

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2017	2018	2019	2020	2021
Capital Expenditures	\$234,550	_____	_____	_____	_____
Operating Costs	_____	_____	_____	_____	_____
External Revenues	_____	_____	_____	_____	_____
Program Income (County)	_____	_____	_____	_____	_____
In-Kind Match (County)	_____	_____	_____	_____	_____
NET FISCAL IMPACT	\$234,550	_____	_____	_____	_____
No. ADDITIONAL FTE POSITIONS (Cumulative)	_____	_____	_____	_____	_____

Is Item Included in Current Budget? Yes X No _____

Budget Account No.: Fund _____ Department _____ Unit _____ Object _____
 Reporting Category _____

B. Recommended Sources of Funds/Summary of Fiscal Impact:

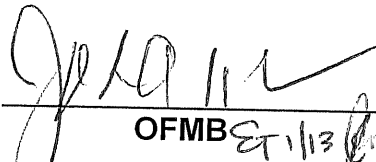
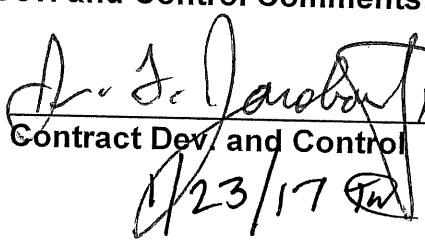
Beach Improvement Fund	
3652-381-M037-4630 Singer Island Dune Project	\$115,271.31
3652-381-M015-3120 Ocean Ridge Shore Protection	\$64,017.34
3652-381-M046-3120 South Lake Worth Inlet Mgmt	\$22,807.20
South Lake Worth Inlet Fund	
3653-381-M703-3120 South Lake Worth Inlet STP	\$32,453.59

C. Department Fiscal Review:



III. REVIEW COMMENTS

A. OFMB Fiscal and /or Contract Dev. and Control Comments:

 OFMB ET 1/13/17  Contract Dev. and Control 1/23/17

B. Legal Sufficiency:


 Assistant County Attorney

C. Other Department Review:

 Department Director

ATTACHMENT 1

TASK ORDER

TASK ORDER: 1523-01 CONSULTANT: CB&I Environmental & Infrastructure

ACCOUNT: various CONTRACT: R2016-1523

[Fiscal approval of Budget Availability: see attached BAS]

PROJECT MANAGER: Kelly Martin PHONE: 561-233-2509

CONTRACT MANAGER: Juan Cueto PHONE: 561-233-2431

PROJECT NAME: 2017 Sea Turtle Monitoring – Singer Island & Ocean Ridge

LOCATION/DISTRICT #: Singer Island & Ocean Ridge / Districts 1 & 4

TASK DESCRIPTION (use additional pages if necessary): The Consultant shall monitor sea turtle nesting along the beaches of Singer Island and Ocean Ridge and provide data management and analysis for March 1, 2017 through December 31, 2017, as described in the Scope of Work.

DELIVERABLES: See scope of work revised December 13, 2016.

TASK ORDER TYPE: FIXED PRICE \$200,861.94 DUE DATE: 12/31/2017
NOT-TO-EXCEED \$33,687.50

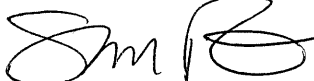
TOTAL AMOUNT \$234,549.44 See attached proposal dated 12/13/2016

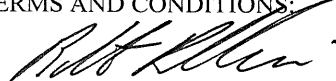
(Check where appropriate)
for Contract and Subcontract Amounts:

	Black	Hispanic	Women	Other (specify)	White Male
M/WBE(State) <input type="checkbox"/>	\$ _____	\$ _____	\$ _____	\$ _____	
SBE-M/WBE* <input type="checkbox"/>	\$ _____	\$ _____	\$ _____	\$ _____	
SBE <input checked="" type="checkbox"/>	\$ _____	\$ _____	\$ <u>228,212.26</u>	\$ _____	\$ _____

*certified as both an SBE and a State MBE

TOTAL SBE-M/WBE PARTICIPATION: \$228,212.26

CONSULTANT REP:  DATE: 12-14-2016

APPROVED AS TO TERMS AND CONDITIONS:
ERM DIRECTOR:  DATE: 1/2/17

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:
ASSISTANT COUNTY ATTORNEY: _____ DATE: _____

BOARD OF COUNTY COMMISSIONERS: _____ DATE: _____
Paulette Burdick, Mayor



CB&I Environmental & Infrastructure, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
Tel: +1 561 391 8102
Fax: +1 561 391 9116
www.CBI.com

November 11, 2016
Revised November 23, 2016 and December 13, 2016

Juan Cueto
Palm Beach County
Environmental Resources Management
Shoreline Enhancement & Restoration Section
2300 North Jog Road - Fourth Floor
West Palm Beach, FL 33411-2743

Re: Proposal for Sea Turtle Monitoring in Ocean Ridge and Singer Island

Dear Juan:

This proposal is provided at your request for CB&I Environmental & Infrastructure, Inc. to provide professional services to assist Palm Beach County in permit-required sea turtle monitoring at Singer Island and Ocean Ridge for the 2017 sea turtle nesting season. CB&I has retained D.B. Ecological Services, Inc. to conduct this monitoring as they have extensive experience in monitoring for sea turtles.

Scope of Services

CB&I will oversee the scope of work proposed by D.B. Ecological Services, Inc. and provide the necessary administrative coordination to the County. D.B. Ecological has provided the enclosed proposal and cost breakdown for Ocean Ridge and Singer Island sea turtle monitoring tasks, which states:

“All work to be performed as indicated in the 2017 Palm Beach County Scope for the associated projects (Singer Island and Ocean Ridge). This cost proposal is to provide services from 1 March 2017 – 31 December 2017. Work will be performed adhering to all marine turtle regulations imposed by the US Fish & Wildlife Service and the Florida Fish & Wildlife Conservation Commission.”

Fee Proposal

The fee for the services contained in this proposal is \$234,549.44 and will be billed monthly on a lump sum basis in proportion to the percentage of the work completed. Attached please find a spreadsheet that delineates the various tasks of the work estimated with the approved rates and classifications (Exhibit A). The total fee for CB&I's oversight and administrative coordination is \$6,337.18. The proposal from our sub consultant, D.B. Ecological, is attached as Exhibit B. The cost for D.B. Ecological's work has been organized in the following tasks:

- 1) Ocean Ridge Monitoring, \$85,922.04
- 2) Ocean Ridge Additional Tasks, \$16,150.00
- 3) Ocean Ridge Optional Tasks, \$14,037.50
- 4) Singer Island Monitoring, \$108,602.72



5) Singer Island Optional Tasks, \$3,500.00

The Additional and Optional Services (Tasks 2, 3 and 5 in the list above) may be requested by the COUNTY on an as needed basis. These tasks will be compensated on a "Not to Exceed" basis and require the associated back-up documentation. This proposal details the additional services and deliverables that will be provided pending the COUNTY's issuance of a Notice-to-Proceed for the Additional and Optional Services.

