

**PALM BEACH COUNTY
BOARD OF COUNTY COMMISSIONERS**

AGENDA ITEM SUMMARY

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Meeting Date: October 20, 2015	(X) Consent	() Regular
	() Workshop	() Public Hearing

Department

Submitted By: Environmental Resources Management

Submitted For: Environmental Resources Management

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I. EXECUTIVE BRIEF

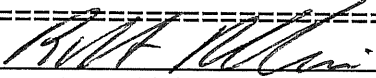
Motion and Title: Staff recommends motion to approve: Amendment No. 1 to Interlocal Agreement (R2013-1058) with the Town of Palm Beach (Town) for cost sharing on Purchase Orders totaling \$511,252 related to the Army Corps of Engineers (ACOE) required Environmental Impact Statement (EIS) for the proposed erosion control project known as the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project.

Summary: A joint EIS is currently being completed for the County’s and Town’s respective shoreline erosion control projects. In 2013, the ACOE determined that an EIS would be required for both the County and Town’s proposed erosion control projects. Due to the multi-jurisdictional nature of the EIS, and the possible cost savings, the Town and the County partnered to hire one contractor to perform the EIS for the entire shoreline length. Because the Town’s portion of the project is substantially longer than the County’s, the Town provides funding for the project and the County reimburses the Town for 38.6% of the project costs associated with the EIS. The County’s share for the purchase orders totals \$197,343. The EIS evaluates erosion control alternatives for both project areas. Districts 4 & 7 (SF)

Background and Justification: Completion of the EIS is a Federal process required under the National Environmental Policy Act. To facilitate the document’s completion in a timely manner, a third party contractor has been selected by the ACOE to write the EIS. Although the Town and County provide the funding for the completion of the EIS, the document is administered by local ACOE staff. Following execution of Interlocal Agreement R2013-1058 in August 2013, the ACOE determined that additional engineering and biological characterization work is required to complete the EIS. Two purchase orders totaling \$241,630 were approved by the Town’s Town Council in October 2013 to initiate this additional work. All deliverables associated with the additional work have been received and incorporated into the Draft EIS (DEIS) which was published in December 2014. Following publication of the DEIS in December 2014, numerous public comments were received. At the direction of the ACOE, the consultant presented a third purchase order totaling \$269,622 to address the public comments, conduct additional analyses to address data gaps, and finalize the document for publication. A Final EIS is anticipated to be published eight months from execution of the amendment.

- Attachments:**
- 1. Amendment No. 1 to IA (2013-1058)
 - 2. Interlocal Agreement (2013-1058)
 - 3. ACOE Letter
 - 4. EIS Purchase Orders

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Recommended by: <u></u>	<u>9/24/15</u>
Department Director	Date

Approved by: <u></u>	<u>10-15-15</u>
Deputy County Administrator	Date

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2016	2017	2018	2019	2020
Capital Expenditures	<u>197,343</u>	_____	_____	_____	_____
Operating Costs	_____	_____	_____	_____	_____
External Revenues	_____	_____	_____	_____	_____
Program Income (County)	_____	_____	_____	_____	_____
In-Kind Match (County)	_____	_____	_____	_____	_____
NET FISCAL IMPACT	<u>197,343</u>	_____	_____	_____	_____
# ADDITIONAL FTE POSITIONS (Cumulative)	_____	_____	_____	_____	_____

Is Item Included in Current Budget? Yes X No

Budget Account No.: Fund 3652 Department 381 Unit M044 Object 4630

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

Amendment for EIS: The County will reimburse the Town of Palm Beach 38.6% (\$197,343.27) of eligible costs associated with the Project. The remainder of the Project (61.4%) is funded by the Town of Palm Beach.

C. Department Fiscal Review:

J. Neary

III. REVIEW COMMENTS

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

Sherry Bm
OFMB *9/30* *11/30* *8/1/11*
Dr. J. Jacobson *10/21/15*
Contract Development and Control
Bio Kellie

B. Legal Sufficiency:

Sam T. 507
Assistant County Attorney

C. Other Department Review:

Department Director

Attachment 1 - waiting for 3 originals

FIRST AMENDMENT TO
INTERLOCAL AGREEMENT
BETWEEN
PALM BEACH COUNTY
AND
TOWN OF PALM BEACH

THIS FIRST AMENDMENT is made and entered into on this _____ day of _____, 2015, by and between Palm Beach County, a political subdivision of the State of Florida (the "COUNTY") and the Town of Palm Beach, a municipal corporation in the State of Florida, (the "TOWN"), each one constituting a public agency as defined in Part I of Chapter 163 Florida Statutes, and both being hereinafter referred to collectively as the "parties".

WITNESSETH

WHEREAS, on August 13, 2013, the parties entered into an Interlocal Agreement (R2013-1058) to combine resources and recognize the cost efficiency of performing one Environmental Impact Statement (EIS) for their respective shoreline protection projects; and

WHEREAS, the United States Army Corps of Engineers ("USACE") has determined that additional data collection, analysis, modeling and reporting is required to complete the EIS; and

WHEREAS, to complete the additional work required by USACE the TOWN is required to enter into three new purchase orders with the consultant for the Project; and

WHEREAS, the COUNTY wishes to cost share with the TOWN on the three new purchase orders which will require additional Project costs in the amount of \$511,252; and

WHEREAS, the parties agree that the COUNTY's share of additional Project costs is calculated as \$197,343.

NOW, THEREFORE, in consideration of the mutual covenants, promises and representations herein contained, the parties agree as follows:

1. The foregoing recitals are true and correct and incorporated herein.
2. The parties agree that the proposed consultant costs set forth in Paragraph 2 of the Agreement, entitled SERVICES REQUIRED, which were estimated to be \$561,548.00 must be increased by an additional \$511,252 to accommodate the additional data collection, analysis, modeling and reporting required by USACE to successfully complete the Project.
3. Paragraph 3 of the Agreement, entitled COST SHARING AND PAYMENTS, is hereby deleted and replaced with the following:
 - A. Cost Sharing and Payments. The TOWN agrees to provide funding for the EIS in anticipation of a 38.6% reimbursement from the COUNTY, which represents the

COUNTY's proportionate share of the linear shoreline contained within the Project. The TOWN shall submit invoices for payment to the COUNTY on a quarterly basis and the COUNTY shall reimburse the TOWN quarterly for the COUNTY's 38.6% share of Project costs incurred by the consultant retained by the TOWN upon presentation from the TOWN of an itemized statement identifying the Project and costs incurred, along with a progress report and update in writing related to the status of work completed to date. Invoices received from the TOWN shall include reference to this Agreement, identify the task performed as outlined in the approved scope of work (SOW), identify the amount due and payable, and include a statement certifying that the invoice amount includes only eligible expenses and said eligible expenses have been incurred and paid. Invoices shall be in sufficient detail for pre audit and post audit review. The Town shall provide any further documentation deemed necessary by the County to substantiate that all costs incurred by the consultant were pursuant to the approved SOW. Invoices received from the TOWN shall be reviewed by the Department of Environmental Resources Management and upon approval shall be sent to the COUNTY's Finance Department for final approval and payment. Invoices will normally be paid within forty-five (45) days of receipt. All statements to the COUNTY and payments to the TOWN shall be submitted at the addresses provided in paragraph 9. If a dispute arises concerning any statement, the COUNTY shall pay any amount not in dispute, shall immediately notify the TOWN's Representative in writing of the amount of and reason for the disputed payment due, and the parties shall meet in an attempt to mutually resolve the dispute.

