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February 8, 2022

Eric Charest
Natural Resources Manager
Indian River County Public Works Coastal Division
1801 27th Street, Vero Beach, FL 32960

**Subject: Indian River County, FL
Sector 5 – 2018029 – Work Order #10
Year 2 Post-Construction Environmental Monitoring**

Dear Eric:

This proposal outlines a scope of work for Aptim Environmental & Infrastructure, LLC (APTIM), to provide professional services to Indian River County (the County) in support of the Sector 5 Beach and Dune Restoration Project. The scope of work described herein is to support the County with the following items:

1. To conduct the Year 2 Post-Construction Nearshore Hardbottom Biological Monitoring
2. To conduct the Year 2 Post-Construction Escarpment Surveys

The tasks to perform this work are listed below and described on the following pages. A breakdown of the hours and expenses to develop the cost is attached. The scope and fee were developed following the provisions of the Professional Services Agreement between Indian River County and APTIM, dated April 3, 2018, to provide engineering and biological support services in support of the Sector 5 Beach and Dune Restoration Project (RFQ#2018029).

Task 1: Year 2 Post-Construction Nearshore Hardbottom Biological Monitoring

The Sector 5 Year 2 Post-Construction nearshore hardbottom biological monitoring will be managed and conducted by APTIM, and conducted by APTIM's approved subconsultant, Coastal Protection Engineering LLC (CPE).

The Biological Monitoring Plan developed for the Sector 5 project during permitting requires post-construction biological monitoring of the hardbottom resources adjacent to the project area to monitor for potential secondary impacts. The scope for this task is based on the FDEP-approved Biological Monitoring Plan (0363427-001-JC). The post-construction nearshore hardbottom monitoring shall include:

- 1) Hardbottom edge mapping
- 2) Monitoring permanent transects

Task 1: Scope of Work

- 1) Hardbottom Edge Mapping:

APTIM shall map the position of the nearshore hardbottom edge for the entire Sector 5 project area, including

1000 feet north (updrift) and 2000 feet south (downdrift) of the project area (R-69.5 to R-87) for a length of approximately 3.6 miles. A buoy with a Differential Global Positioning System (DGPS) antenna linked to a topside laptop computer running HYPACK navigational software will be towed by divers to record the position of the nearshore hardbottom edge. The divers will follow the inshore contour of the most prominent hardbottom-sand border. The purpose of the survey is to provide a comparison for pre- and all subsequent post-construction edge delineations.

2) Monitoring Permanent Transects:

Twenty (20) transects were established along the length of project influence, which includes 1000 feet north (updrift) and 2000 feet south (downdrift). This includes nine (9) biological monitoring transects and eleven (11) sediment only transects. All transects were established perpendicular to the shoreline and extend from the nearshore hardbottom edge to a maximum distance of 50 meters seaward. APTIM will conduct the Year 2 Post-Construction biological survey of the hardbottom using quadrat assessments, sediment measurements and video/photo documentation as detailed in the Biological Monitoring Plan.

Up to nine (9) 0.5-m² quadrats will be sampled along each transect to quantify the benthic community. Sediment data will be collected using line-intercept and 1-m interval sediment depth measurements, and video documentation will also be collected for the length of each transect. It is anticipated that the effort to delineate the hardbottom edge and monitor the transects will take up to nine (9) field days based on previous monitoring events.

The data will be compiled and incorporated into a GIS database and *in situ* data will be entered into an Access database. Time to complete data entry, reduction, analyses, and report production is included in the cost estimate to address the data management and reporting requirements for those 9 days of field operations.

3) Weekly Status Meetings:

Weekly status meetings between the County, APTIM, and EAI will be held to provide the County with updates for both hardbottom and escarpment surveys during the length of the monitoring period (March through October).

Task 1: Deliverable

Raw data will be provided to FDEP and the County within 45 days of completion of the survey. This includes a PDF of the scanned datasheets, excel spreadsheets with quadrat data, interval sediment depth measurements and line-intercept data, shapefiles of the hardbottom edge survey, video and photo documentation. Additionally, APTIM will provide a map of the project area and adjacent hardbottom resources with the hardbottom edge delineation and monitoring transects overlaid onto recent, clear aerial photographs (in digital format).

A Year 2 Post-Construction biological monitoring report will be generated for submittal to the County and regulatory agencies.

Task 1: Schedule

The Year 2 Post-Construction monitoring event will take place during summer 2022. Raw data from field operations will be submitted to the County and FDEP within 45 days and the monitoring report will be submitted within 90 days of completion of the survey.

Task 1: Cost

The lump sum cost for this task is \$92,603.96.

Task 2: Year 2 Post-Construction Escarpment Surveys

The Sector 5 Year 2 Post-Construction escarpment surveys will be managed and coordinated by APTIM, and conducted by APTIM's approved subconsultant, Ecological Associates, Inc. (EAI).

