

WORK ORDER NUMBER 2018006-23

**SECTOR 3 HURRICANES IAN AND NICOLE
2026 ENVIRONMENTAL MONITORING**

This Work Order Number 2018006-23 is entered into as of this ____ day of _____, 2026 pursuant to that certain Contract Agreement relating to Engineering and Biological support services for Sector 3 (Wabasso Beach) Beach and Dune Renourishment Project entered into as January 9, 2018 (“Agreement”), between Indian River County, a political subdivision of the State of Florida (“COUNTY”) and Aptim Environmental & Infrastructure, LLC (“CONSULTANT”).

The COUNTY has selected the CONSULTANT to perform the professional services set forth on Exhibit A, attached to this Work Order and made part hereof by this reference. The professional services will be performed by the CONSULTANT for the fee schedule set forth in Exhibit 1. The CONSULTANT will perform the professional services within the timeframe more particularly set forth in Exhibit A, all in accordance with the terms and provisions set forth in the Agreement. Pursuant to paragraph 1.3 of the Agreement, nothing contained in any Work Order shall conflict with the terms of the Agreement and the terms of the Agreement shall be deemed to be incorporated in each individual Work Order as if fully set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Work Order as of the date first written above.

CONSULTANT
Aptim Environmental & Infrastructure, LLC.

BOARD OF COUNTY COMMISSIONERS
OF INDIAN RIVER COUNTY

By: _____

By: _____
Deryl Loar, Chairman

Title: _____

Attest: Ryan L. Butler, Clerk of Court and
Comptroller

Date: _____

By: _____
(Seal) Deputy Clerk

Approved:

By: _____
John A. Titkanich, Jr., County Administrator

Approved as to form and legal sufficiency:

By: _____
Jennifer W. Shuler, County Attorney



Aptim Environmental & Infrastructure, LLC
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487
Tel: +1 561 391 8102
Fax: +1 561 391 9116
www.aptim.com

Exhibit A

January 28, 2026

Quintin Bergman
Coastal Resource Manager
Natural Resources Department - Coastal Division
1801 27th Street, Vero Beach, FL 32960

**Subject: Indian River County, FL
Sector 3 – 2018006 – Work Order #23
2026 Environmental Monitoring**

Dear Quintin:

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 3 Hurricanes Ian and Nicole Dune Renourishment Project. The scope of work described herein is to support the County with the following items:

1. Sidescan and Swath Sonar Survey
2. Nearshore Hardbottom Biological Monitoring
3. Sea Turtle and Escarpment Monitoring

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 January 9, 2018, to provide engineering and biological support services for the Sector 3 (Wabasso Beach) Beach and Dune Renourishment Project (RFQ#2018006).

Task 1: Sidescan and Swath Sonar Survey

The 2026 environmental monitoring will include a sidescan and swath sonar survey of the nearshore hardbottom edge for the Sector 3 project area (R-20 to R-55), including within one R-monument north (updrift) and three R-Monuments south (downdrift) of the project area for a length of approximately 7.3 miles. R-19.5 and R-57 demarcate the northern and southern boundaries for where the nearshore hardbottom edge shall be mapped. These data will be processed and utilized for diver verification as described in Task 2.

Task 1: Scope of Work

An Edge Tech 6205 fully integrated multi-phase wide swath bathymetry and dual frequency sidescan sonar system will be used to collect data over the entire area of investigation. The 6205 produces real-time, high resolution, three dimensional (3D) maps of the seafloor while providing co-registered simultaneous dual frequency sidescan imagery. The 6205 uses ten receive element transducers and one discrete transmit element. The high number of channels enables superior rejection of multipath effects, reverberation and acoustic noise commonly encountered in the shallow water survey environment.

The digital sidescan and swath bathymetry data will be merged with positioning data (Real-Time Kinematic (RTK) Global Navigation Satellite System (GNSS) via Hypack), video displayed and recorded to the acquisition computer's hard disk for post processing and/or replay. RTK GNSS data will be corrected through the Florida Permanent Reference Network, control checks will be performed at the beginning and end of each survey day. The position of the sensor relative to the RTK antenna will be documented to ensure proper positioning of the data.