B. The TOWN agrees that additional change orders that will increase the costs to complete the EIS beyond \$1,072,800 shall be provided to the COUNTY for review and will not be eligible for reimbursement without prior authorization as an amendment to this Agreement.

C. In the event that cost overruns that will increase the costs to complete the EIS are projected, the TOWN and COUNTY will seek mutual agreement on how to proceed. The TOWN reserves the discretion to cover cost overruns at the TOWN's sole expense; the COUNTY's share shall not exceed \$197,343 without an amendment to this Agreement.

4. Paragraph 5, entitled CONSULTANT MANAGEMENT, is hereby deleted and replaced with the following:

Consultant Management.

A. The TOWN shall retain and manage any consultants necessary to complete the Project. However, the TOWN shall within three days of receipt provide the Director of the Department of Environmental Resources Management (the "Director") or his designee with an opportunity to review and comment on all scopes of work, proposals, and deliverables associated with the Project prior to acceptance and/or payment by the Town and shall in good faith use best efforts to incorporate any changes to the scopes of work, proposals, and deliverables requested by the COUNTY,

B. The TOWN shall keep the Director or his designee informed of the progress of the Project and, on a monthly basis, shall notify the Director of his designee of the extent to which the consultant has exceeded the hours or dollar amount allotted for a particular task or subtask in the SOW over the previous month. The parties shall hold a progress meeting once per month between staffs of both parties, unless the parties mutually agree that a monthly meeting is not necessary. The parties may request the attendance of the consultant but shall be mindful of the potential expenses of including the consultant in such meetings.

5. Paragraph 16, entitled EQUAL OPPORTUNITY, is hereby deleted in its entirety and replaced with the following:

Non-Discrimination. The parties agree that no person shall, on the grounds of race, color, sex, national origin, disability, religion, ancestry, marital status, age, sexual orientation, familial status, gender identity, gender expression or genetic information be excluded from the benefits of, or be subjected to any form of discrimination under any activity carried out by the performance of this Agreement.

The TOWN has submitted to the COUNTY a copy of its non-discrimination policy which is consistent with the above, as contained in Resolution R-2014-1421, as amended, or in the alternative, if the TOWN does not have a written non-discrimination policy, it has acknowledged through a signed statement provided to the COUNTY that the TOWN's non-discrimination policy conforms to R-2014-1421, as amended.

All other terms and conditions of the Agreement shall remain unchanged and in full force and effect.

The remainder of this page is intentionally left blank.

IN WITNESS WHEREOF, the COUNTY of Palm Beach, Florida has caused this Agreement to be signed by the Mayor of the Board of COUNTY Commissioners and the seal of said Board to be affixed hereto and attested by the Clerk of said Board, pursuant to authority granted by said Board, and the TOWN of Palm Beach has caused this Agreement to be signed in its corporate name by its mayor and its corporate seal to be affixed hereto, attested by its City Clerk, the date and year first above written.

TOWN OF PALM BEACH, FLORIDA

PALM BEACH COUNTY, FLORIDA
BY ITS BOARD OF COUNTY
COMMISSIONERS

By: _____
Gail L. Coniglio, Mayor

By: _____
Shelley Vana, Mayor

ATTEST:

ATTEST:
Sharon R. Bock, Clerk and Comptroller

By: _____
TOWN Clerk

By: _____
Deputy Clerk

DATE: _____

DATE: _____

(SEAL)

(SEAL)

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY

By: _____
TOWN Attorney

By: _____
Assistant COUNTY Attorney

APPROVED AS TO TERMS
AND CONDITIONS

By: _____
Robert Robbins, Director
Dept. of Env. Resources Management

Attachment 2

Palm Beach County
Environmental Resources Management
2300 N. Jog Road, 4th fl
West Palm Beach, FL 33411



R 2013-1058

INTERLOCAL AGREEMENT BETWEEN PALM BEACH
COUNTY AND THE TOWN OF PALM BEACH

AUG 13 2013

THIS AGREEMENT is made and entered into on the _____ day of _____ 2013, by and between PALM BEACH COUNTY, a political subdivision of the State of Florida (the "County") and the TOWN OF PALM BEACH (the "Town"), a municipal corporation in the State of Florida, each one constituting a public agency as defined in Part I of Chapter 163, Florida Statutes.

WITNESSETH:

WHEREAS, Section 163.01, Florida Statutes, known as the "Florida Interlocal Cooperation Act of 1969" authorizes local governments to make the most efficient use of their powers by enabling them to cooperate with other localities on a basis of mutual advantage and thereby to provide services and facilities that will harmonize geographic, economic, population and other factors influencing the needs and development of local communities; and

WHEREAS, Part I of Chapter 163, Florida Statutes, permits public agencies as defined therein to enter into interlocal agreements with each other to jointly exercise any power, privilege, or authority that such agencies share in common and that each might exercise separately; and

WHEREAS, pursuant to Chapter 186, Florida Statutes, the Town is empowered to exercise any governmental, corporate, and proprietary power for municipal purposes, except when expressly prohibited by law; and

WHEREAS, pursuant to Chapter 125.01, Florida Statutes, the Board of County Commissioners is empowered to establish and administer programs of beach erosion control and to enter into agreements with other governmental agencies within or outside the boundaries of the County for joint performance, or performance of one unit on behalf of the other, of any of either governmental entity's authorized functions; and

WHEREAS, the Town is the local sponsor for the Reach 8 South End Palm Beach Restoration Project, a project to place sand in the Town's municipal limits within an area designated as Reach 8, where Reach 8 consists of approximately 6,970 linear feet of shoreline extending from the Lake Worth Pier to the southerly limits of the Town of Palm Beach; and

WHEREAS, the County is the local sponsor for the Central Palm Beach County Comprehensive Erosion Control Project, a project to design and permit a shoreline protection solution including shoreline stabilizing structures and dune fill in an area which consists of approximately 4,378 lineal feet of shoreline extending from the southerly limits of the Town of Palm Beach to the south property line of the Ritz Carlton Hotel; and

FILE NUM 20130368466 OR BOOK PAGE 262910512 DATE: 08/30/2013 10:07:14 Pgs 0512 - 516 (7pgs)
Sharon P. Bock, CLERK & COMPTROLLER

WHEREAS, Both the County and the Town are required to prepare an Environmental Impact Statement (EIS), for their respective projects; and

WHEREAS, It is the mutual desire of both the County and the Town to combine their resources and recognize the cost efficiency of performing one EIS for the entire shoreline length by including within the EIS both projects defined above so as to incorporate within the EIS a total linear shoreline of approximately 11,348 feet; and

WHEREAS, the County and the Town desire to establish their respective roles in the Project to make the most efficient use of their respective resources.

NOW, THEREFORE, in consideration of the mutual covenants, promises and representations herein, the parties agree as follows:

1. Purpose of the Agreement. The purpose of this Agreement, due to the multi-jurisdictional nature of the EIS and the significant savings possible because of economies of scale, is to provide a mechanism for the Town to include in the EIS for the Reach 8 South End Palm Beach Restoration Project an additional approximate 4,378 feet of lineal shoreline located within the jurisdictional limits of the Town of South Palm Beach, Town of Lantana, and Town of Manalapan, so as to define a study area of approximately 11,348 feet of linear shoreline in Reaches 8, 9, and 10 (the "Project").

