline or apparent OHW line
- Type of bottom (hard, soft, sand, muck)
- Outfall data will include photographs, approximate size (diameter) and type (i.e. concrete, metal, PVC, other), depth and approximate flow velocity of discharge water.

The assessment will include the presence and species composition of terrestrial, intertidal, or subtidal vegetation, oysters, mudflat, etc. and width of each habitat type. Erosion severity shall be described using three categories established by SJRWMD (severe, moderate, low) based on depth of eroded shoreline and presence/absence of vegetation. Adjacent land use shall be classified as natural, commercial, or residential property. Shoreline slope shall be estimated using the width of intertidal habitat vs. known local tidal range. In areas of the lagoon where the astronomical tide is effectively absent, the nearshore

slope shall be estimated using the measured water depth at 5 feet and 10 feet distance from shoreline or apparent OHW line.

ITEM 2. Deliverable 1: Quarterly updates on extent of surveyed shorelines.

Due Date/Performance Period: Shoreline surveys should be complete and ready to enter into the map and model (Task 2) by June 30, 2017.



Task 2. Wind and Wave Analysis –UCF

St. Johns River Water Management District (SJRWMD) engineering staff will provide the modeling protocol for the wind and wave analysis to UCF. Brevard County Natural Resources Management Department (NRMD) will contract with University of Central Florida to conduct the wind and wave analysis in accordance with SJRWMD protocols. Boat wake energy will be estimated by calculating the distance between shoreline points and nearest boating channel. Publically available wind data will be used to estimate range of wind speeds and frequencies of directions. A SWAN (Simulating Waves Nearshore) model grid will be created using mean sea level and water level associated with storm surge. Model runs will be conducted using wind speeds at both water levels to evaluate wind energy along shorelines throughout Brevard County. Wind and wave analysis results will be compared to published data on *Spartina alterniflora* thresholds (i.e. Roland and Douglas 1995) to guide restoration planning.

ITEM 3. Deliverable 2: Quarterly updates on wind and wave analysis protocol development.

Due Date/Performance Period: Development of wind and wave analysis by UCF will be completed by August 30, 2017. The results of the shoreline model that will result from this analysis plus from data collected in Task 1 will be submitted by September 30, 2017.

Task 3. GIS Mapping - UCF

Brevard County Natural Resources Management Department will contract with UCF to supplement a shoreline map created by Brevard County. UCF staff will combine the data from Task 1 with the IRL wind and wave data (Task 2) to create a geodatabase in Geographic Information System (GIS) using ESRI ArcGIS 10.1. Shoreline attribute data will be converted into GIS layers for subsequent analyses and mapping. Maps created will spatially display shoreline attributes of the study area.

ITEM 4. Deliverable 3: GIS map of shorelines from UCF data (Tasks 1 and 2).

Due Date/Performance Period: GIS map of shorelines will be submitted by July 30, 2017. GIS map of shorelines including model-generated “restoration suitability” will be submitted by September 30, 2017.

Task 4. Oyster Gardening – Brevard County and Zoo

Brevard County Natural Resources Management Department will contract with the Brevard Zoo to engage the Brevard County community in a citizen-based oyster propagation program to raise juvenile oysters to populate living shoreline oyster reef sites constructed during FY16-17. Oyster Gardening workshops will be held throughout the county to provide training and education about oyster gardening, living shorelines, and issues facing the lagoon. Since the launch of the Oyster Gardening program in 2014 by Brevard County and the Brevard Zoo, citizens representing over 1,000 shoreline locations have been trained as citizen scientists to grow oysters off their docks for restoration projects.

For this project task, volunteer oyster gardeners will be provided with approximately 1000 seed oysters and two oyster cages for propagation. Juvenile oysters will be gardened at docks in Brevard County, and finally relocated to restoration sites within the county. The oysters used in this project are not for human consumption. Their intended purpose is to be used for restoration efforts only.

Oysters:

Oyster spat will be purchased from Florida Oceanographic Society/Research Aquaculture Inc. at approximately 1/8-inch size (3mm). Spat purchased will be set on cured shell with approximately 10 spat set on each shell. Oyster spat will be the offspring of broodstock collected in Brevard County. Anticipated delivery of spat and distribution to volunteer gardeners is November 2016.