The services proposed herein will be performed in accordance with this proposal and the Professional Services Agreement between Palm Beach County and CB&I Environmental & Infrastructure, Inc. for Professional Consultant Services executed October 18, 2016. The sea turtle monitoring and reporting shall be completed by December 31, 2017, barring any circumstances beyond the control of CB&I.

We will commence work upon receipt of a Purchase Order from Palm Beach County. Thank you for the opportunity to serve Palm Beach County.

If you should have any questions, please call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tom P.', with a stylized flourish extending to the right.

Thomas P. Pierro, P.E., D.CE
Director of Operations
CB&I Environmental & Infrastructure, Inc.

cc: Kelly Martin, PBC-ERM
Tara Brenner, E.I., P.G., CB&I
Stacy Buck, CB&I

PALM BEACH COUNTY
SEA TURTLE MONITORING - 2017 SEA TURTLE NESTING SEASON
EXHIBIT A
Cost Estimate

TASK	LABOR COSTS				DIRECT COSTS
	Senior Project Manager (Hours)	Project Manager (Hours)	Bookkeeper (Hours)	Clerical (Hours)	Subconsultant Cost (\$)
1. Ocean Ridge Sea Turtle Monitoring					
a. CB&I Review & Coordination	2	16	5	2	
b. Subcontractor, D.B. Ecological Services, Inc. Monitoring					\$85,922.04 ✓
c. Subcontractor, D.B. Ecological Services, Inc. Additional Tasks					\$16,150.00 ✓
d. Subcontractor, D.B. Ecological Services, Inc. Optional Tasks					\$14,037.50 ✓
2. Singer Island Sea Turtle Monitoring					
a. CB&I Review & Coordination	2	16	5	2	
b. Subcontractor, D.B. Ecological Services, Inc. Monitoring					\$108,602.72 ✓
c. Subcontractor, D.B. Ecological Services, Inc. Optional Tasks					\$3,500.00 ✓
Total =	4	32	10	4	\$228,212.26
Rate =	\$244.70	\$135.69	\$76.39	\$63.10	1
Cost =	\$978.80	\$4,342.08	\$763.90	\$252.40	\$228,212.26 ✓
TOTAL LABOR COST =	\$6,337.18				
TOTAL DIRECT SUBCONTRACTOR COST =	\$228,212.26 ✓				
TOTAL COST =	\$234,549.44 ✓				

D.B. Ecological Services, Inc.
1012 SW 7th St
Boca Raton, FL 33486
Phone # (561) 376-5502
Fax # (561) 393-0394

12/9/16

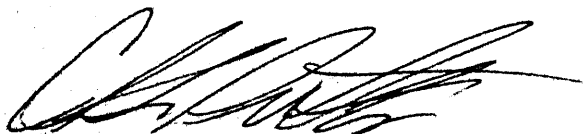
**D.B. ECOLOGICAL SERVICES, INC. REVISED 2017 COST PROPOSAL FOR
PALM BEACH COUNTY SEA TURTLE MONITORING
SINGER ISLAND & OCEAN RIDGE**

All work to be performed as indicated in the 2017 Palm Beach County Scope for the associated projects. This cost proposal is to provide services from 1 March 2017 – 31 December 2017.

Work will be performed adhering to all marine turtle regulations imposed by the US Fish & Wildlife Service and the Florida Fish & Wildlife Conservation Commission.

A cost breakdown has been provided for Ocean Ridge on the attached spreadsheet labeled Exhibit A. The tasks referenced in Exhibit A are only for tasks that necessary from 1 March 2017– 31 December 2017. The Total costs established in Exhibit A for Tasks 1-5 = \$85,922.04. The total the proposed additional and optional tasks = \$30,187.50.

A cost breakdown has been provided for Singer Island on the attached spreadsheet labeled Exhibit B. The tasks referenced in Exhibit B are only for tasks that necessary from 1 March 2017 – 31 December 2017. Any additional services will be provided under a separate Agreement. The Total costs established in Exhibit B for Tasks 1-5 = \$108,602.72. The total the proposed optional tasks = \$3500.00.



Christine Perretta
DB Ecological Services, Inc.

2017 OR costs March-Dec

2017 Detailed Cost Breakdown for DB Eco ST monitoring Exhibit A

Ocean Ridge

Task		Cost	Unit	# Units	Unit Rate
1	Nest survey	\$ 39,294.62	month	8	4911.83
2	Scarps	\$ 1,675.00	month	7	239.28
3	Nest eval	\$ 6,525.00	month	7	932.14
4	Prog Mgmt	\$ 27,696.42	month	9	3077.38
4 A,B,C	Prog Mgmt	\$ 8,541.00	month	8	1067.63
5A	FWC spreadsheet	\$ 2,190.00	one time		
	Subtotal=	\$ 85,922.04			

OR Additional Tasks (Not to Exceed)

A	Reloc	\$ 150.00	Nest	5	\$ 30.00
B	Caging	\$ 16,000.00	night	80	\$ 200.00
		\$ 16,150.00			

OR Optional Tasks

A	Pre-con Meeting	\$ 187.50	hr	1.5	\$ 125.00
B	Shorebird survey	\$ 1,080.00	month	6	\$ 180.00
C	Early Season Mon	\$ 1,220.00	day	61	\$ 20.00
D	Nighttime Mon.	\$ 8,250.00	day	15	\$ 550.00
E	Late season Mon	\$ 3,300.00	day	30	\$ 110.00

\$ 14,037.50

NTE Subtotal: \$ 30,187.50

2017 SI costs March-Dec

2017 Detailed Cost Breakdown for DB Eco ST monitoring Per Exhibit B

Section 1 - Monitoring

Singer Island

Task		Cost	Unit	# Units	Unit Rate
1	Nest survey	\$ 43,987.93	month	8	5498.5
2	Scarps	\$ 1,600.00	month	7	228.57
3	Nest eval	\$ 15,890.00	month	7	2270
4	Prog Mgmt	\$ 33,546.75	month	9	3727.42
4 A,B,C	Prog Mgmt	\$ 12,483.04	month	8	1560.38
5 A	FWC spreadsheet	\$ 1,095.00	one time		
	Subtotal=	\$ 108,602.72			

OR Optional Tasks

A	Late season Mon	\$ 3,300.00	day	30	\$ 110.00
B	Mark and Avoid	\$ 200.00	month	3	\$ 66.67
		\$ 3,500.00			

Total Optional = \$3500.00 ✓

Scope of Work
2017 Singer Island Sea Turtle Monitoring

Palm Beach County's Department of Environmental Resources Management (COUNTY) intends to contract with CB&I (CONSULTANT), to provide sea turtle monitoring services in support of State permit requirements issued to Palm Beach County for the Singer Island dune restoration project. The project is 1.25 miles in length extending from Waterglades through Coral Sea Condominiums and encompassing existing sea turtle monitoring zones 1-5. (See attached survey map).