All sidescan sonar data will be processed using the SonarWiz software package developed by Chesapeake Technologies Inc. All multi-phase swath bathymetry data will be processed with the Hypack MBMax64 software developed by Xylem Inc. These software packages allow for advanced processing, interpretation, and digital mosaic output and can produce georeferenced HTML's viewable in generic web-browser software programs. SonarWiz also produces digital geographic information for sidescan data that are exportable for incorporation into a GIS database.

It is anticipated that the effort to survey the hardbottom edge will take up to two (2) field days based on previous experience. The data will be digitized and incorporated into a GIS database. Time for reduction and analyses is included in the cost estimate to address the data management for those 2 days of field operations.

Task 1: Deliverable

The deliverables will include GIS shapefiles to be included in the GIS geodatabase that will be submitted as part of the raw data package described in Task 2. A short write-up describing equipment and operations will be included in the post-construction biological monitoring report.

Task 1: Schedule

The survey will take place in early summer 2026 to assist in the diver verification efforts.

Task 1: Cost

The lump sum cost for this task is \$22,221.40.

Task 2: Nearshore Hardbottom Biological Monitoring

The Sector 3 2026 nearshore hardbottom biological monitoring will be managed and conducted by APTIM, with the assistance of APTIM's approved subconsultant, Coastal Protection Engineering LLC (CPE). APTIM and CPE will be available to meet with the County on a weekly basis to provide a status report of the monitoring as needed.

The Biological Monitoring Plan for the Sector 3 project requires pre- and post-construction biological monitoring adjacent to the project area to monitor for potential secondary impacts to nearshore natural hardbottom. The scope for this task is based on the Florida Department of Environmental Protection (FDEP)-approved Biological Monitoring Plan (FDEP Permit No. 0285993-009-JC and Mod. No. 0285993-011-JN). The nearshore hardbottom monitoring for this task shall include:

- Hardbottom edge mapping/verification
- Permanent transect monitoring

Task 2: Scope of Work

1) Hardbottom Edge Mapping/Verification:

Qualified biologists will utilize the sidescan sonar data to verify the hardbottom edge at predetermined intervals along the project area (R-19.5 to R-57) based on coordination with the FDEP. As needed, additional areas may be diver verified to investigate areas of uncertainty in order to confirm the current location of the hardbottom edge. 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 interface.

2) Permanent Transect Monitoring:

Thirty-eight (38) permanent transects were established along the length of project influence, which includes 1000 feet north (updrift) and 2000 feet south (downdrift). This includes twenty-four (24) biological monitoring transects and fourteen (14) sediment-only transects. All transects were established perpendicular to the shoreline and extend from the landward hardbottom edge to a maximum distance of 50 meters seaward.

The APTIM team will conduct the biological survey of the hardbottom using the following methods:

- 1) Quadrat Assessments: Up to nine (9) 0.5-m² quadrats sampled along each transect to quantify the benthic community.
- 2) Sediment Measurements: Collected using line-intercept and 1-m interval sediment depth measurements.
- 3) Video/Photo Documentation: Collected for the length of each transect.

It is anticipated that the effort to verify the hardbottom edge and monitor the transects will take up to sixteen (16) 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 16 days of field operations.

Task 2: Deliverable

Raw data will be provided to FDEP and the County and will include 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, and video/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 the most recent aerial photography (in digital format).

A post-construction biological monitoring report will be generated for submittal to the County and regulatory agencies.

Task 2: Schedule

The 2026 monitoring event will take place during summer 2026. 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 2: Cost

The lump sum cost for this task is \$160,651.47.

Task 3: Sea Turtle and Escarpment Monitoring

The Sector 3 2026 sea turtle monitoring will be managed and coordinated by APTIM, and conducted by APTIM's approved subconsultant, Ecological Associates, Inc. (EAI). EAI will be available to join APTIM and CPE to meet with the County on a weekly basis to provide a status report of the monitoring as needed.