2. Services Required. The Project entails the successful completion of an Environmental Impact Statement at a consultant proposed cost of \$561,548.00.

3. Cost Sharing and Payments. The Town agrees to provide funding for the EIS in anticipation of a 38.6% reimbursement from the County, which represents the County's proportionate share of the linear shoreline contained within the Project. The County shall reimburse Town quarterly for the County's 38.6% share of Project costs incurred by the consultant retained by the Town upon presentation from the Town of an itemized statement identifying the Project and costs incurred, along with a progress report and update in writing related to the status of work completed to date. The Town shall provide any further documentation deemed necessary by the County. Invoices received from the Town shall be reviewed by the Department of Environmental Resources Management and upon approval shall be sent to the County's Finance Department for final approval and payment. Invoices will normally be paid within forty-five (45) days of receipt. All statements to the County and payments to the Town shall be submitted at the addresses provided in paragraph 9. If a dispute arises concerning any statement, the County shall pay any amount not in dispute and shall immediately notify the Town's Representative in writing of the amount of and reason for the disputed payment due.

4. Termination. The parties agree that in the event that either party for any reason determines, at either party's sole discretion, that it wishes to terminate this Agreement, the party may, in its sole discretion, terminate this Agreement following a thirty (30) day written notice to the other party. If the County terminates this Agreement

after the Town has entered into a contract with a consultant for completion of the Project, the County shall have no further obligation hereunder other than to reimburse the Town for the 38.6% costs spent on the Project up to the date of termination of this Agreement.

5. Consultant Management. The Town shall retain and manage any consultants necessary to complete the Project. The Town shall keep the County informed of the progress of the Project and, to that end, shall schedule regular meetings between staffs of both parties and the consultant(s). The Town shall timely provide the County with the opportunity to review and comment on all scopes of work, proposals, and deliverables associated with the Project prior to acceptance and payment by the Town and shall in good faith use best efforts to incorporate any changes to the scopes of work, proposals, and deliverables requested by the County.

6. Term. The term of this Agreement shall commence upon execution by both parties and shall terminate upon completion of the Project and payment of all Project costs, unless terminated earlier as provided herein. Notwithstanding, work conducted on this Project by the Town and its consultant(s) beginning on or after July 9, 2013 shall be eligible for reimbursement by the County.

7. Funding. Notwithstanding any other provision herein, the County's obligation to pay under this Agreement is contingent upon appropriation for its purpose by its Board of County Commissioners in its annual fiscal year budget and the Town's obligation to pay under this Agreement is contingent upon an appropriation for its purpose by its Town Council in its annual fiscal year budget.

8. Party Representatives. The County's representative/contract monitor during the term of this Agreement shall be the Director of the Department of Environmental Resources Management whose telephone number is (561) 233-2400.

The Town's representative/contract monitor during the term of this Agreement shall be the Town Manager, whose telephone number is (561)838-5400.

9. Notices. All notices required under this Agreement shall be delivered in writing by certified mail, return receipt requested, facsimile with delivery confirmation or hand delivery to:

Director
Palm Beach County Department of
Environmental Resources Management
2300 North Jog Road 4th floor
West Palm Beach, FL 33411
Facsimile:

Town Manager
Town of Palm Beach
360 South County Road
Palm Beach, FL 33480
Facsimile:

Notices shall be deemed delivered upon receipt. Any change in the address/facsimile where notices are to be delivered shall be provided in writing and shall be effective five days after receipt.

10. Default and Opportunity to Cure. The parties hereto expressly covenant and agree that in the event either party is in default of its obligations herein, the party not in default shall provide to the party in default thirty (30) days written notice to cure said default before exercising any of its rights as provided for in this Agreement. If the defaulting party fails to correct the default within this time, unless otherwise agreed by the parties, the party not in default may terminate the Agreement at the expiration of the thirty (30) day time period. In the event of a default by the County, the County shall pay the Town for all costs incurred and work performed on the Project through the date of termination.

11. Delegation. Nothing contained herein shall be deemed to authorize the delegation of the constitutional or statutory duties of state, County, or municipal officers.

12. Recording. A copy of this Agreement shall be recorded and filed with the Clerk of the Circuit Court in and for Palm Beach County, Florida.

13. Liability. The parties to this Agreement and their respective officers and employees shall not be deemed to assume any liability for the acts, omissions, or negligence of the other party. Further, nothing herein shall be construed as a waiver of sovereign immunity by either party, pursuant to Section 768.28, Florida Statutes.

14. Indemnification. Each party agrees to protect, defend, reimburse, indemnify and hold the other party, its agents, employees and elected officers, free and harmless at all times from and against any and all suits, actions, legal or administrative proceedings, claims, demands, liabilities, interest, attorney's fees, costs and expenses of whatsoever kind or nature whether arising in any manner directly or indirectly caused, occasioned or contributed to in whole or in part, by reason of any act, omission or fault whether active or passive of the party, or anyone acting under its direction or control, or on its behalf in connection with or incident to the performance of this Agreement. Each party's aforesaid indemnity and hold harmless obligations, or portions or applications thereof, shall apply to the fullest extent permitted by law but in no event shall they apply to liability caused by the negligence or willful misconduct of the other party, its respective agents, servants, employees or officers, nor shall the liability limits set forth in 768.28, Florida Statutes, be waived.

15. Insurance. Each party shall maintain a fully funded program of self-insurance pursuant to Section 768.28 Florida Statutes. Each party agrees to require any consultant performing work on the Project to maintain adequate insurance coverage, naming both the Town and County as an additional insured and providing that the consultant shall save, defend and hold harmless the Town and the County from any and all suits, actions, claims, demands, liabilities, interests, attorneys' fees,

costs and expenses of whatsoever kind or nature arising or occasioned or contributed to in whole or in part by reason of any act, omission, fault or negligence of the consultant.

16. Equal Opportunity. The County and the Town agree that no person shall, on the grounds of age, race, color, sex, national origin, ancestry, disability, religion, ancestry, marital status, familial status, sexual orientation or gender identity and expression be excluded from the benefits of or be subjected to any form of discrimination under any activity carried out by the performance of this Agreement.

17. Severability. In the event that any section, paragraph, sentence, clause, or provisions hereof is held by a court of competent jurisdiction to be invalid, such shall not affect the remaining portions of this agreement and the same shall remain in full force and effect.

18. Waiver of Breach. The failure to insist on strict performance of or the waiver of any covenant, condition, or provision of this Agreement by any party shall not relieve the other party from performing any other obligation strictly in accordance with the terms of this Agreement. No waiver shall be effective unless in writing and signed by the party against whom enforcement is sought. Such waiver shall be limited to provisions of this Agreement specifically referred to therein and shall not be deemed a waiver of any other provision. No waiver shall constitute a continuing waiver unless the writing states otherwise.

19. Entirety of Agreement. The TOWN and COUNTY agree that this Agreement, together with any attached exhibits, sets forth the entire agreement between the parties, and that there are no promises or understandings other than those stated herein. None of the provisions, terms or obligations in the Agreement may be added to, modified, superseded, or otherwise altered, except by written instrument executed by the parties hereto.