The CONSULTANT shall obtain all Florida Fish and Wildlife Conservation Commission (FWC) permits required for sea turtle monitoring, including authorization for nest relocation. All standard sea turtle permit required reports shall be submitted to FWC by the CONSULTANT. The CONSULTANT shall utilize trained and experienced staff to conduct all monitoring activities. All data shall be collected and entered into a computerized data management system, quality control and assurance conditions satisfied, and then submitted to the COUNTY as set forth in this Scope of Work. The COUNTY may, at its discretion, conduct independent surveys and observe data collection and analysis techniques for the purpose of comparing and validating compliance with FWC guidelines and this contract. Proven and unjustifiable discrepancies of more than 10% on 10% of observations on a given day may be cause for contract termination.

All sea turtle crawl data shall be entered into the COUNTY's web-based data management system (database). In the event the COUNTY's database fails to function as designed, the CONSULTANT and the COUNTY shall determine mutually agreeable alternatives for data management and reporting. All physical beach monitoring data shall be compiled, stored, and submitted as outlined in each Task.

In order to maintain consistency in data collection techniques, the CONSULTANT shall be provided a set of COUNTY sea turtle monitoring guidelines, containing specific definitions and monitoring criteria. The CONSULTANT shall be required to follow the same methodology unless written approval has been given for alternate methods. In the event of a conflict between the guidelines and scope of work, the scope shall prevail and the CONSULTANT shall notify the COUNTY of any conflicts. The CONSULTANT (including all monitoring staff) shall also be required to have read and understood the guidelines and to attend an early season consistency meeting with COUNTY staff. Additional training and/or clarification of monitoring criteria shall be provided as necessary at that meeting.

Task 1: Daily Nesting Surveys and Beach Monitoring

Daily surveys for sea turtle monitoring activity shall be conducted for all zones between March 1 and October 31. The locations of all crawls marked for evaluation are to be collected with a real time corrected DGPS unit with sub-meter accuracy. GPS data shall be uploaded to the database within one business day of data collection and examined for accuracy of content and position and for real-time correction. If necessary, data may be post-processed to obtain sub-meter accuracy using a base station approved by the COUNTY. Each occurrence where post-processing is necessary, as well as the steps taken to identify and resolve the problem, shall be reported to the COUNTY with the appropriate monthly data submittal.

The following parameters shall be recorded for each crawl encountered on a daily survey form approved by the COUNTY:

- A. Date
- B. Start and end time of survey
- C. Weather conditions during survey
- D. Survey zone
- E. Species of turtle
- F. Crawl type
- G. Estimated distance from the egg chamber or landward extent of the non-nesting emergence to the high water line

- H. Estimated distance from the egg chamber or landward extent of the non-nesting emergence to the toe of dune
- I. Number of abandoned body pits
- J. Number of abandoned egg chambers
- K. Any obstructions (natural or man-made) encountered by the turtle and the turtle's response to that obstruction. Interactions with beach furniture, boats, or recreational equipment shall be recorded on a FWC Obstructed Nesting Attempt form and submitted to FWC per FWC guidelines and the COUNTY with the appropriate monthly data submittal.

Additionally, each nest record must contain a designation of marked/staked (yes/no) and clutch located (yes/no). If the nest is marked, a unique nest identification number must be assigned according to the COUNTY's naming convention.

If authorized by the FWC Marine Turtle Permit, nests may be relocated for conservation purposes, in accordance with FWC guidelines. All relocated nests must be marked for evaluation, regardless of species or marking rotation. Relocated nests shall be identified by the addition of "R" after the marked nest number (example: CC-060314-4BR-SIN).

Zone boundary markers will be installed at the beginning of the season (if missing) and maintained by the CONSULTANT in the dune at historical locations within the entire survey area throughout the nesting season.

Frequency: Daily from March 1 through October 31.

Deliverable: Each crawl record, including all parameters mentioned above, shall be entered into the COUNTY's database within one business day of collection. If the database is malfunctioning, the CONSULTANT will immediately notify the COUNTY. Original datasheets are to be kept at least until disposal is authorized by the County. Copies will be provided upon request. A monthly summary of daily surveys will be submitted as described in Task 4 (Program Management) and will confirm survey extents and times and summarize any unusual activity on the beach. All original or post-processed GPS datafiles shall be submitted with the appropriate monthly data submittal. Any crawl location that cannot be corrected through real-time or post-processing shall be reported to the COUNTY with the appropriate monthly data submittal.

Task 2: Escarpment Mapping

Weekly visual surveys for escarpment formation shall be conducted for the entire survey area. Escarpments steeper than 60° that exceed 18 inches in height for a distance of 100 feet or greater shall be mapped as a line feature with DGPS. The average height of any escarpments meeting the above criteria shall be estimated and the maximum height measured.

Frequency: Weekly from March 1 to September 30. Task to be a not-to-exceed item based on the number of weeks an escarpment is mapped.

Deliverable: A cumulative summary spreadsheet of all surveys, including date and time, environmental conditions (winds, tide, and sea state), zone, average height, and maximum height and length of the escarpments (as a Microsoft Excel file), as well as GIS line features of escarpments (as ArcMap shapefiles in NAD83, Florida East) and the original GPS datafiles shall be included with each monthly data submittal.

Task 3: Nest Evaluations and Monitoring

Selected nests shall be located, marked, tracked throughout the incubation period, and nest contents evaluated, if applicable. Nests shall be marked approximately 2 feet west of the egg chamber using a 2 foot (or larger) painted wooden stake. An additional painted wooden stake shall be placed at the toe of the dune in the dune vegetation. Precise measurements (distance and bearing) shall be made to the dune stake and recorded on the datasheet. If

nest poaching occurs, an alternate staking method, proposed by the CONSULTANT and approved by the COUNTY, may be implemented in high-risk poaching areas upon FWC recommendation.

The clutch for each marked nest shall be located by digging a maximum of 10 narrow holes. If the clutch is not found, the approximate location shall be marked and monitored throughout the incubation period.

The nest marking rotation for each species shall be developed in consultation with the COUNTY prior to the start of each sea turtle nesting season. The nest marking protocol shall take into account variable nesting densities and potential losses due to erosion or depredation in the project and non-project areas to ensure similar sample sizes for each treatment. Historic and predicted trends shall be used to formulate the protocol. A running count shall be maintained and the beach shall be surveyed in the same direction each day to ensure randomization of nests selected for marking. By July 15 of each nesting season, the CONSULTANT shall compare the current data to predictions and, as necessary, make adjustments to the marking protocol to ensure a sufficient number of evaluated nests.