Volunteer Gardeners:

Volunteer coordination will be carried out by the Brevard Zoo. Citizens who register as oyster gardeners will attend scheduled workshops where they will receive educational materials and participate in cage building. Each gardener will receive 2 cages, rope for suspension, gloves, scrub brushes, and an Oyster Gardening Manual. All oyster gardening materials are provided to participants at no charge.

After attending the workshops, oyster gardeners will secure their cages to their docks and await oyster distribution at a future date. Oyster spat on shell (in mesh bags) will be available for pick up at designated locations on distribution day (determined by the date spat will be delivered from hatchery). Each gardener will be advised to bring a container for transport of their oysters to their dock gardening sites. At each site, approximately 1000 oysters will be distributed evenly into cages, for a total of about 500 oysters per cage (50 shells with approximately 10 spat on each shell).

Gardener responsibilities will include keeping their cages clean and free of fouling organisms weekly. Gardeners will care for their oysters for a term of 6 -9 months. At the end of the oyster gardening term, the young adult oysters will be permanently relocated to reef sites at a size of approximately 1-3 inches (25-75mm). Reef sites will be selected during Task 5 of this project.

ITEM 5. Deliverable 4: Summary report of Oyster Gardening task activities including number of workshop events, number of volunteer gardeners, estimated number of oyster spat distributed, and estimated number of live oysters returned.

Due Date/Performance Period: October 1, 2016 - September 30, 2017

Task 5. Pilot Oyster Reef Living Shorelines - Brevard County and Zoo

Brevard County Natural Resources Management Department will prepare design documents and obtain all required permits for construction of 1,180 linear feet of oyster reef living shorelines along the IRL in Brevard County during FY16-17. The pilot sites will include living oyster reefs as wave breaks and native salt marsh vegetation as appropriate for design. Brevard County Natural Resources Management Department will contract with the Brevard Zoo for construction which includes volunteer coordination, site preparation, materials, hauling, and installation.

ITEM 6. Deliverable 5: Summary report of Pilot Oyster Reef Living Shoreline installation activities including map of selected sites, acquired permits and design drawings.

Due Date/Performance Period: October 1, 2016 - September 30, 2017

Task 6. Final Report - UCF

University of Central Florida will prepare a final report describing tasks completed during this project. The report will include a summary of UCF's assessment methodology and field challenges and successes.

The project scope, final GIS map of "stabilization suitability" and future plans for living shorelines will be featured on the County's website and posted on the Brevard County Natural Resources Management's Facebook page by County. The map, and information on living shorelines as an alternative

and beneficial shoreline stabilization method, will also be presented by Brevard County and Zoo staff at Oyster Gardening Workshops held throughout the County.

V. TIME FRAMES and DELIVERABLES

ITEM 7. Proposed Schedule:

- **Task 1 - Shoreline Survey**

Deliverable 1: Progress updates on field data collection: due on 1/10/17, 4/10/17 and 7/10/17.

Due Date/Performance Period: Shoreline surveys should be complete and ready to enter into the model as of June 30, 2017.

- **Task 2 - Wind and Wave Analysis**

Deliverable 2: Quarterly updates on wind and wave analysis protocol development due on 1/10/17, 4/10/17 and 7/10/17.

Due Date/Performance Period: Development of wind and wave analysis should be completed by August 30, 2017.

- **Task 3 - GIS Mapping**

Deliverable 3: GIS map of shorelines that includes data from Tasks 1 and 2, plus GIS map of shorelines that includes “stabilization suitability”.

Due Date/Performance Period: GIS map of shorelines will be submitted by July 30, 2017. GIS map of shorelines including model-generated “shoreline suitability” will be submitted by September 30, 2017

- **Task 4 – Community Oyster Gardening:**

Deliverable 4: Summary report of Oyster Gardening task activities including number of workshop events, number of volunteer gardeners, estimated number of oyster spat distributed, and estimated number of live oysters returned.

Due Date/Performance Period: October 1, 2016 - September 30, 2017

- **Task 5 – Pilot Oyster Reef Living Shorelines**

Deliverable 5: Summary report of Pilot Oyster Reef Living Shoreline installation activities including map of selected sites, acquired permits and design drawings.

Due Date/Performance Period: October 1, 2016 - September 30, 2017

- **Task 6 – Final Report**

Deliverable 6: Final Report

Due Date/Performance Period: September 30, 2017

VI. BUDGET

Project Budget including in-kind and cash match amounts and source of all funds.