Task 2: Scope of Work

APTIM will oversee the scope of work proposed by EAI and provide the necessary administrative coordination to the County. The escarpment surveys will be conducted along the approximate 3.5 mile shoreline within the Sector 5 Project Area to address post-construction permit-compliance monitoring during the 2022 nesting season. The monitoring will comply with all applicable conditions set forth in the regulatory permits and related authorizations for the project. EAI has provided the enclosed proposal and cost breakdown for escarpment surveys, which are summarized as follows:

1. Project Management
2. Post-Construction Escarpment Surveys

Task 2: Deliverable

EAI will notify APTIM of any persistent scarps within the Project Area that may interfere with sea turtle nesting. The location of both the northern and southern terminus of each scarp will be recorded by GPS and average scarp height assigned to one of three categories (0 to 2 feet, 2 to 4 feet, and 4 feet or higher). Additionally, the maximum height of each scarp will be measured. The location (relative to R-monuments), approximate length, height category, maximum height, and percentage of beach scarped will be presented in tabular and/or graphic format for reporting purposes.

Task 2: Schedule

The escarpment surveys will commence in March 2022.

Task 2: Cost

The lump sum cost for this task is \$6,406.45.

Summary

The total lump sum cost to perform the proposed work described herein for Sector 5 – 2018029 – Work Order #10 is \$99,010.41. Please refer to Exhibit 1, attached to the end of this proposal, for a summary of the costs and labor hours of each Task. APTIM will proceed with the tasks upon receipt of a signed work order from Indian River County.

Thank you for the opportunity to serve Indian River County. We look forward to continuing to provide expert professional services to the County. Please do not hesitate to call if you have any questions.

Sincerely,

Katy Brown

Katy Brown
Lead Marine Biologist
Aptim Environmental & Infrastructure, LLC

cc: Nicole S. Sharp, P.E., APTIM
Thomas Pierro, P.E., D.CE, CPE
Stacy Buck, CPE
Debra Neese, APTIM



Authorized Corporate Signature

Nicole S. Sharp, P.E.

Printed Name

Coastal Restoration & Modeling Program Manager

Title

EXHIBIT 1

**Indian River County, Florida
Sector 5 - 2018029 - Work Order #10
Year 2 Post-Construction Nearshore Hardbottom Biological Monitoring and Escarpment Surveys**

Summary of Cost by Task

Task Number	Task Name	Labor	Equipment	Materials	Mobilization	Subcontractors	Total
Task 1	Year 2 Post-Construction Nearshore Hardbottom Biological Monitoring	\$53,072.00	\$15,914.30	\$1,575.00	\$ 3,680.00	\$ 18,362.66	\$ 92,603.96
Task 2	Year 2 Post-Construction Escarpment Surveys	\$ 2,280.00	\$ -	\$ -	\$ -	\$ 4,126.45	\$ 6,406.45
Totals =		\$55,352.00	\$15,914.30	\$1,575.00	\$ 3,680.00	\$ 22,489.11	\$ 99,010.41

**Indian River County, Florida
Sector 5 - 2018029 - Work Order #10
Year 2 Post-Construction Nearshore Hardbottom Biological Monitoring and Escarpment Surveys**

Summary of Labor Hours and Cost

Labor Title	Labor Bill Rate	Year 2 Nearshore Hardbottom Biological Monitoring		Year 2 Escarpment Surveys		Totals	
		Task 1		Task 2		Labor Hours	Cost
		Labor Hours	Cost	Labor Hours	Cost		
Principal Engineer/Sr Proj Mngr	\$ 250.00	1	\$ 250.00		\$ -	1	\$ 250.00
Sr Coastal Engineer/Proj Mngr	\$ 165.00	4	\$ 660.00	4	\$ 660.00	8	\$ 1,320.00
Sr. Coastal Engineer	\$ 165.00	18	\$ 2,970.00		\$ -	18	\$ 2,970.00
Senior Marine Biologist	\$ 135.00	-	\$ -	12	\$ 1,620.00	12	\$ 1,620.00
Marine Biologist II	\$ 95.00	410	\$ 38,950.00		\$ -	410	\$ 38,950.00
Senior CAD Operator	\$ 140.00	1	\$ 140.00		\$ -	1	\$ 140.00
GIS Operator	\$ 105.00	8	\$ 840.00		\$ -	8	\$ 840.00
Boat Captain	\$ 80.00	112	\$ 8,960.00		\$ -	112	\$ 8,960.00
Bookkeeper	\$ 80.00	2	\$ 160.00		\$ -	2	\$ 160.00
Clerical	\$ 71.00	2	\$ 142.00		\$ -	2	\$ 142.00
Subcontractors	-	-	\$ 18,362.66	-	\$ 4,126.45	-	\$ 22,489.11
Equipment	-	-	\$ 15,914.30	-	\$ -	-	\$ 15,914.30
Materials	-	-	\$ 1,575.00	-	\$ -	-	\$ 1,575.00
Mobilization/Other ODCs	-	-	\$ 3,680.00	-	\$ -	-	\$ 3,680.00
TOTAL	-	558	\$ 92,603.96	16	\$ 6,406.45	574	\$ 99,010.41



Ms. Kathryn Brown
Lead Marine Biologist
APTIM
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431

February 8, 2022

Dear Ms. Brown:

Ecological Associates, Inc. (EAI) is pleased to submit its Scope of Work and Cost Proposal for providing professional environmental services in support of Indian River County's Sector 5 Beach and Dune Restoration Project. This proposal addresses post-construction permit-compliance monitoring along approximately 3.5 miles of beach during the 2022 nesting season, as described in the Scope of Work presented below. This monitoring will comply with all applicable conditions set forth in the regulatory permits and related authorizations issued for the project.