When sufficient numbers of nests are available, the following minimum numbers of nests shall be marked for each species:

- A. Loggerhead – 100 nests in the dune fill (fill) and 100 nests on the berm (non-fill)
- B. Green – 100 nests in the dune fill (fill) and 100 nests on the berm (non-fill)
- C. Leatherback – all nests

Every marked nest shall be checked daily for:

- A. Presence of nest stakes – if the nest stake is missing, the stake shall be reset, that day, using either the distance and bearing information recorded in the database or GPS coordinates, unless continued stake loss due to ongoing, extreme tidal events is likely
- B. Evidence of overwash – overwash events shall be categorized as to severity using the following criteria:
 - a. 1 = overwash over the egg chamber but less than 1 meter west of the egg chamber
 - b. 2 = overwash extent greater than 1 meter west of the egg chamber
- C. Evidence of predation – all depredation events, by a mammalian predator or nesting turtle, that involve loss of viable eggs and/or hatchlings (not just loss of hatchlings) shall be recorded using the following parameters:
 - a. Predator species
 - b. Number of eggs lost
 - c. Incubation stage at time of depredation
 - i. Pre-hatchling emergence
 - ii. Post-hatchling emergence

All predated nests shall be assigned a fate of “Predated” on the first instance of egg loss, even if viable eggs remain intact; these nests shall not be evaluated for reproductive success. Depredation events by non-mammalian predators, such as crabs, birds, or ants, shall be recorded only in the comments section; these nests shall be evaluated for reproductive success. If hatchlings are depredated after leaving the chamber, but before entering the water, the number of depredated hatchlings and the predator, shall be recorded in the comments section; these nests shall be evaluated for reproductive success.

- D. Evidence of hatchling emergence – each marked nest, older than 45 days post-deposition, shall be checked daily for hatchling emergence. If emergence is noted, the estimated number of emerged hatchlings shall be recorded.
- E. Evidence of disorientation – **all** hatchling emergences observed in the survey area (not just those from marked nests) shall be evaluated for disorientation. A disorientation report shall be completed for any amount of disoriented hatchlings. All disorientation events shall be recorded on the FWC Marine Turtle Disorientation Incident Report form and faxed or emailed to the COUNTY and FWC within 24 hours of observation; the original form shall be submitted to FWC within one week of observation.

All appropriate information shall be recorded daily on a nest inspection datasheet (automatically generated by the database).

Each marked nest shall be evaluated for reproductive success no earlier than 72 hours post-emergence or 70 days post deposition, whichever is earlier, in accordance with FWC guidelines. For each marked nest, the following parameters shall be recorded on a hatch success form approved by the COUNTY:

- A. Number of hatched eggs
- B. Number of unhatched eggs
- C. Number of pipped live eggs
- D. Number of pipped dead eggs
- E. Number of live hatchlings
- F. Number of dead hatchlings
- G. Number of spacer eggs
- H. Depth to the top of the chamber (inches)
- I. Depth to the bottom of the chamber (inches)

Each marked nest shall be assigned a fate according to the following codes:

- A. Hatched (H) – hatched, eggs found
- B. Hatched, emergence not observed (HNO) – hatched, emergence not observed, eggs found
- C. Predated (PD) – predated, any number of eggs lost
- D. Protected (PR) – marked solely for protection or project purposes
- E. Poached (PV) – poached, any number of eggs lost
- F. Washout (WO) – eroded prior to anticipated or actual emergence, any number of eggs lost
- G. Lost (L) – not evaluated due to erosion after anticipated or actual emergence or proximity to a viable nest, all marking stakes removed and GPS coordinates unavailable, etc
- H. Could Not Locate (CNL) – eggs unable to be located
- I. Scavenged (SCV) – predated after hatchling emergence, any number of eggs lost
- J. Turtle Scattered (TS) – eggs scattered by nesting female, any number of eggs lost

For nests assigned a fate of “Lost”, an explanation of the circumstances must be entered into the comments section (example: nest eroded on 9/21 from Hurricane Xavier at 74 days post-deposition). If hatchling emergence is not observed after 70 days, the nest site shall be excavated to locate the clutch. A nest fate of “Could Not Locate” may only be used after a 4’x4’x4’ area has been excavated. All relocated nests must be marked and evaluated, regardless of species or marking rotation.

Frequency: Daily from March 1 until the last marked nest is evaluated.

Deliverable: Each nest inspection event and hatch success record, including the above mentioned parameters, shall be entered into the COUNTY’s database within one business day of collection. Copies of nest inspection sheets and hatch success datasheets are to be provided with the appropriate monthly data submittal.

Task 4: Program Management, Quality Assurance/Quality Control, and Reporting

All data reporting forms shall be checked for accuracy and clarity by a CONSULTANT supervisor or senior staff member and all problems resolved within one business day of data collection. Data shall be entered into the COUNTY’s database and each entry verified for accuracy by at least one other person within four (4) weeks of data collection. Persons performing data entry and all verification checks shall initial and date each original datasheet. Alternative methods for data verification and quality assurance may be implemented by the CONSULTANT if approved in advance by the COUNTY.

A quality control manager shall perform the following:

- A. Weekly review for timely data entry and verification, accuracy, and overall compliance with the scope.
- B. Monthly data quality control summary.

- C. Mid-season 1 page summary summarizing in narrative, tabular and graphic format for each species a comparison to the previous season and the 5-year average for:
- a. Crawl totals
 - b. Nesting success
 - c. Nesting density
 - d. Reproductive success
 - e. Erosion rates
 - f. Disorientation rates

Deliverable: A summary of the range of dates reviewed, all problems encountered associated with any task and problem resolution shall be included with each monthly data submittal. All deliverables and invoices shall be submitted on or before the 15th of each month following the month of data collection in order to receive payment. Deliverables for A and B under Task 4 shall be submitted on or before the last day of the month.

Task 5: FWC Report

FWC Shoreline Protection Project Excel Spreadsheets in format specified by FWC and detailed in permit conditions.

Deliverables and Invoices

All deliverable reports and support data to compile the report shall be provided in electronic formats (Word, Excel, ArcGIS, PDF). Palm Beach County ERM shall be notified of spreadsheet submission via email cc to the Project Manager. All deliverables shall be complete and accurate before full payment for each task shall be authorized.

Optional Task A - Late Season Construction Monitoring

If construction activities occur between November 1 and November 30, daily sea turtle nesting surveys and nest monitoring and evaluations shall be conducted through November 30 in accordance with permit conditions and Tasks 1 and 3.

Frequency: Daily surveys and monitoring of nests shall occur until the last nest has been evaluated.

Data Reporting: As described in Tasks 1 and 3.

