WORK ORDER NUMBER 2023051-5

SECTOR 4 HURRICANES IAN AND NICOLE DUNE RENOURISHMENT PROJECT
IMMEDIATE POST-CONSTRUCTION MONITORING

This Work Order Number 2023051-5 is entered into as of this _____ day of _____, 2025 pursuant to that certain Engineering and Biological Support Services Contract for Sector 4 Agreement for Professional Services entered into as of August 29, 2023 ("Agreement"), by and between Indian River County, a political subdivision of the State of Florida ("COUNTY") and Coastal Technology Corporation, ("CONSULTANT").

The COUNTY has selected the CONSULTANT to perform the professional services set forth on Exhibit 1, 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 1, 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
Coastal Technology Corporation

By: _____
_____, P.E.

Title: _____

Date: _____

BOARD OF COUNTY COMMISSIONERS
OF INDIAN RIVER COUNTY

By: _____
Joseph E. Flescher, Chairman

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

By: _____
(Seal) Deputy Clerk

Approved:

By: _____
John Titkanich, Jr., County Administrator

Approved as to form and legal sufficiency:

By: _____
Jennifer Wintrode Shuler, County Attorney

Exhibit 1 - *Scope of Work*
Sector 4 Dune Restoration Project - Immediate Post-Construction Monitoring

Introduction: Indian River County (COUNTY) engaged a contractor to restore the dune within Sector 4 (Project) - consistent with the "*Indian River County Beach Preservation Plan Update*", adopted by the COUNTY in June 2020. The Project limits extend from Florida Department of Environmental Protection (FDEP) Reference Monument R-55 (about ¾ mile south of the Turtle Trail Beach Access) to just south of R-70 (near Mariner Beach Lane north of the County's Tracking Station Beachfront Park). The FDEP and U.S. Army Corps of Engineers (USACE) permits include conditions that require the COUNTY (as PERMITTEE) to perform monitoring immediately (within same calendar year) after construction – as identified in the U.S. Fish and Wildlife Service (USFWS) "Revised Statewide Programmatic Biological Opinion" (SPBO) dated March 13, 2015. This Work Order is to provide for immediate post-construction physical and biological monitoring services in support of the Project as required by the FDEP and USACE permits. The work under this Work Order is proposed to be performed by Coastal Technology Corporation (COASTAL TECH) with environmental support services by Ecological Associates, Inc. (EAI) - as described below:

Task 1 - Survey & Report: As required by FDEP Specific Condition 28 and the FDEP approved Physical Monitoring Plan dated October 12, 2023:

- The COUNTY will provide the Post-Construction beach profile survey following the completion of the construction of the Project.
- COASTAL TECH will:
    - review the 2025 Post-Construction beach profile survey for compliance with the Physical Monitoring Plan;
    - conduct an analysis of the following:
        - patterns, trends, or changes between annual surveys and for cumulative changes over time,
        - the erosion and accretion volumetric change rates and shoreline changes between the pre and post-construction survey, with assessment of the volume of fill remaining within the Project area, and
        - adjustment of the beach fill via alongshore and cross- shore fill movement – including outside of the Project fill area.
    - prepare an "Engineering Report" summarizing results of the analysis.

Task 2 - Lighting Surveys: Per FDEP Specific Condition 15 and SPBO "Measure" A10, COASTAL TECH via subcontract with EAI will perform the required Post-Construction Lighting Surveys (a) "between May 1 and May 15" 2025, and (b) "between July 15 and August 1" 2025. For each survey, EAI will:

- document the location (sub-meter GPS coordinates), number and type of lights visible from the beach and not in compliance with Indian River County's lighting regulations - with photos of lights visible from the beach;
- within 30 days of the survey - prepare a written report and Excel spreadsheet summarizing survey results including recommendations for correcting non-compliant lights;
- participate in a meeting with COASTAL TECH, the COUNTY, FWC, and USFWS to discuss the survey results if requested by the COUNTY; and
- conduct up to twenty (20) additional site specific lighting surveys – as may be requested by FWC and the COUNTY - from the crest of the reconstructed dune in areas with documented nesting on top of or landward of the reconstructed dune.