20. Independent Contractor. Each party recognizes that it is an independent contractor and not an agent or servant of the other party. No person employed by any party to this Agreement shall, in connection with the performance of this Agreement or any services or functions contemplated hereunder, at any time, be considered the employee of the other party, nor shall an employee claim any right in or entitlement to any pension, worker's compensation benefit, unemployment compensation, civil service, or other employee rights or privileges granted by operation of law, except through and against the entity by whom they are employed.

21. Enforcement Costs. Except as otherwise provided herein, any costs or expenses (including reasonable attorney's fees) associated with the enforcement of the terms and/or conditions of this Agreement shall be borne by the respective parties. This provision pertains only to the parties to the Agreement.

22. Maintenance of Records. The parties shall maintain, in accordance with generally-accepted governmental auditing standards, all financial and nonfinancial

records and reports directly or indirectly related to the negotiation or performance of this Agreement or any amendment hereto, including supporting documentation for any service rates, expenses, research or reports. The parties shall have the right to examine in accordance with generally-accepted governmental auditing standards all records directly or indirectly related to this Agreement or any amendment hereto. Such examination may be made only upon reasonable notice, time and place. In the event the parties should become involved in a legal dispute with a third party arising from performance under this Agreement or any amendment hereto, the parties shall extend the period of maintenance for all records relating to this Agreement or any amendment hereto until the final disposition of the legal dispute, and all such records shall be made readily available to the other party.

23. Governing Law and Venue. The laws of the State of Florida shall govern all aspects of this Agreement. In the event it is necessary for either party to initiate legal action regarding this Agreement, venue shall be in the Fifteenth Judicial Circuit Court for claims under state law and in the Southern District of Florida for any claims that are justiciable in federal court.

24. Third Parties. No provision of this Agreement is intended to, or shall be construed to, create any third party beneficiary or to provide any rights to any person or entity not a party to this Agreement, including but not limited to any citizen or employees of the County and/or the City.

25. Construction. No party shall be considered the author of this Agreement since the parties hereto have participated in drafting this document to arrive at a final agreement. Thus, the terms of this Agreement shall not be strictly construed against one party as opposed to the other party based upon who drafted it.

26. Captions. The captions and section designations herein set forth are for convenience only and shall have no substantive meaning.

27. Palm Beach County Office of the Inspector General. Palm Beach County has established the Office of the Inspector General in Palm Beach County Code, Section 2-421 - 2-440, as may be amended. The Inspector General's authority includes but is not limited to the power to review past, present and proposed County contracts, transactions, accounts and records, to require the production of records, and to audit, investigate, monitor, and inspect the activities of any party contracting with the COUNTY and its officers, agents, employees and lobbyists in order to ensure compliance with contract requirements and detect corruption and fraud.

Failure to cooperate with the Inspector General or interfering with or impeding any investigation shall be in violation of Palm Beach County Code, Section 2-421 - 2-440, and punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.

IN WITNESS WHEREOF, the County of Palm Beach, Florida has caused this Agreement to be signed by the Mayor of Palm Beach County and the seal of Board of County Commissioners to be affixed hereto and attested by the Clerk of said Board, pursuant to authority granted by said Board; and the Town of Palm Beach has caused this Agreement to be signed in its corporate name by its Mayor and its corporate seal to be affixed hereto, attested by its Town Clerk, the date and year first above written.

TOWN OF PALM BEACH, FLORIDA

By Gail L. Coniglio
Gail L. Coniglio, Mayor

ATTEST:

By Susan A. Owens
Susan A. Owens, Town Clerk

Date: 7/7/13

SEAL

APPROVED AS TO LEGAL FORM
AND SUFFICIENCY:

By John C. Randolph
John C. Randolph, Town Attorney

R2013 1058

PALM BEACH COUNTY, FLORIDA
BY ITS BOARD OF COUNTY
COMMISSIONERS

By Steven L. Abrams
Steven L. Abrams, Mayor

ATTEST:

Sharon R. Bock, Clerk and Comptroller

By Deputy Clerk

Date: AUG 13 2013

SEAL

APPROVED AS TO LEGAL FORM
AND SUFFICIENCY:

By Assistant County Attorney
Assistant County Attorney

APPROVED AS TO TERMS AND
CONDITIONS

By Robert Robbins
Robert Robbins, Director



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
4400 PGA BOULEVARD, SUITE 500
PALM BEACH GARDENS, FLORIDA 33410

Attachment 3

July 22, 2015

Palm Beach Gardens Section
SAJ-2008-04086 (SP-AAZ) Palm Beach County
SAJ-2005-07908 (SP-AAZ) Town of Palm Beach

Town of Palm Beach
Attention: Rob Weber
Coastal Coordinator
Public Works Department
Post Office Box 2029
Palm Beach, Florida 33480-2029

Palm Beach County Board of County Commissioners
Attn: Robert Robbins
2300 North Jog Road, Fourth Floor
West Palm Beach, FL 33411

Dear Mr. Weber and Mr. Robbins:

This is in reference to your permit application requesting Department of the Army (DA) authorization to fill waters of the United States in order to stabilize the beach as part of the Southern Palm Beach Island Comprehensive Shoreline Stabilization project. The project has two different but similar activities that have been assigned separate DA application numbers: SAJ-2008-04086 for the beach fill project proposed by the Town of Palm Beach and SAJ 2005-07908 for the remainder of the project to the south including beach fill and seven groins proposed by Palm Beach County. The project is being reviewed as an Environmental Impact Statement (EIS) and is located between Florida Department of Environmental Protection (FDEP) range monuments R-129-210 and R-138+551 in Palm Beach County, Florida.

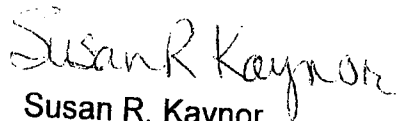
The Notice of Availability (NOA) of the draft EIS was published in the Federal Register on December 12, 2014. The draft EIS included the Corps evaluation of the effects of the proposed project as well as five other alternatives. The 45-day comment period for the draft EIS ended on January 26, 2015; however a 30-day time extension was granted until February 25, 2015. During the comment review period, the Corps received several comments, many of which were considered substantial. Most notably were comments received by the Town of Palm Beach regarding the options of using a wider range of grain sizes to renourish their section of the beach. Although it is important to explore various alternatives for sand sources in our National Environmental Policy Act assessment, this request to evaluate additional grain sizes, compare costs, and consider performance for each alternative will require additional modeling to address appropriately. Additionally, work is still needed to address public comments, conduct additional analysis to address data gaps and finalize the document for publication. These tasks will take additional time to complete.

-2-

The requested evaluation and additional efforts to address substantive comments are needed to continue our preparation of the Final EIS. The Corps has reviewed the revised scope of work to complete these tasks, and believes it is required to address comments we've received to date. As we work through the tasks, the Corps can give an estimated timeframe to finalize our process to reach a permit decision.

Should you have any questions or comments regarding this request for additional information, please contact Alisa Zarbo at the letterhead address, by phone at 561-472-3506, or by electronic mail at Alisa.A.Zarbo@usace.army.mil.