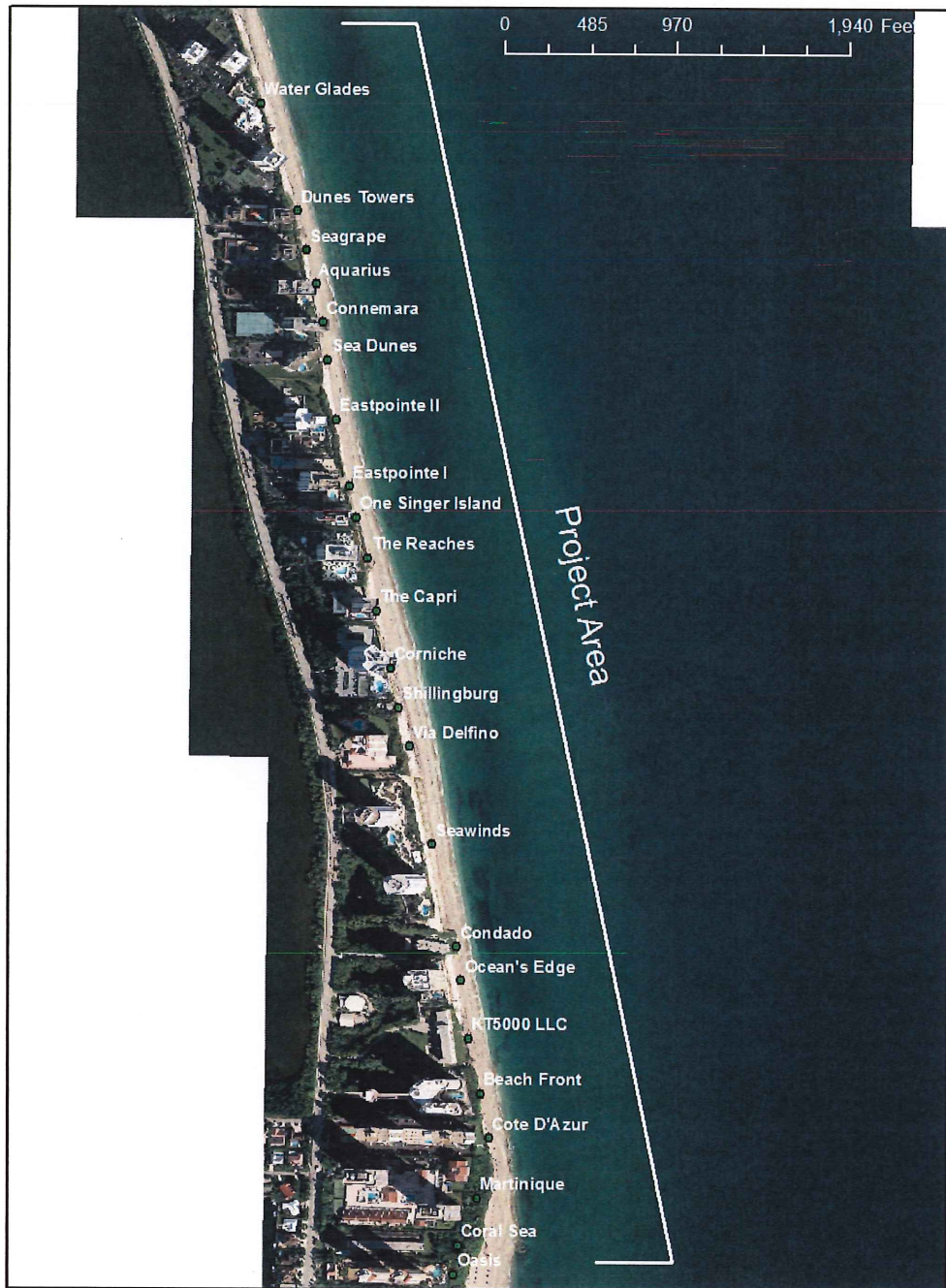
Optional Task B – Mark and Avoid Activities

If construction activities occur between November 1 and November 30, all nests documented in the project area shall be marked and left in place. Such nests will be marked and the actual location of the clutch determined. A circle with a radius of three (3) feet, centered at the clutch shall be marked by stake and survey tape or string. Only those nests that are marked for Task 3 are to be evaluated.

Frequency: Daily from September 1 through November 30.

Data Reporting: As described in Tasks 1 and 3.

Survey Map



Scope of Work
2017 Ocean Ridge Sea Turtle Monitoring

Palm Beach County's Department of Environmental Resources Management (COUNTY) intends to contract with CB&I (CONSULTANT), to provide sea turtle monitoring services. This work is in support of current and anticipated State and Federal permit requirements issued to Palm Beach County for three shore protection projects along the Ocean Ridge beach. They are - Ocean Ridge Shoreline Protection, South Lake Worth Inlet Maintenance Dredging, and South Lake Worth Inlet Sand Transfer Plant Bypassing.

The CONSULTANT shall provide services associated with monitoring sea turtle nesting for the beach 1500 feet north of the South Lake Worth Inlet running south to Adams Road (~2.25 miles; see attached survey map).

The CONSULTANT shall obtain all Florida Fish and Wildlife Conservation Commission (FWC) permits required for sea turtle monitoring, including authorization for nest relocation. All standard sea turtle permit required reports shall be submitted to FWC by the CONSULTANT. The CONSULTANT shall utilize trained and experienced staff to conduct all monitoring activities. All data shall be collected and entered into a computerized data management system, quality control and assurance conditions satisfied, and then submitted to the COUNTY as set forth in this Scope of Work. The COUNTY may, at its discretion, conduct independent surveys and observe data collection and analysis techniques for the purpose of comparing and validating compliance with FWC guidelines and this contract. Proven and unjustifiable discrepancies of more than 10% on 10% of observations on a given day may be cause for contract termination.

All sea turtle crawl data shall be entered into the COUNTY's web-based data management system (database). In the event the COUNTY's database fails to function as designed, the CONSULTANT and the COUNTY shall determine mutually agreeable alternatives for data management and reporting. All physical beach monitoring data shall be compiled, stored, and submitted as outlined in each Task.

In order to maintain consistency in data collection techniques, the CONSULTANT shall be provided a set of COUNTY sea turtle monitoring guidelines, containing specific definitions and monitoring criteria. The CONSULTANT shall be required to follow the same methodology unless written approval has been given for alternate methods. In the event of a conflict between the guidelines and scope of work, the scope shall prevail and the CONSULTANT shall notify the COUNTY of any conflicts. The CONSULTANT (including all monitoring staff) shall also be required to have read and understood the guidelines and to attend an early season consistency meeting with COUNTY staff. Additional training and/or clarification of monitoring criteria shall be provided as necessary at that meeting.

Task 1: Daily Nesting Surveys and Beach Monitoring

Daily surveys for sea turtle monitoring activity shall be conducted for all zones between March 1 and October 31. The locations of all crawls marked for evaluation are to be collected with a real time corrected DGPS unit with sub-meter accuracy. GPS data shall be uploaded to the database within one business day of data collection and examined for accuracy of content and position and for real-time correction. If necessary, data may be post-processed to obtain sub-meter accuracy using a base station approved by the COUNTY. Each occurrence where post-processing is necessary, as well as the steps taken to identify and resolve the problem, shall be reported to the COUNTY with the appropriate monthly data submittal.