Task 3: Scope of Work

APTIM will oversee the scope of work proposed by EAI and provide the necessary administrative coordination to the County. The 2026 sea turtle monitoring effort along the approximate 6.7 mile shoreline (R-20 to R-55) within the Sector 3 Project Area addresses permit-required post-construction sea turtle monitoring. 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 (Attachment 1) for sea turtle monitoring tasks, which are summarized as follows:

1. Mobilization
2. Project Management
3. Daily Sea Turtle Monitoring and Data Management
4. Nest Marking and Monitoring
5. Weekly Escarpment Surveys and Reporting
6. Reporting

Task 3: Deliverable

Deliverables included a nesting season summary report within 90 days of completion of all monitoring activities and a permit-required Excel spreadsheet summarizing all nesting activity and reproductive success at the end of the 2026 nesting season.

Task 3: Schedule

The sea turtle monitoring will commence in March 2026.

Task 3: Cost

The lump sum cost for this task is \$283,593.85.

Summary

The total lump sum cost to perform the proposed work described herein for Sector 3 – 2018006 – Work Order #23 is \$466,466.72. Exhibit 1 includes a summary of the costs and labor hours of each Task. Thank you for the opportunity to serve Indian River County. As always, please do not hesitate to call if you have any questions.

Sincerely,



Katy Brown
Lead Marine Biologist
Aptim Environmental & Infrastructure, LLC

cc: Nicole Sharp, P.E., APTIM
Andra Frederick, APTIM



EXHIBIT 1

Indian River County, Florida
Sector 3 - 2018006 - Work Order #23
2026 Environmental Monitoring

Summary of Cost by Task

Task Number	Task Name	Labor	Equipment	Materials	Mobilization	Subcontractors	Total
Task 1	Sidescan and Swath Sonar Survey	\$ 14,090.00	\$ 4,111.40	\$ 2,490.00	\$ 1,530.00	\$ -	\$ 22,221.40
Task 2	Nearshore Hardbottom Biological Monitoring	\$ 77,642.00	\$28,554.60	\$ 2,400.00	\$ 9,772.00	\$ 42,282.87	\$ 160,651.47
Task 3	Sea Turtle and Escarpment Monitoring	\$ 2,280.00	\$ -	\$ -	\$ -	\$ 281,313.85	\$ 283,593.85
Totals =		\$ 94,012.00	\$32,666.00	\$ 4,890.00	\$ 11,302.00	\$ 323,596.72	\$ 466,466.72

Indian River County, Florida
Sector 3 - 2018006 - Work Order #23
2026 Environmental Monitoring

Summary of Labor Hours and Cost

Labor Title	Labor Bill Rate	Sidescan & Swath Sonar Survey		Nearshore Hardbottom Biological Monitoring		Sea Turtle & Escarpment Monitoring		Totals	
		Task 1		Task 2		Task 3			
		Labor Hours	Cost	Labor Hours	Cost	Labor Hours	Cost	Labor Hours	Cost
Senior Project Manager	\$ 250.00		\$ -	1	\$ 250.00		\$ -	1	\$ 250.00
Senior Coastal Engineer	\$ 165.00		\$ -	24	\$ 3,960.00	4	\$ 660.00	28	\$ 4,620.00
Senior Marine Biologist	\$ 135.00		\$ -	24	\$ 3,240.00	12	\$ 1,620.00	36	\$ 4,860.00
Marine Biologist II	\$ 95.00		\$ -	554	\$ 52,630.00		\$ -	554	\$ 52,630.00
GIS Operator	\$ 105.00	8	\$ 840.00	12	\$ 1,260.00		\$ -	20	\$ 2,100.00
Boat Captain	\$ 80.00	44	\$ 3,520.00	200	\$ 16,000.00		\$ -	244	\$ 19,520.00
PSM	\$ 145.00	2	\$ 290.00		\$ -		\$ -	2	\$ 290.00
Surveyor	\$ 95.00	64	\$ 6,080.00		\$ -		\$ -	64	\$ 6,080.00
Geologist III	\$ 130.00	16	\$ 2,080.00		\$ -		\$ -	16	\$ 2,080.00
Geologist I	\$ 80.00	16	\$ 1,280.00		\$ -		\$ -	16	\$ 1,280.00
Bookkeeper	\$ 80.00		\$ -	2	\$ 160.00		\$ -	2	\$ 160.00
Clerical	\$ 71.00		\$ -	2	\$ 142.00		\$ -	2	\$ 142.00
Subcontractors	-		\$ -		\$ 42,282.87		\$ 281,313.85		\$ 323,596.72
Equipment	-		\$ 4,111.40		\$ 28,554.60		\$ -		\$ 32,666.00
Materials	-		\$ 2,490.00		\$ 2,400.00		\$ -		\$ 4,890.00
Mobilization/Other ODCs	-		\$ 1,530.00		\$ 9,772.00		\$ -		\$ 11,302.00
TOTAL	-	150	\$22,221.40	819	\$ 160,651.47	16	\$ 283,593.85	985	\$ 466,466.72