Task Line Item	Task Description	IRL Funding Amount	Cost Share Funding Amount	Cost Share Funding Source (cash or in-kind)
1	Shoreline Survey	\$70,937	\$0	
2	Wind and wave analysis	\$14,169	\$0	
3	GIS Map	\$13,511	\$0	
4	Oyster Gardening	\$0	\$150,000	Brevard County NRMD cash Match*
5	Pilot Oyster Reef Living Shorelines	\$0	\$30,000	SJRWMD Grant to NRMD
6	Final Report	\$1,260	\$0	
	Project Total Cost	\$99,877	\$180,000	TOTAL: \$279,877

*Match funds are provided by Brevard County Natural Resources Management Department through cost share agreement #28256 with SJRWMD to construct living shoreline pilot projects along 1,180 feet of the IRL during FY 2016/17. The sites will include native salt marsh vegetation and living oyster reefs as wave breaks. Brevard County will fund \$150,000 of the project with a cost share from the SJRWMD of \$30,000.

ATTACHMENT B — COUNCIL'S SUPPLEMENTAL INSTRUCTIONS (sample)
COUNCIL SUPPLEMENTAL INSTRUCTIONS #

DATE:

TO:

FROM: _____, Project Manager

CONTRACT/PURCHASE ORDER NUMBER:

CONTRACT TITLE:

The Work shall be carried out in accordance with the following supplemental instruction issued in accordance with the Contract Documents without change in the Contract Sum or Contract Time. Prior to proceeding in accordance with these instructions, indicate your acceptance of these instructions for minor changes to the work as consistent with the Contract Documents and return to the Council's Project Manager.

1. CONTRACTOR'S SUPPLEMENTAL INSTRUCTIONS:
2. DESCRIPTION OF WORK TO BE CHANGED:
3. DESCRIPTION OF SUPPLEMENTAL INSTRUCTION REQUIREMENTS:

Contractor's approval: (choose one of the items below):

Approved: _____ Date: _____

(It is agreed that these instructions shall not result in a change in the Total Compensation or the Completion Date.)

Approved: _____ Date: _____

(Contractor agrees to implement the Supplemental Instructions as requested, but reserves the right to seek a Change Order in accordance with the requirements of the Agreement.)

Approved: _____ Date: _____
_____, Council Project Manager

Acknowledged: _____ Date: _____
_____, Council Contracts Administrator

cc: Contract/Purchasing file

Attachment C

**BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS**

INITIAL CONTRACT FORM

SECTION I

The following information must be completed on all new contracts submitted to the Board.

1. Contractor/parties: Brevard County and University of Central Florida (UCF)	
2. Fund/Account #: 1110	3. Division Name:
4. Contract Description: MOA for Developing a Shoreline Habitat Restoration and Management Plan for Brevard County – Phase I	
5. Contract Monitor: Jane Hart	6. Mail Stop #: 81
7. Dept./Office Director: Natural Resources/Virginia Barker	8. Contract Type:
ACTION DATE:	ACTION REQUIREMENT:

SECTION II

The following departments must approve all contracts submitted to the Board:

<u>COUNTY OFFICE</u>	<u>APPROVAL</u>		<u>INITIALS</u>	<u>DATE</u>
	<u>YES</u>	<u>NO</u>		
User Agency	<u>✓</u>	<u> </u>	<u>1/1/16</u>	<u>11/3/16</u>
Risk Management	<u>✓</u>	<u> </u>	<u>[Signature]</u>	<u>11/3/2016</u>
County Attorney	<u>✓</u>	<u> </u>	<u>[Signature]</u>	<u>11/3/16</u>

If any office denies approval, the package will be returned immediately to the User Agency.

NOTE: This form should be attached to all new contracts being submitted to the Board for approval. After the contract has been approved, the contract package, including this form, will go to the Clerk to the Board. The Clerk's office will return the Initial Contract Form to department for contract to be entered into the Contract Management System. See AO-29 for additional information.

Attachment C

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	<u>YES</u>	<u>NO</u>		
User Agency	☒	☐	<u>VHB</u>	<u>11/3/16</u>
Risk Management	☒	☐	<u>MF</u>	<u>11/3/2016</u>
County Attorney	☒	☐	<u>CL</u>	<u>11/3/16</u>

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