

WORK ORDER NUMBER 2018029-15

**SECTOR 5 HURRICANES IAN AND NICOLE
2026 ENVIRONMENTAL MONITORING**

This Work Order Number 2018029-15 is entered into as of this ____ day of _____, 2026 pursuant to that certain Contract Agreement relating to Engineering and Biological support services for Sector 5 (Vero Beach) Beach and Dune Renourishment Project entered into as April 3, 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 29, 2026

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

**Subject: Indian River County, FL
Sector 5 – 2018029 – Work Order #15
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 5 Beach and Dune Restoration Project. The scope of work described herein is to support the County with the following items:

1. Nearshore Hardbottom Biological Monitoring
2. Sea Turtle and Shorebird 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 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: Nearshore Hardbottom Biological Monitoring

The Sector 5 immediate 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). 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 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:

The APTIM Team 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.

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. The APTIM Team will conduct the immediate 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.

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).

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

Task 1: Schedule

The immediate post-construction 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 1: Cost

The lump sum cost for this task is \$98,004.84.

Task 2: Sea Turtle and Shorebird Monitoring

The Sector 5 2026 sea turtle and shorebird 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 2: 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 and shorebird monitoring 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 2026 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 (Attachment 1) for the sea turtle and shorebird 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. Weekly Shorebird Nesting Surveys
7. Nighttime Lighting Surveys and Reporting
8. Reporting

Task 2: 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. Lighting survey results will be provided to APTIM in standard report form as well as on an Excel spreadsheet. Reports, including recommendations for correcting problem lights, will be provided within 30 days of each survey.

Task 2: Schedule

The monitoring will commence following the completion of construction or on March 1, 2026, whichever is later. If construction activities take place entirely outside of the breeding season (March 1 through September 1), shorebird surveys are not required.

Task 2: Cost

The lump sum cost for this task is \$191,679.34.

Summary

The total lump sum cost to perform the proposed work described herein for Sector 5 – 2018029 – Work Order #15 is \$289,684.18. 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. 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 5 - 2018029 - Work Order #15
2026 Environmental Monitoring**

Summary of Cost by Task

Task Number	Task Name	Labor	Equipment	Materials	Mobilization	Subcontractors	Total
Task 1	Nearshore Hardbottom Biological Monitoring	\$ 47,012.00	\$ 16,141.20	\$ 1,350.00	\$ 6,268.00	\$ 27,233.64	\$ 98,004.84
Task 2	Sea Turtle and Shorebird Monitoring	\$ 2,280.00	\$ -	\$ -	\$ -	\$ 189,399.34	\$ 191,679.34
Totals =		\$ 49,292.00	\$ 16,141.20	\$ 1,350.00	\$ 6,268.00	\$ 216,632.98	\$ 289,684.18

**Indian River County, Florida
Sector 5 - 2018029 - Work Order #15
2026 Environmental Monitoring**

Summary of Labor Hours and Cost

Labor Title	Labor Bill Rate	Nearshore Hardbottom Biological Monitoring		Sea Turtle and Shorebird Monitoring		Totals	
		Task 1		Task 2		Labor Hours	Cost
		Labor Hours	Cost	Labor Hours	Cost		
Senior Project Manager	\$ 250.00	1	\$ 250.00		\$ -	1	\$ 250.00
Sr. Coastal Engineer	\$ 165.00	18	\$ 2,970.00	4	\$ 660.00	22	\$ 3,630.00
Senior Marine Biologist	\$ 135.00	22	\$ 2,970.00	12	\$ 1,620.00	34	\$ 4,590.00
Marine Biologist II	\$ 95.00	320	\$ 30,400.00		\$ -	320	\$ 30,400.00
GIS Operator	\$ 105.00	8	\$ 840.00		\$ -	8	\$ 840.00
Boat Captain	\$ 80.00	116	\$ 9,280.00		\$ -	116	\$ 9,280.00
Bookkeeper	\$ 80.00	2	\$ 160.00		\$ -	2	\$ 160.00
Clerical	\$ 71.00	2	\$ 142.00		\$ -	2	\$ 142.00
Subcontractors	-	-	\$ 27,233.64	-	\$ 189,399.34	-	\$ 216,632.98
Equipment	-	-	\$ 16,141.20	-	\$ -	-	\$ 16,141.20
Materials	-	-	\$ 1,350.00	-	\$ -	-	\$ 1,350.00
Mobilization/Other ODCs	-	-	\$ 6,268.00	-	\$ -	-	\$ 6,268.00
TOTAL	-	489	\$ 98,004.84	16	\$ 191,679.34	505	\$ 289,684.18