Sincerely,



Susan R. Kaynor
Chief, Palm Beach Gardens Section

Attachment 4



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

July 17, 2015

Mr. Robert Weber
Coastal Coordinator
Town of Palm Beach
951 Old Okeechobee Road, Suite A
West Palm Beach, FL 33401

Re: Proposal to Provide Continued Services on the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement

Dear Rob:

This proposal is provided at your request for CB&I Coastal Planning & Engineering, Inc. (CB&I) to conduct continued services in the preparation of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS for the U.S. Army Corps of Engineers (Corps). These services will be provided to fill data gaps in response to public comments received on the December 2014 Draft EIS and associated efforts to complete the process.

The Corps, as the lead federal agency, will have responsibility for the preparation and content of the EIS in accordance with all of the requirements of NEPA (42 U.S.C. § 4321, et seq.), Council of Environmental Quality Regulations (40 C.F.R. Parts 1500-1508) and the NEPA Implementation Procedures for the Regulatory program (Appendix B of 33 C.F.R. Part 325). According to these laws and regulations, specifically 40 C.F.R. § 1506.5(c), CB&I has been selected as the Third Party Contractor (TPC) to perform the work described herein under the direction of the Corps.

Scope of Services

The attached Scope of Services (Exhibit A) summarizes the scientific and technical services to be provided by CB&I, as the third party contractor (TPC) for the continued preparation of the EIS, which will aid the Corps in their decision to issue, modify, condition, or deny a Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and/or Section 404 of the Clean Water Act (33 U.S.C. 1344) permit(s) for the proposed Project. The principal objective of the proposed services is for CB&I to continue to provide the Corps with the documents and analyses to satisfy NEPA in its preparation of the EIS. The Draft EIS will be updated to address comments received following the public comment period for continued development of the EIS, which will include ongoing administrative and record keeping efforts. A summary of all interagency meetings, identification of areas of controversy and incorporation of information developed in previous NEPA documents will be included. The Final EIS will comply, both procedurally and analytically with the requirements of the Council on Environmental Quality's (CEQ) regulations and be prepared in an efficient manner while maintaining a high degree of credibility, ensuring the validity and accuracy of the study products.

This proposal is for continued preparation of the Final EIS, which will focus on addressing public comments, conducting additional analyses to address data gaps, and finalizing the document for publication. This will include coordination between responsible agencies, the Town of Palm Beach, Palm Beach County, and the public. This proposal does not include permitting and is limited to the scope specifically described in Exhibit A. If additional items are deemed necessary as a result of Corps' reviews, additional proposals will be prepared and presented to the Town for approval upon request.



Fee Proposal

The fee for the services contained in this proposal is not to exceed \$269,622.00 and will be billed monthly on a time and materials basis. Attached please find a spreadsheet that delineates the various phases of the work estimated with the approved contract rates and classifications (Exhibit B). Although this proposal is detailed by separable items and estimated by specific staff and categories, it is anticipated that some work elements will exceed the estimate while others fall below the estimate to complete. Our staff will be used as needed to achieve the scope of services and to meet the stated objectives and timelines.

The services proposed herein will be performed in accordance with this proposal and the Professional Services Agreement (PSA) between the Town of Palm Beach and CB&I Coastal Planning & Engineering, Inc. dated April 10, 2014. The billing rates for services rendered under this proposal will be based on the schedule of hourly billing rates incorporated by reference and attached to the PSA. The time frame estimated to complete this work is estimated to be eight (8) months from receipt of your authorization to proceed, barring any circumstances beyond the control of CB&I. We will commence work upon receipt of a Purchase Order from the Town of Palm Beach.

Thank you for the opportunity to serve the Town of Palm Beach.

If you should have any questions, please call me.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom P.", followed by a stylized flourish.

Thomas P. Pierro, P.E., D.CE
Director
CB&I Coastal Planning & Engineering, Inc.

Please reply to: Thomas Pierro
Phone No. 561.361.3150
E-Mail: thomas.pierro@cbi.com

cc: David Swigler, PE, CB&I
Stacy Buck, CB&I

Exhibit A

Scope of Services

Continued Development of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement

This Scope of Services is for CB&I Coastal Planning & Engineering, Inc. (CB&I) to assist the U.S. Army Corps of Engineers (Corps) in preparing the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS). Under direction by the Corps, CB&I will provide the information necessary to assist the Corps in its analysis and preparation of the EIS to evaluate the significant direct, indirect and cumulative effects of the proposed beach stabilization projects on the environment. The information and documentation provided will comply with all provisions of the NEPA and all corresponding implementing regulations including the provisions of 33 C.F.R. Part 325, Appendix B and 40 C.F.R. Parts 1500-1508.

TASK 1: Continued Development of the EIS

1.1 Clarification and Requests for Additional Information

Several comments were submitted during the public comment period that warrant additional research and analysis in order to provide a response, while others may require minimal efforts such as clarification and/or editorial revisions. It is anticipated that several topics will dominate the response effort. These include, but are not limited to the following:

- Unified Mitigation Assessment Methodology (UMAM)
- Mitigation
- Impact Analyses
- Project Cost
- Geotechnical (sand source, grain size)
- General Editorial

1.2 Monitoring Plans

CB&I will coordinate with agencies to address comments made on the DEIS regarding development of a Biological Monitoring Plan (BMP) and Coral Relocation Plan (CRP). This task includes coordination with those agencies that commented on the DEIS. Detailed development of these plans will be executed during the permitting process and are not included in this scope of work.

1.3 Prepare Public Comment Report

CB&I will prepare a report summarizing the results of the DEIS public meeting, including the transcript recorded by the court reporter, oral and public comments. All public comments submitted to the Corps during the public comment period will also be included. The report shall include a spreadsheet or other tabular format for compiling and sorting public responses. CB&I will work with the Corps to draft responses to the comments. CB&I will submit a draft report with comments and responses for Corps review and comment prior to incorporating requested changes into the final report. Included in the DEIS Comments report shall be an analysis of the issues raised and their proposed disposition.

CB&I will attend one (1) Interagency Meeting with the Corps to review the DEIS comments and proposed resolutions. CB&I will record meeting minutes and prepare a report summarizing the discussions, action items, or tasks assigned during the review meeting.

Deliverables:

- DEIS Comment Matrix
- DEIS Comment Report
- Interagency Meeting with Corps and EPA

1.4 Interagency Meetings

CB&I will coordinate and attend interagency meetings and conference calls to specifically discuss the comments submitted to the Corps by the agencies, including from the Florida Department of Environmental Protection (FDEP) and National Marine Fisheries Services (NMFS). These meetings will serve to discuss the issues raised by the agencies and clarify any requests for additional information. In particular, the methodology used in the UMAM analysis will be discussed.

Deliverable:

- Attend Interagency Meeting to Coordinate Public Comments

1.5 Preliminary Final Environmental Impact Statement (PFEIS)

CB&I will prepare a template for responses to comments and coordinate its review by the Corps. Following both meetings, CB&I will classify and organize public comments according to type. CB&I will then prepare responses to public comments on the DEIS and provide five (5) printed copies of the comments and drafted responses to the Corps for review and comment. CB&I will attend one (1) meeting at the Corps' office to review the responses.