The following parameters shall be recorded for each crawl encountered on a daily survey form approved by the COUNTY:

- A. Date
- B. Start and end time of survey
- C. Weather conditions during survey
- D. Survey zone
- E. Species of turtle

- F. Crawl type
- G. Estimated distance from the egg chamber or landward extent of the non-nesting emergence to the high water line
- H. Estimated distance from the egg chamber or landward extent of the non-nesting emergence to the toe of dune
- I. Number of abandoned body pits
- J. Number of abandoned egg chambers
- K. Any obstructions (natural or man-made) encountered by the turtle and the turtle's response to that obstruction. Interactions with beach furniture, boats, or recreational equipment shall be recorded on a FWC Obstructed Nesting Attempt form and submitted to FWC per FWC guidelines and the COUNTY with the appropriate monthly data submittal.

Additionally, each nest record must contain a designation of marked/staked (yes/no) and clutch located (yes/no). If the nest is marked, a unique nest identification number must be assigned according to the COUNTY's naming convention.

If authorized by the FWC Marine Turtle Permit, nests may be relocated for conservation purposes, in accordance with FWC guidelines. All relocated nests must be marked for evaluation, regardless of species or marking rotation. Relocated nests shall be identified by the addition of "R" after the marked nest number (example: CC-060314-4BR-OR).

Zone boundary markers will be installed at the beginning of the season (if missing) and maintained by the CONSULTANT in the dune at historical locations within the entire survey area throughout the nesting season.

Daily coordination with sand transfer plant or construction personnel must occur indicating that the daily nesting survey has been completed in the area and either sand transfer plant or construction activities may begin.

Frequency: Daily from March 1 through October 31.

Data Reporting: The sand transfer plant clear time shall be recorded on the daily survey datasheet. Each crawl record, including all parameters mentioned above, shall be entered into the COUNTY's database within one business day of collection. If the database is malfunctioning, the CONSULTANT will immediately notify the COUNTY. Original datasheets are to be kept until disposal has been approved by the County. Copies will be provided upon request. A monthly summary of daily surveys will be submitted as described in Task 4 (Program Management) and will confirm survey extents and times and summarize any unusual activity on the beach. All original or post-processed GPS datafiles shall be submitted with the appropriate monthly data submittal. Any crawl location that cannot be corrected through real-time or post-processing shall be reported to the COUNTY with the appropriate monthly data submittal.

Task 2: Escarpment Mapping

Weekly visual surveys for escarpment formation on the beach shall be conducted for the entire survey area. Escarpments steeper than 60° that exceed 18 inches in height for a distance of 100 feet or greater shall be mapped as a line feature with DGPS. The average height of any escarpments meeting the above criteria shall be estimated and the maximum height measured.

Frequency: Weekly from March 1 to September 30. Task to be a not-to-exceed item based on the number of weeks an escarpment is mapped.

Data Reporting: A cumulative summary spreadsheet of all surveys, including date and time, environmental conditions (winds, tide, and sea state), zone, average height, and maximum height and length of the escarpments (as a Microsoft Excel file), as well as GIS line features of escarpments (as ArcMap shapefiles in NAD83, Florida East) and the original GPS datafiles shall be included with each monthly data submittal.

Task 3: Nest Evaluations and Monitoring

Selected nests shall be located, marked, tracked throughout the incubation period, and nest contents evaluated, if applicable. Nests shall be marked approximately 2 feet west of the egg chamber using a 2 foot (or larger) painted wooden stake. An additional painted wooden stake shall be placed at the toe of the dune in the dune vegetation. Precise measurements (distance and bearing) shall be made to the dune stake and recorded on the datasheet. If nest poaching occurs, an alternate staking method, proposed by the CONSULTANT and approved by the COUNTY, may be implemented in high-risk poaching areas upon FWC recommendation.

The clutch for each marked nest shall be located by digging a maximum of 10 narrow holes. If the clutch is not found, the approximate location shall be marked and monitored throughout the incubation period.

The nest marking rotation for each species shall be developed in consultation with the COUNTY prior to the start of each sea turtle nesting season. The nest marking protocol shall take into account variable nesting densities and potential losses due to erosion or depredation in the project and non-project areas to ensure similar sample sizes for each treatment. Historic and predicted trends shall be used to formulate the protocol. A running count shall be maintained and the beach shall be surveyed in the same direction each day to ensure randomization of nests selected for marking. By July 15 of each nesting season, the CONSULTANT shall compare the current data to predictions and, as necessary, make adjustments to the marking protocol to ensure a sufficient number of evaluated nests.

When sufficient numbers of nests are available, the following minimum numbers of nests shall be marked for each species:

- A. Loggerhead – 100 nests in zones 2-10 (fill) and 100 nests in zones 1, 11-13 (non-fill)
- B. Green – 100 nests in zones 2-10 (fill) and 100 nests in zones 1, 11-13 (non-fill)
- C. Leatherback – all nests in zones 1-13

Protected Nest Designation: In addition to the nest marking schedule, all nests shall be marked for protection purposes that are laid in:

1. a vehicle access;
2. within 10 feet of a lifeguard tower; or,
3. within 10 feet of the average tide line in Ocean Ridge in areas where mechanical beach cleaning is permitted by DEP. Areas that will not be cleaned during the season do not need to have low nests marked. Daily coordination with the beach cleaner must occur. Two signs, one each located north of the South Lake Worth Inlet and another at Oceanfront Park tractor access, must be changed daily to indicate that the daily nesting survey has been conducted in the area and that beach cleaning activities may begin. If any stakes are lost, they must be replaced daily (unless prevented by severe storm conditions) prior to beach cleaning activities.

To identify protected nests (unless they would have been marked as part of the marking rotation), they shall be assigned a nest ID as described in Task 1, with the addition of “P” after the marked nest number (example: CC-060314-4BP-OR). These nests shall be checked daily for the parameters A, D, and E below, but shall not be evaluated for overwash or reproductive success. All stakes shall be removed either 72 hours post-emergence or after 70 days post-deposition, whichever occurs first. All protected nests shall be assigned a nest fate of “Protected”.