Task 3 – Sea Turtle & Shorebird Monitoring: COASTAL TECH will subcontract with EAI to perform Task 3 monitoring for potential impacts to nesting sea turtles and shorebirds. Following completion of construction or beginning on March 1, 2025 (whichever is later), to monitor nesting sea turtles, EAI will:

- conduct daily morning sea turtle nesting surveys either on foot or using ATVs of the Project Area and a Reference Area (a nearby beach with similar characteristics that is outside of the influence of the Project) - within 30 minutes of sunrise through November 11, 2025, or until 15 days without a crawl in the Project or Reference Areas, whichever is earlier;
- request a waiver from the USFWS and FWC to discontinue daily sea turtle monitoring if there is a fifteen-day period where no crawls are documented in the Project or Reference Areas; if USFWS and FWC permission is granted, EAI will then perform surveys three days per week to monitor marked nests;
- interpret emergences (turtle crawls) apparent from the previous night to determine which species of turtle came ashore and whether it nested;
- denote for each apparent crawl:
    - the approximate geographic location (sub-meter GPS coordinates),
    - as being above or below the previous high tide line,
    - whether nesting or and non-nesting emergences (false crawls) - with each false crawl 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, and
    - any obstacles encountered by turtles during their crawls;
- document – using FWC's electronic Marine Turtle Hatchling Disorientation Incident Report Form - any observed evidence of hatchling misorientation or disorientation from either marked or unmarked nests - including, as based on track evaluations, an estimate of the number of hatchlings disoriented and observable light sources potentially responsible for the disorientation identified – with documentation forwarded by email to COASTAL TECH and the COUNTY so appropriate remedial action may be taken by the COUNTY;
- respond to the stranding of sick, injured, and dead sea turtles within the survey area by
    - examining the animals, and if alive, transported the animals to state approved care facilities, and
    - completing and submitting a standard Sea Turtle Stranding and Salvage data form to FWC in accordance with established FWC guidelines;

- mark (using a series of stakes and surveyor's tape) a representative sample of nests in the Project and Reference Areas for determination of nest fate and reproductive success (not to exceed 750 nests total) via:
    - monitoring throughout the nest incubation period to determine nest fate (e.g., hatched, washed out, depredated, vandalized, etc.). After an appropriate incubation period, and
    - excavation of the nest in accordance with the FWC Handbook, to determine reproductive success as hatching and emerging.
- prepare a Nesting Season Summary 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 – with an Excel spreadsheet summarizing all nesting activity and reproductive success within the Project and Reference Areas; and
- submit the Nesting Season Summary Report to FWC – following COASTAL TECH and COUNTY acceptance of the Report.

Following completion of construction or beginning on March 1, 2025 (whichever is later), to monitor nesting shorebirds, EAI will perform weekly surveys to identify shorebird/seabird nesting activity within the Project area through September 1, 2025. The surveys will be conducted on foot or by ATV and will cover all potential beach nesting bird habitats within the Sector 4 Project Area. 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. If construction activities take place entirely outside the breeding season, shorebird surveys are not required.

To monitor potential escarpments that may affect nesting sea turtles - following completion of construction or beginning on March 1, 2025 (whichever is later) through October 31, 2025 - EAI will perform scarp surveys in accordance with permit requirements on a weekly basis within the Project Area. EAI will:

- document for each observed scarp:
    - the location (sub-meter GPS coordinates and relative to R-monuments), of both the northern and southern terminus of each observed scarp,
    - average scarp height - assigned to one of three categories (0 to 2 feet, 2 to 4 feet, and 4 feet or higher),
- prepare a tabular and/or graphic format report summarizing the location, approximate length, height category, maximum height, and percentage of beach with scarps
- notify COASTAL TECH and the COUNTY of any persistent scarps within the Project Area that may interfere with sea turtle nesting.

COASTAL TECH in coordination with the COUNTY will notify FWC of the presence of scarps as required by the permits. The COUNTY will provide for any FWC required remediation measures.