CB&I will incorporate the approved revisions and responses to comments into a PFEIS. Data gaps shall be identified and reported to the Corps. CB&I will gather additional available data from the Town, the County or other available sources. If necessary, additional modeling or data collection services will be included in a separate proposal. CB&I will submit chapters of the PFEIS for review as they are completed. Chapters will be submitted to the Corps as PFEIS Submittal #1. The Corps will determine whether the chapters can be released to the Town of

Palm Beach and Palm Beach County. Up to three (3) printed copies of the PFEIS will be produced. The copies, PFEIS Submittal #2, will be provided to the Corps for review and approval.

CB&I will prepare and distribute the Notice of Availability (NOA) for the FEIS in coordination with the Corps. Five (5) printed copies and one (1) electronic copy of the FEIS will be provided to the Corps. Up to fifty (50) printed or electronic copies of the FEIS will be produced for the public. CB&I will prepare responses to comments received following the publication of the FEIS. CB&I will attend an Interagency Meeting with the Corps and EPA to review the Scoping comments and proposed resolutions.

Deliverables:

- Preliminary Final EIS Submittal #1
- Finalize Response to Comments and Prepare Preliminary Final EIS Submittal #1
- Preliminary Final EIS Submittal #2
- Finalize EIS for Publication
- Prepare Notice of Availability of FEIS and Issue Locally
- Attend Interagency Meeting to Coordinate FEIS Comments and Responses

1.6 Preparation of Draft Record of Decision and Section 404(b)(1) Guideline Evaluation

CB&I will prepare a draft Record of Decision and Section 404(b)(1) Guidelines Evaluation under direction of the Corps. CB&I is not responsible for the publication of this NOA.

Deliverables:

- Prepare Draft Record of Decision

TASK 2: Continued Administration, Record Keeping and Progress Reporting

2.1 Maintenance of Administrative Record and Documentation of EIS Related Communications

CB&I will document, categorize and maintain an administrative record of all EIS related communications including e-mails, letters or phone calls for submittal to the Corps. A detailed transmittal log of all information, documentation, correspondence or any other materials submitted or received will be maintained.

Deliverable:

- Prepare Administrative Record

2.2 Preparation of Monthly Progress Reports

CB&I will prepare and submit the first progress report on or about the 15th of each month. Based on the existing schedule, eight (8) reports will be prepared. Reports will include a list of activities and accomplishments in the previous month, problems and present concerns encountered in

the Project that relate to or may impact the NEPA process, planned actions for the next month, and an updated Project Schedule (if needed), an update on all QA/QC activities and acknowledgement of compliance with the QA/QC Plan.

Deliverables:

Prepare Monthly Progress Reports

2.3 Attendance and Participation in Progress Review and Unscheduled Meetings

Additional meetings with agencies, stakeholders, the Town residents and land owners may be necessary during the course of the development of the EIS. The Project Manager, Project Engineer and Project Biologists will attend and participate in up to four (4) progress reviews and one (1) unscheduled local meetings at critical points within the EIS schedule. It is anticipated that these meetings will be held in the Corps' office in Palm Beach Gardens, Florida. Additional virtual meetings will be held between CB&I and the Corps or other Agencies, Town of Palm Beach, Palm Beach County or any other group or individual to meet the demands of the EIS development. CB&I will coordinate the scheduling of meetings with the Corps.

Deliverables:

Attendance at Four (4) Progress Reviews and One (1) Unscheduled Meetings

2.4 Maintenance of Bibliography of Acronyms, References and Data Sources and Preparation and Maintenance of Mailing Lists

CB&I will develop a framework for keeping records at the beginning of the project and will ensure compliance and maintain accordingly. A list of references will be populated including all data sources used in the development of the EIS. CB&I assumes the Town of Palm Beach will provide most of the names of the initial mailing list from existing sources and that the final list will be compiled in coordination with the Corps. The mailing list will be maintained and updated as necessary over the course of the project.

Deliverables:

Bibliography, References Data and Mailing Lists

Assumptions and Caveats

The proposed scope of services includes the procedures and steps required by the Corps to complete the EIS and assumes that the work will be based on existing information to be made available to CB&I by others. This scope does not include any data collection, field work or permitting efforts. Supplementary scopes of work requested by the Corps for additional efforts will be prepared and presented to the Town for approval upon request.

As described in the Statement of Work provided by the Corps, CB&I will provide all deliverables to the Corps. The Corps will make the decision to disseminate information or deliverables to the Town of Palm Beach, Palm Beach County and other interested parties.

It is assumed that all in-person meetings will be held in Palm Beach County.

Geotechnical and Cultural Resource Investigations

The beach stabilization project currently proposed for evaluation in the EIS includes beach fill obtained by trucking sand from an upland sand source or other previously identified offshore sources. Accordingly, geotechnical investigations are not included in this proposal. Likewise, cultural resource investigations are not included. In the event that geotechnical or cultural resource investigations are deemed necessary by the Corps, CB&I will prepare and submit a separate proposal for these services.

EXHIBIT B

TOWN OF PALM BEACH, FL

FEE PROPOSAL FOR

**ENVIRONMENTAL IMPACT STATEMENT CONTINUED SERVICES
SOUTHERN PALM BEACH ISLAND COMPREHENSIVE SHORELINE STABILIZATION PROJECT**

July 17, 2015

PREPARED BY:

CB&I COASTAL PLANNING & ENGINEERING, INC.

TOWN OF PALM BEACH, FL

FEE PROPOSAL FOR

**ENVIRONMENTAL IMPACT STATEMENT CONTINUED SERVICES
SOUTHERN PALM BEACH ISLAND COMPREHENSIVE SHORELINE STABILIZATION PROJECT**

**PROJECT PROPOSAL SUMMARY
PREPARED BY:
CB&I COASTAL PLANNING & ENGINEERING, INC.**

TASK	DESCRIPTION	LABOR COSTS	DIRECT COSTS	TASK COST
1	CONTINUED DEVELOPMENT OF EIS	\$215,218	\$5,180	\$220,398
2	CONTINUED ADMINISTRATION, RECORD KEEPING AND PROGRESS REPORTING	\$49,224	\$0	\$49,224
	SUBTOTAL	\$264,442	\$5,180	\$269,622
TOTAL PROJECT COST =				\$269,622

TOWN OF PALM BEACH, FL
ENVIRONMENTAL IMPACT STATEMENT CONTINUED SERVICES
SOUTHERN PALM BEACH ISLAND COMPREHENSIVE SHORELINE STABILIZATION PROJECT