SCOPE OF WORK

This scope of work was developed based on conditions and requirements set forth in the following documents:

- Florida Department of Environmental Protection (FDEP) Joint Coastal Permit (JCP) No. 0363427-001-JC

Task 1: Project Management

The Project Area extends approximately 3.5 miles from FDEP Range Monument R-70 near Mariner Beach Lane to R-86 near Bay Oak Lane. An EAI project manager will oversee all fieldwork and data management operations and consult with APTIM on permit requirements, as necessary. A project schedule, as well as field survey schedules, will be created and maintained throughout the life of the project. All equipment and supplies necessary to successfully implement this Scope of Work are available.

Task 2: Post-construction Escarpment Surveys (FDEP Specific Condition 17)

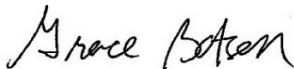
Beginning on March 1, 2022, escarpment (scarp) surveys will be conducted on a weekly basis within the Sector 5 Beach and Dune Restoration Project Area through October 31, 2022. In accordance with Florida Fish and Wildlife Conservation

Commission (FWC) protocol, scarps are functionally defined as an abrupt change in beach slope (greater than 45°) at least 18 inches in height that persists for a distance of 100 feet or more. The location of both the northern and southern terminus of each scarp will be recorded by GPS and average scarp height assigned to one of three categories (0 to 2 feet, 2 to 4 feet, and 4 feet or higher). Additionally, the maximum height of each scarp will be measured. The location (relative to R-monuments), approximate length, height category, maximum height, and percentage of beach scarped will be presented in tabular and/or graphic format for reporting purposes. EAI will notify APTIM and the County of any persistent scarps within the Project Area that may interfere with sea turtle nesting. APTIM shall be responsible for notifying FWC of the presence of those scarps and for coordinating any remediation measures, if required. ***Scarp monitoring will be charged at a weekly rate. Any services required of EAI during scarp consultation and leveling will be charged separately on a time and materials basis.***

EAI will submit its monthly billings for the services described above to APTIM in accordance with the fees and schedules set forth in Attachments A and B. No deposit or advance mobilization fees are required.

Ecological Associates, Inc. appreciates the opportunity to be of continued service to APTIM. Should you have any questions regarding the enclosed Scope of Work or associated costs, I can be reached at (772) 334-3729.

Sincerely,



Grace Botson
Project Manager

c: Niki Desjardin/Director of Operations

ATTACHMENT A
ECOLOGICAL ASSOCIATES, INC.
P.O. BOX 405
JENSEN BEACH, FLORIDA 34958

COST PROPOSAL – February 8, 2022

PROJECT NAME: Sector 5 Post-construction Scarp Monitoring - 2022
(Project No. 22-3019)

CLIENT: Ms. Kathryn Brown
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
Phone: (561) 361-3181 * Email: kathryn.brown@aptim.com

PROJECT DESCRIPTION: Post-construction escarpment monitoring and ancillary professional services in support of the Sector 5 Beach and Dune Restoration Project, as described in EAI's Scope of Work dated February 8, 2022.

PROJECT DURATION: March 2022 – October 2022.

PROJECT COSTS: All services will be provided at the fixed rates specified below (*except where noted*), inclusive of all time and materials required to perform the Scope of Work.

Task	Description	Cost
1	Project management	\$1,040.00
2	Weekly escarpment surveys (<i>Weekly rate; not to exceed 35 weeks at \$82.57 per week</i>)	\$2,889.95
TOTAL (<i>not to exceed</i>)		\$3,929.95

TERMS: All terms and conditions related to this Scope of Work will be governed under EAI's Work Agreement with APTIM for Environmental and Biological Support Services dated February 9, 2018.

Ecological Associates, Inc. - 2022 Indian River County Sector 5 Beach and Dune Restoration Project
Attachment B - Post-construction Monitoring Cost Breakdown

Task No.	Task	Sub-task	Units	# Units	Position	Rate	Cost	Total*
1	Project Management	Management	Hours	8	Proj Mgr	\$ 130.00	\$ 1,040.00	\$ 1,040.00
2	Weekly Scarp Surveys	Surveys and reports	Hours	35	Field Tech	\$ 62.00	\$ 2,170.00	\$ 2,890.00
			Hours	8	Biol I	\$ 90.00	\$ 720.00	
TOTAL								\$ 3,930.00

*Totals may vary slightly when presented as a weekly rate.