Indian River County
Sector 4 Dune Restoration Project
Immediate Post-Construction Phase Services
Estimated Fees and Schedule

Notice to Proceed
March 1, 2025

January 23, 2025

Start	Finish	Days	Task Description	COASTAL TECH Principal Engineer $240	Senior Coast. Engineer $220	Engineer II $125	Perm. Spec. / CADD $105	Total Fees	Direct Costs Amount	Direct Costs Description	Line Total	Subtask Total	Task Total
			Immediate Post-Construction Phase Services										**$293,643.41**
1-Jun-25	29-Sep-25	120	**Task 1 - 2025 Survey & Report**									$25,630.00	
			review the beach profile survey		1		2	$430			$430		
			conduct analysis	2	10	20	80	$13,580			$13,580		
			Engineering Report	8	10	60		$11,620			$11,620		
1-Jun-25	18-Dec-25	200	**Task 2 - Lighting Surveys**									$30,656.66	
			2 field surveys - May 1 to May 15 and July 15 to August 1		6			$1,320	$8,874.76	EAI	$10,194.76		
			Additional FWC-required lighting survey		20			$4,400	$16,061.90	EAI	$20,461.90		
1-May-25	1-Mar-26	304	**Task 3 - Sea Turtle & Shorebird Monitoring**									$237,356.75	
			Post-Construction Nesting Surveys (March 1 to October 31)		88			$19,360	$129,206.50	EAI	$148,566.50		
			Nest Marking and Hatchling Success (up to 750 marked nests)		44			$9,680	$65,917.50	EAI	$75,597.50		
			Weekly Escarpment Monitoring (up to 35 weeks)		3			$660	$4,852.75	EAI	$5,512.75		
			Reporting		4			$880	$6,800.00	EAI	$7,680.00		
			Total Hours:	10	186	80	82	358					
			Total Fees:	$2,400	$40,920	$10,000	$8,610	$61,930	$231,713.41		$293,643	$293,643.41	$293,643.41

Mr. Tem Fontaine
Vice President
Coastal Tech Corporation
3625 20th Street
Vero beach, Florida 32960

January 21, 2025

Dear Mr. Fontaine:

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 4 Dune Restoration Project. This proposal addresses post-construction sea turtle and shorebird permit-compliance monitoring along approximately 2.9 miles of beach during the 2025 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. 0441083-001-JC
- U.S. Army Corps of Engineers (USACE) permit No. SAJ-2023-02844
- 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 2.9 miles from FDEP Range Monument R-55 to R-70. Survey zone boundaries, consistent with those established by Indian River County under its Habitat Conservation Plan, will be 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 and consult with Coastal Tech 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, 2025 (whichever is later), EAI will conduct daily morning sea turtle nesting surveys of the Project Area and a suitable Reference Area (a nearby beach with similar characteristics that is outside of the influence of the project). Surveys will continue through November 11, 2025, or until 15 days without a crawl in the Project or Reference Areas, whichever is earlier. If there is a fifteen-day period where no crawls are documented in the Project or Reference Areas, 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 (sub-meter accuracy). 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 and Director of Operations, Niki Desjardin. All persons engaged in monitoring performed by EAI for the Sector 4 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 Coastal Tech. 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 Coastal Tech by 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 11)

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 750 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: Nesting Shorebird Monitoring (FDEP Specific Condition 17)

Following completion of construction or beginning on March 1, 2025 (whichever is later), weekly surveys to identify shorebird/seabird nesting activity within the Project Area will be conducted through September 1, 2025, if no shorebird nesting activity is observed. The surveys will be conducted on foot or by ATV and will cover all potential beach nesting bird habitats within the Sector 4 Project Area. 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. ***If construction activities take place entirely outside the breeding season, shorebird surveys are not required.***

Task 6: Post-Construction Escarpment Surveys (FDEP Specific Condition 14)

Following completion of construction or beginning on March 1, 2025 (whichever is later), scarp surveys will be conducted on a weekly basis within the Sector 4 Project Area through October 31, 2025. 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 Coastal Tech of any persistent scarps within the Project Area that may interfere with sea turtle nesting. Coastal Tech shall be responsible for notifying 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 7a-7d: Lighting Surveys (FDEP Specific Condition 15)

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 will also be taken of all lights visible from the nourished beach.

Additional lighting surveys may be requested by FWC and will be conducted from the crest of the reconstructed dune in areas with documented nesting on top of or landward of the reconstructed dune.