Task 1 - Cost Estimate

TASK DESCRIPTION	LABOR COST												DIRECT COST			SUBTASK TOTALS	
	Principal Engineer (Hours)	Senior Project Manager (Hours)	Senior Coastal Engineer (Hours)	Coastal Engineer III (Hours)	Coastal Engineer I (Hours)	Senior Marine Biologist (Hours)	Marine Biologist II (Hours)	Professional Geologist I (Hours)	Geologist I (Hours)	Senior CAD Operator (Hours)	GIS Operator (Hours)	Clerical (Hours)	Mileage (Miles)	Printing (per page)	CDs (number)	HOURS	COST
1. CONTINUED DEVELOPMENT OF EIS																	
1.1 Clarification and Requests for Additional Information		28		96		240	200	16	32	2	100					714	\$91,070
1.2 Monitoring Plans																68	\$8,640
Biological Monitoring Plan		1		2		12	16			1	4						
Coral Relocation Plan		1		2		8	16			1	4						
1.3 Prepare Public Comment Report																132	\$18,120
Prepare DEIS Comments Matrix		4		4		12	16										
Prepare DEIS Comments Report		4		16		20	40										
Interagency meeting with the Corps and EPA		4		4		4	4										
1.4 Interagency Meetings/Calls to Discuss Comments		8		8		24	24									64	\$9,040
1.5 Preliminary Final Environmental Impact Statement (PFEIS)																462	\$67,496
PFEIS Submittal #1		2	8			16	40					8					
Address Comments on PFEIS Submittal #1		8	40			80	80	2	8								
PFEIS Submittal #2		2	8			20	40					8		1200			
Final EIS for Publication (5 cps to Corps, up to 50 cps for public)		2	8			8	8					16		20000	200		
Prepare Notice of Availability of FEIS and Issue Locally		2	2			8	8										
Interagency Meeting to Coordinate Comments and Responses		6				16	8										
1.6 Draft Record of Decision and Section 404(b)(1) Evaluation																188	\$26,032
Prepare Draft Record of Decision		8	16			120	40					4					
Hours =	0	80	82	132	0	588	540	18	40	4	108	36	0	21200	200		
Rate =	\$300	\$225	\$185	\$140	\$105	\$135	\$120	\$120	\$85	\$145	\$100	\$68	\$0.55	\$0.15	\$10		
Cost =	\$0	\$18,000	\$15,170	\$18,480	\$0	\$79,380	\$64,800	\$2,160	\$3,400	\$580	\$10,800	\$2,448	\$0	\$3,180	\$2,000		
Labor Cost = \$215,218																	
Direct Cost = \$5,180																	
Task Cost = \$220,398																	

TOWN OF PALM BEACH, FL
ENVIRONMENTAL IMPACT STATEMENT CONTINUED SERVICES
SOUTHERN PALM BEACH ISLAND COMPREHENSIVE SHORELINE STABILIZATION PROJECT

Task 2 - Cost Estimate

TASK DESCRIPTION	LABOR COST										SUBTASK TOTALS	
	Principal Engineer (Hours)	Senior Project Manager (Hours)	Senior Coastal Engineer (Hours)	Coastal Engineer III (Hours)	Coastal Engineer I (Hours)	Senior Marine Biologist (Hours)	Marine Biologist II (Hours)	Senior CAD Operator (Hours)	GIS Operator (Hours)	Clencal (Hours)	HOURS	COST
2. CONTINUED ADMINISTRATION, RECORD KEEPING AND PROGRESS REPORTING												
2.1 Records and Documentation of EIS Related Communications		4	4			24	40				72	\$ 9,680
2.2 Preparation of Monthly Progress Reports		8	8			16					32	\$ 5,440
2.3 Progress Review and One (1) Unscheduled Meetings		40	40			40	40				160	\$ 26,600
2.4 Maintain Bibliography, References and Data Sources and Mailing Lists						16	40			8	64	\$ 7,504
Hours = 0 52 52 0 0 96 120 0 0 8												
Rate = \$300 \$225 \$185 \$140 \$105 \$135 \$120 \$145 \$100 \$68												
Cost = \$0 \$11,700 \$9,620 \$0 \$0 \$12,960 \$14,400 \$0 \$0 \$544												
Labor Cost = \$49,224												
Direct Cost = \$0												
Task Cost = \$49,224												



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Fax: +1 561 391 9116
www.CBI.com

September 23, 2013

Mr. Robert Weber
Coastal Coordinator
Town of Palm Beach
951 Old Okeechobee Road, Suite A
West Palm Beach, FL 33401

**Re: Proposal for Biological Characterization for the
Southern Palm Beach Island Comprehensive Shoreline Stabilization Project**

Dear Rob:

This proposal is provided for Coastal Planning & Engineering, Inc., a CB&I Company (CB&I), to conduct a biological characterization of the nearshore natural resources in support of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS).

The Corps, as the lead federal agency, will have responsibility for the preparation and content of the EIS in accordance with all of the requirements of NEPA (42 U.S.C. § 4321, et seq.), Council of Environmental Quality Regulations (40 C.F.R. Parts 1500-1508) and the NEPA Implementation Procedures for the Regulatory program (Appendix B of 33 C.F.R. Part 325). According to these laws and regulations, specifically 40 C.F.R. § 1506.5(c), CB&I has been selected as the Third Party Contractor (TPC) to perform the work described herein under the direction of the Corps.

Previous Work

Previous biological monitoring has been conducted within and adjacent to the project area in conjunction with the FDEP Hurricane Recovery Dune Restoration Project and the South Palm Beach/Lantana Erosion Control Study. The data from these efforts will be referenced and used for comparison to the data generated from the surveys proposed herein in order to provide an updated and comprehensive assessment of the nearshore habitat within the project area.

Scope of Services

The attached Scope of Services (Exhibit A) summarizes the scientific and technical services to be provided by CB&I, as the TPC in conducting a biological characterization of the area within and adjacent to the proposed project area of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project. These data will support preparation of the EIS, which in turn will aid the Corps in their decision to issue, modify, condition, or deny a Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and/or Section 404 of the Clean Water Act (33 U.S.C. 1344) permit(s) for the proposed Project. The principal objective of the proposed services is for CB&I to provide the data and analyses required to support Section 7 Consultation of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and NEPA throughout preparation of a Biological Assessment, an Essential Fish Habitat Assessment, and the EIS.



Fee Proposal

The fee for the services (Exhibit B) contained in this proposal is not to exceed \$117,753 and will be billed monthly on a time and materials basis. The billing rates for services rendered under this proposal will be based on direct labor costs multiplied by a factor of 3.0 as defined in Section 5.A of the Professional Services Agreement. Attached please find a spreadsheet which delineates the various phases of the work estimated with CPE standard rates and classifications (Exhibit B). Although this proposal is detailed by separable items and estimated by specific staff and categories, it is anticipated that some work elements will exceed the estimate while others fall below the estimate to complete. Our staff will be used as needed to achieve the scope of services and to meet the Town's objectives and timelines.

The services proposed herein will be performed in accordance with this proposal and the Professional Services Agreement between The Town of Palm Beach and Coastal Planning & Engineering, Inc. dated July 15, 2009. The timeframe to complete the fieldwork component of this work is estimated to be within one (1) month from receipt of your authorization to proceed, barring any circumstances beyond the control of CB&I. Final deliverables will be provided within three (3) months of the completion of fieldwork. We will commence work upon receipt of a Purchase Order from the Town of Palm Beach.

Thank you for the opportunity to serve the Town of Palm Beach.

If you should have any questions, please call me.

Sincerely,

Thomas P. Pierro, P.E., D.CE
Vice President
Coastal Planning & Engineering, Inc.