ATTACHMENT 1

**ECOLOGICAL ASSOCIATES, INC.
SCOPE OF WORK AND COST PROPOSAL**



Ms. Kathryn Brown
APTIM
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487

December 11, 2025

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 3 Beach and Dune Nourishment Project. This proposal addresses post-construction sea turtle permit-compliance monitoring along approximately 6.7 miles of beach during the 2026 nesting season, along with a suitable reference area, 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 standard regulatory permits and the following documents:

- Florida Department of Environmental Protection (FDEP) Joint Coastal Permit (JCP) No. 0285993-009-JC
- U.S. Fish and Wildlife Service (USFWS) Revised Statewide Programmatic Biological Opinion (BO) dated March 13, 2015

Task 1: Mobilization

All equipment, staff, and schedules will be prepared prior to project commencement. The Project Area extends approximately 6.7 miles from FDEP Range Monument R-20 to R-55. The Reference Area, approximately 6.0 miles south of the Project and outside of the influence of the project, lies between R-86 and R-96. Pre-existing survey zone boundaries, consistent with those established by Indian River County under its Habitat Conservation Plan, will be verified and re-marked, and project-specific data sheets and a database will be created.

Task 2: Project Management

An EAI project manager will oversee all fieldwork and data management operations, provide weekly updates to APTIM/Indian River County, 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 3: Daily Sea Turtle Monitoring and Data Management (FDEP Specific Condition 15)

Beginning on March 1, 2026, EAI will conduct daily morning sea turtle nesting surveys of the Project and Reference Areas. Surveys will continue through October 31, 2026, or until 15 days without a crawl in the Project Area, whichever is earlier. If there is a fifteen-day period where no crawls are documented in the Project Area, EAI will request a waiver from the USFWS and FWC to discontinue daily monitoring. If permission is granted, EAI will then perform surveys three days per week to monitor marked nests.

Surveys will commence within 30 minutes of sunrise. Monitoring will be performed by EAI staff either on foot or using ATVs. All emergences (turtle crawls) apparent from the previous night will be interpreted to determine which species of turtle came ashore and whether it nested. Crawls will be denoted as being above or below the previous high tide line. The approximate geographic location of each crawl will be determined by GPS. In addition to segregating crawls into nesting and non-nesting emergences (false crawls), each false crawl will be assigned to one of the following categories denoting the stage at which the nesting attempt was abandoned: no digging, abandoned body pit, or abandoned egg cavity. Any obstacles encountered by turtles during their crawls will be documented.

Disorientation Reporting. During the course of daily monitoring, any evidence of hatchling misorientation or disorientation from either marked or unmarked nests will be documented using FWC's electronic Marine Turtle Hatchling Disorientation Incident Report Form. Based on track evaluations, an estimate of the number of hatchlings disoriented will be recorded and light sources potentially responsible for the disorientation identified. Information concerning each incident will be forwarded by email to Indian River County on a weekly basis so appropriate remedial action may be taken.

Stranding and Salvage. A requirement of FWC sea turtle permit holders conducting nesting surveys is to respond to the stranding of sick, injured, and dead sea turtles within their survey area. These animals are examined, and if alive, transported to state-approved care facilities. A standard Sea Turtle Stranding and Salvage data form will be completed and submitted for each stranded animal encountered by EAI. This information will be transmitted to FWC in accordance with established guidelines.

State and Federal Authorizations. All sea turtle monitoring and related activities will be performed under FWC Marine Turtle Permit #261 issued by FWC to EAI Co-

President, Niki Desjardin. All persons engaged in monitoring performed by EAI for the Sector 3 Beach and Dune Nourishment Project will be listed on the permit.