A sub-meter GPS will be used to record coordinates from which observations are made, and results will be provided to Coastal Tech 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 Coastal Tech 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 Coastal Tech /Indian River County), an EAI lighting specialist will participate in a meeting with Coastal Tech, 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 16)

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 Coastal Tech within 90 days of the completion of all monitoring activities**.**

2. **Summary Spreadsheet of Sea Turtle Nesting Activity**: At the end of the 2025 nesting season, a permit-required Excel spreadsheet summarizing all nesting activity and reproductive success within the Project and Reference Areas will be prepared and submitted electronically to Coastal Tech /Indian River County, JCP Compliance, and FWC.

EAI will submit its monthly billings for the services described above to Coastal Tech 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 Coastal Tech. 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

Grace Botson
Senior Project Manager

c: Niki Desjardin/Co-President and Director of Operations
Joseph Scarola/Senior Scientist

ATTACHMENT A

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

COST PROPOSAL – January 21, 2025

PROJECT NAME: Sector 4 Post-Construction Sea Turtle and Shorebird Monitoring – 2025 (Project No. 25-5572B)

CLIENT: Mr. Tem Fontaine
Vice President
Coastal Tech Corporation
3625 20th Street
Vero beach, Florida 32960
Phone: (772) 562-8580 Email: tfontaine@coastaltechcorp.com

PROJECT DESCRIPTION: Post-construction sea turtle and shorebird monitoring and ancillary professional services in support of the Sector 4 Dune Restoration Project, as described in EAI's Scope of Work dated January 21, 2025.

PROJECT DURATION: February 2025 – March 2026.

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. In some cases, costs are estimates based on best available information.

Task	Description	Cost
1	Mobilization	$2,210.00
2	Project management	$8,100.00
3	Daily sea turtle monitoring and data management ***(Daily rate; estimate 271 days at $426.50 per day)***	$115,581.50
4	Nest marking and monitoring and determination of nest fate and reproductive success ***(Per nest rate; not to exceed 750 nests at $87.89 per nest)***	$65,917.50
5	Nesting shorebird surveys ***(Per survey rate; not to exceed 26 surveys at $127.50 per week)***	$3,315.00
6	Weekly escarpment surveys and reporting ***(Weekly rate; not to exceed 35 weeks at $138.65 per week)***	$4,852.75
7a	Nighttime lighting surveys and reporting ***(Per survey rate; 2 surveys at $4,087.38 per survey)***	$8,174.76
7b	Additional FWC-requested lighting surveys ***(Survey rate for Senior Scientist; not to exceed 5 surveys at $1,299.88 per survey)***	$6,499.40
7c	Additional FWC-requested lighting surveys ***(Survey rate for Field Tech; not to exceed 15 surveys at $637.50 per survey)***	$9,562.50
7d	Post-season lighting meeting with FWC ***(if required)***	$700.00
8a	Final interpretive report	$6,280.00

Task	Description	Cost
8b	FWC nourishment reporting Excel spreadsheet	$520.00
TOTAL *(not to exceed)*		**$231,713.41**

BILLING: Charges for services will be billed at the end of each quarter during which services are provided. A description of all services rendered will accompany each billing.

PRICES FIRM: The prices quoted above are offered for a period of 30 days. Once an agreement is entered into with EAI for the services described herein, costs will remain fixed through project completion.

TERMS: 30 days from receipt of invoice.

EARLY TERMINATION: EAI's services may be terminated at any time by providing seven (7) days written notice. There is no penalty for early termination. Only charges accrued to the effective date of termination will be assessed.

LATE PAYMENT: Invoices shall be considered **PAST DUE** if payment is not received by EAI within 30 calendar days of the invoice date. Any unpaid balances for other than disputed charges will draw interest at the rate of one and one-half percent (1½ %) per month commencing 30 days after the date of invoice.

DISPUTED CHARGES: EAI shall be notified in writing of any disputed amount within 10 calendar days after receipt of invoice; otherwise, all invoice charges will be considered acceptable and correct.

ENTITLEMENT: EAI is entitled to all reasonable costs, including attorney's fees, associated with the collection of past due charges.