Every marked nest shall be checked daily for:

- A. Presence of nest stakes – if the nest stake is missing, the stake shall be reset, that day, using either the distance and bearing information recorded in the database or GPS coordinates, unless continued stake loss due to ongoing, extreme tidal events is likely
- B. Evidence of overwash – overwash events shall be categorized as to severity using the following criteria:
 - a. 1 = overwash over the egg chamber but less than 1 meter west of the egg chamber

- b. 2 = overwash extent greater than 1 meter west of the egg chamber
 - C. Evidence of predation – all depredation events, by a mammalian predator or nesting turtle, that involve loss of viable eggs and/or hatchlings (not just loss of hatchlings) shall be recorded using the following parameters:
 - a. Predator species
 - b. Number of eggs lost
 - c. Incubation stage at time of depredation
 - i. Pre-hatchling emergence
 - ii. Post-hatchling emergence
- All predated nests shall be assigned a fate of “Predated” on the first instance of egg loss, even if viable eggs remain intact; these nests shall not be evaluated for reproductive success. Depredation events by non-mammalian predators, such as crabs, birds, or ants, shall be recorded only in the comments section; these nests shall be evaluated for reproductive success. If hatchlings are depredated after leaving the chamber, but before entering the water, the number of depredated hatchlings and the predator, shall be recorded in the comments section; these nests shall be evaluated for reproductive success. If the CONSULTANT is participating in the FWC NPA program, adjustments can be made to allow predated nests to remain marked. The COUNTY will develop a system to allow these protocols.
- D. Evidence of hatchling emergence – each marked nest, older than 45 days post-deposition, shall be checked daily for hatchling emergence. If emergence is noted, the estimated number of emerged hatchlings shall be recorded.
 - E. Evidence of disorientation – **all** hatchling emergences observed in the survey area (not just those from marked nests) shall be evaluated for disorientation. A disorientation report shall be completed for any amount of disoriented hatchlings. All disorientation events shall be recorded on the FWC Marine Turtle Disorientation Incident Report form and faxed or emailed to the COUNTY and FWC within 24 hours of observation; the original form shall be submitted to FWC within one week of observation.

All appropriate information shall be recorded daily on a nest inspection datasheet (automatically generated by the database).

Each marked nest shall be evaluated for reproductive success no earlier than 72 hours post-emergence or 70 days post deposition (80 days for leatherbacks), whichever is earlier, in accordance with FWC guidelines. For each marked nest, the following parameters shall be recorded on a hatch success form approved by the COUNTY:

- A. Number of hatched eggs
- B. Number of unhatched eggs
- C. Number of pipped live eggs
- D. Number of pipped dead eggs
- E. Number of live hatchlings
- F. Number of dead hatchlings
- G. Number of spacer eggs
- H. Depth to the top of the chamber (inches)
- I. Depth to the bottom of the chamber (inches)

Each marked nest shall be assigned a fate according to the following codes:

- A. Hatched (H) – hatched, eggs found
- B. Hatched, emergence not observed (HNO) – hatched, emergence not observed, eggs found
- C. Predated (PD) – predated, any number of eggs lost
- D. Protected (PR) – marked solely for protection or project purposes
- E. Poached (PV) – poached, any number of eggs lost
- F. Washout (WO) – eroded prior to anticipated or actual emergence, any number of eggs lost
- G. Lost (L) – not evaluated due to erosion after anticipated or actual emergence or proximity to a viable nest, all marking stakes removed and GPS coordinates unavailable, etc
- H. Could Not Locate (CNL) – eggs unable to be located

- I. Scavenged (SCV) – predated after hatchling emergence, any number of eggs lost
- J. Turtle Scattered (TS) – eggs scattered by nesting female, any number of eggs lost

For nests assigned a fate of “Lost”, an explanation of the circumstances must be entered into the comments section (example: nest eroded on 9/21 from Hurricane Xavier at 74 days post-deposition). If hatchling emergence is not observed after 70 days (80 days for leatherbacks), the nest site shall be excavated to locate the clutch. A nest fate of “Could Not Locate” may only be used after a 4’x4’x4’ area has been excavated. All relocated nests must be marked and evaluated, regardless of species or marking rotation.

Frequency: Daily from March 1 until the last marked nest is evaluated.

Data Reporting: Each nest inspection event and hatch success record, including the above mentioned parameters, shall be entered into the COUNTY’s database within one business day of collection. Copies of nest inspection sheets and hatch success datasheets are to be provided with the appropriate monthly data submittal.

Task 4: Program Management, Quality Assurance/Quality Control, and Reporting

All data reporting forms shall be checked for accuracy and clarity by a CONSULTANT supervisor or senior staff member and all problems resolved within one business day of data collection. Data shall be entered into the COUNTY’s database and each entry verified for accuracy by at least one other person within four (4) weeks of data collection. Persons performing data entry and all verification checks shall initial and date each original datasheet. Alternative methods for data verification and quality assurance may be implemented by the CONSULTANT if approved in advance by the COUNTY.

A quality control manager shall perform the following:

- A. Weekly review for timely data entry and verification, accuracy, and overall compliance with the scope.
- B. Monthly data quality control summary.
- C. Mid-season 1 page summary summarizing in narrative, tabular and graphic format for each species a comparison to the previous season and the 5-year average for:
 - a. Crawl totals
 - b. Nesting success
 - c. Nesting density
 - d. Reproductive success
 - e. Erosion rates
 - f. Disorientation rates

A summary of the range of dates reviewed, all problems encountered associated with any task and problem resolution shall be included with each monthly data submittal. All deliverables and invoices shall be submitted on or before the 15th of each month following the month of data collection in order to receive payment. Deliverables for A and B under Task 4 shall be submitted on or before the last day of the month.

Task 5: FWC Report

FWC Shoreline Protection Project Excel Spreadsheets in format specified by FWC and detailed in permit conditions.

Deliverables and Invoices

All deliverable reports and support data to compile the report shall be provided in electronic formats (Word, Excel, ArcGIS, PDF). Palm Beach County ERM shall be notified of spreadsheet submission via email cc to the Project Manager. All deliverables shall be complete and accurate before full payment for each task shall be authorized.

ADDITIONAL TASKS In addition to the standard sea turtle monitoring work described above, the CONSULTANT must complete the following additional tasks to be billed on a per nest basis:

Additional Task A: Nest Relocation for Sand Transfer Plant Operation

Nests deposited in zones 2 and 3 may require relocation out of the area of influence of the sand transfer plant intake and discharge to an appropriate incubation area; the relocation area shall be selected in consultation with the CONSULTANT and COUNTY prior to each nesting season and shall be reevaluated periodically during the nesting season to ensure nests are adequately protected and/or are not unnecessarily relocated. Relocation activities must be completed prior to 9:00 AM on the date deposited. All relocated nests must be marked as described in Task 1 and evaluated as described in Task 3. Relocation and incubation areas are shown on Attachment 1. An estimated 5 nests per season may require relocation. The CONSULTANT must be able to obtain a FWC permit authorizing relocation activities.

Frequency: As required when nests are deposited within the relocation area.

Data Reporting: Observer, relocation start and end time, number of eggs, and egg chamber dimensions shall be recorded. Copies of datasheets shall be provided with the appropriate monthly data submittal. Data reporting shall occur in accordance with Tasks 1 and 3.