All data will be subject to rigorous QA/QC protocols and stored in EAI's project-specific database. Monthly summary reports will be furnished to APTIM. These reports will tabulate the dates and times of monitoring, names of monitoring personnel, numbers of sea turtle emergences by species, and numbers of nests marked and evaluated for reproductive success, as applicable. Monthly reports will be submitted to APTIM on the last day of the month following delivery of services (e.g., March report due no later than April 30), or as otherwise mutually agreed upon.

Task 4: Nest Marking and Monitoring (FDEP Specific Condition 15)

A representative sample of nests in the Project and Reference Areas will be marked for determination of nest fate and reproductive success (not to exceed 700 nests total). Nests will be marked using a series of stakes and surveyor's tape. These nests will be monitored throughout their incubation period to determine nest fate (e.g., hatched, washed out, depredated, vandalized, etc.). After an appropriate incubation period, and in accordance with the FWC Handbook, nests will be excavated to determine reproductive success. Two measures of reproductive success will be calculated: hatching success (the percentage of eggs in the nest that hatch) and emerging success (the percentage of eggs in the nest that produce hatchlings which successfully escape from the nest).

Task 5: Post-Construction Escarpment Surveys (FDEP Specific Condition 18)

Beginning on March 1, 2026, escarpment (scarp) surveys will be conducted on a weekly basis within the Sector 3 Project Area through October 31, 2026. In accordance with 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 of any FDEP-defined persistent scarps within the Project Area that may interfere with sea turtle nesting. APTIM shall be responsible for notifying FDEP/FWC of the presence of those scarps and for coordinating any remediation measures, if required. *Any services required of EAI during scarp consultation and leveling will be charged separately on a time and materials basis.*

Tasks 6a-6b: Reporting (FDEP Specific Condition 19)

1. **Nesting Season Summary:** A report summarizing methods, numbers of sea turtle emergences by species, nest fates of all marked nests, and reproductive success of

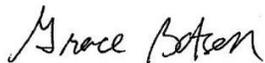
evaluated nests, and an assessment of project performance on sea turtle nesting and reproductive success, including interpretive analyses and graphic representations, will be prepared and submitted to APTIM within 90 days of the completion of all monitoring activities.

2. **Summary Spreadsheet of Sea Turtle Nesting Activity:** At the end of the 2026 nesting season, a permit-required Excel spreadsheet summarizing all nesting activity and reproductive success within the Project and Reference Areas will be submitted electronically to APTIM/Indian River County and JCP Compliance.

EAI will submit its monthly billings for the services described above to APTIM in accordance with the fees and schedules set forth in Attachment A. 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
Senior Project Manager

c: Niki Desjardin/Co-President
Joseph Scarola/Senior Scientist

ATTACHMENT A
ECOLOGICAL ASSOCIATES, INC.
3552 NE CANDICE AVE
JENSEN BEACH, FLORIDA 34957

COST PROPOSAL – December 11, 2025

PROJECT NAME: Sector 3 Post-construction Sea Turtle Monitoring Program – 2026
(Project No. 26-3943)

CLIENT: Ms. Kathryn Brown
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487
Phone: (732) 599-6653 Email: kathryn.brown@aptim.com

PROJECT DESCRIPTION: Post-construction sea turtle monitoring and ancillary professional services in support of the Sector 3 Beach and Dune Nourishment Project, as described in EAI’s Scope of Work dated December 11, 2025.

PROJECT DURATION: February 2026 – March 2027.

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	Mobilization	\$2,050.00
2	Project management	\$10,530.00
3	Daily sea turtle monitoring and data management (<i>Daily rate; estimate 271 days at \$645.35 per day</i>)	\$174,889.85
4	Nest marking and monitoring and determination of nest fate and reproductive success (<i>Per nest rate; not to exceed 700 nests at \$94.69 per nest</i>)	\$66,283.00
5	Weekly escarpment surveys and reporting (<i>Weekly rate; estimate 35 weeks at \$194.86 per week</i>)	\$6,820.10
6a	Final interpretive report	\$6,780.00
6b	FWC nourishment reporting Excel spreadsheet	\$565.00
TOTAL (not to exceed)		\$267,917.95

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.