ATTACHMENT 1

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



Mr. James Austin, P.E.
APTIM
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487

January 28, 2026

Dear Mr. Austin:

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 sea turtle and shorebird permit-compliance monitoring along approximately 3.5 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. 0363427-001-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 3.5 miles from FDEP Range Monument R-70 near Mariner Beach Lane to R-86 near Bay Oak Lane. The Reference Area, 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 11)

Following completion of construction or beginning on March 1, 2026, whichever is later, EAI will conduct daily morning sea turtle nesting surveys of the Project and Reference Areas. Surveys will continue through November 30, 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 #277 issued by FWC to EAI Senior Scientist, Joseph Scarola. All persons engaged in monitoring performed by EAI for the Sector 5 Beach and Dune Restoration 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 18)

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 600 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 17)

Following completion of construction or beginning on March 1, 2026, whichever is later, escarpment (scarp) surveys will be conducted on a weekly basis within the Sector 5 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.***

Task 6: Post-construction Nesting Shorebird Monitoring (FDEP Specific Conditions 20 & 21)

Following completion of construction, EAI will conduct surveys to identify shorebird/seabird nesting activity in the Project Area weekly through September 1, 2026, if no shorebird nesting activity is observed. The surveys will be conducted on foot or by ATV at dawn. EAI will report all breeding activity to the Florida Shorebird Database within one week of data collection. Shorebird monitoring activities will comply with all protocols outlined on the Florida Shorebird Database website. *Nesting shorebird surveys will be charged at a per survey rate. *If construction activities take place entirely outside the breeding season, shorebird surveys are not required.*

Task 7: Lighting Surveys (FDEP Specific Condition 19)

Two surveys (one between May 1 and May 15 and another between July 15 and August 1) of beachfront lighting conditions within the Project Area will be performed. The location, number, and type of lights visible from the beach and not in compliance with Indian River County's lighting regulations will be documented and reported to the County. Photos (long exposure, without flash) will also be taken of all lights visible from the nourished beach.

A sub-meter GPS equipped with a laser rangefinder will be used to record coordinates from which observations are made and the exact locations of non-compliant light sources. Results will be provided to APTIM in standard report form as well as on an Excel spreadsheet. Reports, including recommendations for correcting problem lights, will be provided within 30 days of each survey.

It shall be the responsibility of APTIM to work with Indian River County to notify property owners of non-compliant lights. Following submission of an annual report on enforcement actions (to be prepared by APTIM/Indian River County), an EAI lighting specialist will participate in a meeting with APTIM, Indian River County, FWC, and USFWS to discuss the survey reports and marine turtle disorientations documented within the Project Area, if required.

Tasks 8a-8b: Reporting (FDEP Specific Condition 18)

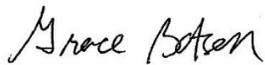
1. **Nesting Season Summary:** A report summarizing methods, numbers of sea turtle emergences by species, nest fates of all marked nests, and reproductive success of evaluated nests, and an assessment of project performance on sea turtle nesting and reproductive success, including interpretive analyses 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 – January 28, 2026

PROJECT NAME: Sector 5 Post-construction Sea Turtle Monitoring Program – 2026
(Project No. 26-3019B)

CLIENT: Mr. James Austin, P.E.
APTIM
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487
Phone: (561) 361-3167* Email: James.Austin@APTIM.com

PROJECT DESCRIPTION: Post-construction sea turtle and shorebird 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 January 28, 2026.

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	\$7,020.00
3	Daily sea turtle monitoring and data management (<i>Daily rate; estimate 271 days at \$325.02 per day</i>)	\$88,080.42
4	Nest marking and monitoring and determination of nest fate and reproductive success (<i>Per nest rate; not to exceed 600 nests at \$94.69 per nest</i>)	\$56,814.00
5	Weekly escarpment surveys and reporting (<i>Weekly rate; estimate 35 weeks at \$146.14 per week</i>)	\$5,114.90
6	Weekly shorebird nesting surveys (<i>Per survey rate; not to exceed 27 surveys at \$155.00 per survey</i>)	\$4,185.00
7a	Nighttime lighting surveys and reporting (<i>Per survey rate; two surveys at \$4,510.50 each</i>)	\$9,021.00
7b	Post-season lighting meeting with FWC (<i>if required</i>)	\$750.00
8a	Final interpretive report	\$6,780.00
8b	FWC nourishment reporting Excel spreadsheet	\$565.00
TOTAL (not to exceed)		\$180,380.32

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.