Additional Task B: Caging Activities

Nests deposited in the groin field (zones 3 and 4) may require screening with restraining cages to prevent hatchling interaction with the T-head groins. The egg chamber must be located for all nests deposited within the groin field (Attachment 1) as described in Task 3; if the nest marker is lost during incubation, it must be reset using sub-meter accurate DGPS coordinates and the top of the egg chamber reconfirmed, as described in Task 3, prior to cage deployment. The minimum caging criteria based on beach and lighting conditions shall be determined in coordination with the COUNTY prior to the first cage deployment. After 45 days of incubation, a restraining cage will be placed over the egg chamber for nests that require screening. The cage must be closed at sunset, checked once between 11:00 PM and 1:00 AM, and opened at sunrise every day. Hatchlings found in the cages shall be released immediately at a location that is not influenced by artificial lighting. The CONSULTANT shall conduct all nest and monitoring evaluations as described in Task 3. The cage will be removed 72 hours post-emergence, during nest excavation, not upon nest emergence.

Frequency: As required when nests are deposited within the groin field.

Data Reporting: Date of cage checks, observer, cage open, check, and close times, emergence, number of hatchlings, and position of hatchlings within the cage shall be recorded. Data reporting shall occur in accordance with Tasks 1 and 3. Cost for this task shall be provided on a per night visit.

CONSTRUCTION RELATED MONITORING

In addition to the standard and additional sea turtle monitoring tasks described above, the COUNTY may authorize the CONSULTANT to provide the following construction project monitoring as a supplement to this task order.

Optional Task A- Pre-construction Meeting

The CONSULTANT will be required to attend a pre-construction meeting for any proposed construction which could include the sand trap dredging project and beach nourishment.

Frequency: Once prior to construction initiation.

Data Reporting: A copy of the pre-construction attendance sheet shall be provided to the COUNTY with the appropriate monthly data submittal.

Optional Task B- Weekly Shorebird Surveys

A bi-weekly survey for shorebird activity shall be conducted for all zones, including shorebird activity visible from the beach on breakwaters, groins and jetties, 10 days prior to project initiation through September 30. The daily shorebird survey must occur prior to movement of equipment or operation of vehicles outside of the overnight work area. Shorebird surveys shall be conducted in accordance with FWC guidelines. The following parameters shall be recorded for each shorebird observance on a shorebird survey form approved by the COUNTY:

- A. Date of survey
- B. Start and end time of survey
- C. Weather conditions during survey
- D. Survey zone
- E. Species of shorebird
- F. Location (beach, structure, in flight, etc)
- G. Number
- H. Activity
 - a. Loafing
 - b. Feeding
 - c. Nesting
 - d. Courtship behavior

If nesting activities are observed, the CONSULTANT must notify the COUNTY within 12 hours. The COUNTY, in consultation with FWC, will then decide if protective action must be taken. Credentials of all staff conducting shorebird surveys must be submitted to and approved by the COUNTY and the FWC Regional Biologist prior to April 1.

Frequency: Once a week from April 1 to September 30.

Data Reporting: All shorebird activity shall be summarized in an Excel spreadsheet or Access database, as directed by the COUNTY, and submitted with the appropriate monthly data submittal. The data shall also be entered into the Florida Fish and Wildlife Commission Florida Shorebird Database (<https://public.myfwc.com/crossdoi/shorebirds/index.html>).

Optional Task C- Early Season Construction Monitoring

If construction activities occur between March 1 and April 30, daily sea turtle nesting surveys and nest monitoring and evaluations shall be conducted in accordance with permit conditions and Tasks 1 and 5. Activities may include marking nests with perimeter stakes and flagging tape for protection from construction activity of relocation of nests from active construction zones as described in Additional Task A.

Frequency: Daily surveys and monitoring of nests.

Data Reporting: As described in Tasks 1 and 3.

Optional Task D- Early Season Nighttime Monitoring and Nest Relocation

If dredging and filling activities occur between March 1 to April 30, daily nighttime surveys for nesting activity shall begin when the first leatherback nest is recorded in the project area or adjacent beaches and continue through project completion, or April 30, whichever is later. Nesting surveys shall be conducted hourly from 9:00 PM to 6:00 AM. Nests deposited in areas that will be directly affected by dredging and filling activities shall be relocated to a nearby area that will not be affected by construction activities. All relocated nests shall be managed as described in previous tasks and evaluated for reproductive success regardless of species or marking rotation. The CONSULTANT shall be responsible for all daily coordination with the dredging contractor to notify the contractor of survey status and nest locations.

Frequency: Daily after first leatherback nest through project completion or April 30, whichever is earlier.

Data Reporting: Observer, start and end time of each hourly survey, and number and type of turtle crawls encountered (by zone) shall be recorded on a datasheet approved by the COUNTY. Raw datasheets shall be submitted to the COUNTY weekly by email. All nighttime survey information shall be summarized in an Excel spreadsheet, as directed by the COUNTY, and submitted with the appropriate monthly data submittal. Data reporting for relocated nests shall occur in accordance with Tasks 1 and 3.

Optional Task E- Late Season Construction Monitoring

If construction activities occur between November 1 and November 30, daily sea turtle nesting surveys and nest monitoring and evaluations shall be conducted through November 30 in accordance with permit conditions and Tasks 1 and 3. Activities may include marking nests with perimeter stakes and flagging tape for protection from construction activity and relocation of nests from active construction zones as described in Additional Task A. Relocation could begin as early as August 28 (65 days prior to construction).

Frequency: Daily surveys and monitoring of nests shall occur until the last nest has been evaluated.

Data Reporting: As described in Tasks 1 and 3.

Survey Map





**Palm Beach County
Environmental Resources Management**

INTERDEPARTMENTAL BUDGET AVAILABILITY STATEMENT

REQUEST DATE: 12/28/16

REQUESTED BY: Juan Cueto

PHONE: 233-2431

PROJECT TITLE: 2017 0Sea Turtle Monitoring

PROJECT NO:

SITE: Singer Island and Ocean Ridge (Districts 1 & 4)

ACTIVITY: Sea Turtle Monitoring

CONTRACTOR/CONSULTANT NAME: CB&I Inc.

SCOPE OF SERVICES: The Consultant shall monitor sea turtle nesting along the beaches of Singer Island and Ocean Ridge and provide data management and analysis for March 1, 2017 through December 31, 2017 as described in the Scope of work.

BUDGET ACCOUNT NUMBER(S):

<u>Fund</u>	<u>Dept</u>	<u>Unit</u>	<u>Obj</u>	<u>SObj</u>	<u>Program</u>	<u>PPC</u>	<u>(Proj) Task</u>	<u>(Site) Sub Task</u>	<u>(Activity) Task Ord</u>	<u>Amount</u>
3652	381	M037	4630		E037		S015	CSII	029	\$115,271.31
3652	381	M015	3120		E015		S027	COCR	029	\$64,017.34
3652	381	M046	3120		E046		S017	CSLW	029	\$22,807.20
3653	381	M703	3120		E703		S017	CSLW	029	\$32,453.59

FISCAL APPROVAL: *Sandra Thum* DATE: 12/29/16

DEPT DIRECTOR APPROVAL: *Bob Miller* DATE: 1/2/17

ENCUMBRANCE NUMBER _____ DATE: _____