Please reply to: Thomas Pierro
Phone No. 561.361.3150
E-Mail: thomas.pierro@cbi.com

cc: Stacy Prekel, CB&I
Samantha Danchuk, PhD, PE, CB&I
Brad Rosov, CB&I
Sheri Dindial, CB&I

Exhibit A

Scope of Services

Biological Characterization for the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project

This Scope of Services is for Coastal Planning & Engineering, Inc., a CB&I Company (CB&I) to conduct a biological characterization of the nearshore natural resources in support of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement. Biological assessments have been conducted in the nearshore marine habitat adjacent to the proposed project area within the past several years. The FDEP Hurricane Recovery Dune Restoration Project was constructed in April and May 2006 in response to erosion caused by the hurricanes of 2004 and 2005. The project spanned Reaches 7 and 8 in the Town of Palm Beach and was constructed with offshore sand in conjunction with the Phipps Ocean Park (Reach 7) Beach Restoration Project. The biological monitoring program for this project included cross-shore transects that spanned the width of the nearshore hardbottom resources. In Reach 8, quadrat assessments were conducted on the transects located between R-128 and R-134 (2006-2008). South of the dune project, a survey was conducted in support of the South Palm Beach/Lantana Breakwater Project Feasibility Study in 2009 and 2010 where relief measurements were taken along the eastern and western edges of the nearshore hardbottom resources between R-130 and R-143. Additionally, quantitative assessments were conducted in July 2006 along shore-perpendicular transects in South Palm Beach between R-134 and R-142 in association with the South Palm Beach/Lantana Erosion Control Study. Within the same project area (R-134 to R-142) and timeframe (September 2006) a dune vegetation survey was conducted to map species coverage and document species location. The data from these surveys will be referenced and used for comparison to the data generated from the surveys proposed herein. The proposed biological characterization will provide an updated and comprehensive assessment of the nearshore resources within and adjacent to the project area of the Southern Palm Beach Island Comprehensive Shore Stabilization Project.

In order to ensure that the biological characterization methodologies proposed by CB&I were deemed appropriate by regulatory staff and would provide the information necessary for NMFS to generate a Biological Opinion, a draft of the biological monitoring methodologies was provided to the Corps (Garett Lips). The Corps passed the information on to NMFS Protected Resources Division (PRD) and NMFS Habitat Conservation Division (HCD) for comment. NMFS-HCD responded and a conference call was set up between the Corps, NMFS-HCD and CB&I to discuss the details of the plan. Written comments and discussion during the conference call by NMFS-HCD were incorporated into the monitoring methodologies proposed herein. NMFS-PRD has been contacted by the Corps on several occasions but has not yet commented on the proposed methodologies. Input from NMFS-PRD was desired due to the incorporation of an *Acropora* spp. survey in the protocol; however, the survey is proposed as outlined in the NMFS recommended protocol for *Acropora* spp. in support of Section 7 Consultation (NMFS, 2008). Additionally, a survey for the seven species proposed for listing under the ESA will be conducted in conjunction with the *Acropora* survey. This will ensure a comprehensive

assessment of all hardbottom resources for both the listed and proposed coral species that may occur within and adjacent to the project area.

Under direction by the Corps, CB&I will conduct the following surveys to determine the distribution and abundance of federally listed (and proposed for listing) coral species and to assess the benthic hardbottom habitat within and adjacent to the project area of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project. These data will support the production of the Environmental Impact Statement (EIS), Biological Assessment (BA), and Essential Fish Habitat (EFH) Assessment being generated for this project. A time-average analysis of the exposed hardbottom over the past 10 years (2003-2012) resulted in a hardbottom area of 26.3 ac in the nearshore habitat. The area examined in the analysis, and to be surveyed extends beyond the project limits by 2000 feet to the north and 3500 feet to the south, from approximately R-127 to R-141. The following tasks are proposed for this study area. All deliverables will be reviewed for quality assurance and quality control by our in-house QA officer prior to submittal.

Survey for *Acropora* spp. and Seven Corals Proposed for Listing

A survey of the project area and adjacent area will be conducted to determine the distribution and abundance of the federally listed coral species *Acropora* spp. The survey area will include the area from approximately 2000 ft north of the proposed project area near R-127 to approximately 3500 ft south of the proposed project area near R-141 (approximately 3 miles). Benthic habitat maps of the nearshore hardbottom in the survey area show highly ephemeral hardbottom habitat located mostly landward of the 10 ft (3.05 m) depth contour and generally within 500 ft (150 m) from shore. The survey area will include all nearshore hardbottom habitat starting at the westernmost limit of nearshore hardbottom and extending to the eastern limit of nearshore hardbottom (approximately 500 ft). The surveys will omit areas that consistently contain unconsolidated sediment based on available aerial analyses; however, these areas will be verified as unconsolidated sediment during the survey to ensure no potential habitat is omitted. The offshore reef resources (> 30 ft water depth) will not be surveyed as they are well outside the proposed project area.

The survey will follow the NMFS Recommended Survey Protocol for *Acropora* spp. in support of Section 7 Consultation (NMFS, 2008). During this survey, the area will also be assessed for the seven coral species proposed for listing (*Dendrogyra cylindrus*, *Montastrea annularis*, *Montastrea faveolata*, *Montastrea franksi*, *Mycetophyllia ferox*, *Agaricia lamarcki*, and *Dichocoenia stokesi*) under the Endangered Species Act (ESA) since it is anticipated that these species may be listed prior to commencement of the proposed project. The same protocol will be applied for these seven species. The NMFS recommended protocol is provided below.

Recommended Methods:

The most appropriate approach depends on scale, and the amount of expected error depends on the approach. Unless a complete survey of the entire area is done, the estimated distribution and abundance of these species may be significantly in error. With the exception of very small project areas, efficient field sampling may require sampling in two stages, as described in the NMFS Recommended Survey Protocol for *Acropora* spp. (NMFS, 2008) and outlined below. A preliminary visual reconnaissance of the site should be conducted to locate any occurrences of *Acropora* spp. Following the preliminary reconnaissance, a more comprehensive sampling should be initiated.

When using following survey methods, the survey personnel should record the following:

1. Species;
2. Single largest linear dimension of the colony or length, height, and width (units = mm);
3. Rank of percentage live tissue (i.e., > or < 50%);
4. GPS coordinate of each colony (if possible) or each survey site (unit = decimal degrees and state datum); and
5. Site map with locations of each colony

Based on area of the survey site, this survey will follow the methodology recommended for an intermediate to large project area (>~0.25 ac or ~0.1 ha). The data will be collected at one (1) sampling site per every 2.5 ac (10,000 m² or 1 ha). At each sampling site, a 2-tiered survey will be conducted as follows:

Tier 1. A structured 20-min timed swim will be conducted from a referenced center point (i.e., downline). If 5 or fewer colonies are encountered, the required data will be collected on those colonies and the survey will proceed to next sampling site. If greater than 5 colonies are encountered, the 2nd tier survey will be conducted.

Tier 2. Three belt transects will be surveyed from the referenced center point at 3 random bearings. Each belt transect should measure 4 m X 50 m, for a total of 200 m² sampled per transect, for a total of 600 m² per sampling site. All required data for all colonies encountered along the transect will be collected.

Deliverable: A comprehensive report will be submitted detailing the results from *Acropora* spp. survey. A map generated in ArcGIS will provide *Acropora* site locations within and adjacent to the project area.

Quantitative Benthic Assessment of the Nearshore Hardbottom Habitat

A biological assessment of the nearshore hardbottom habitat within and adjacent to the project area will be conducted to determine the existing conditions of the hardbottom resources. The assessment area will include the nearshore resources from approximately 2000 ft north of the proposed project area near R-127 to approximately 3500 ft south of the proposed project area near R-141 (approximately 3 miles). It is proposed that approximately fifteen (15) shore-perpendicular transects be spaced throughout this survey area, each extending from the landward edge of the hardbottom to the seaward extent of the hardbottom or 150 m (whichever is less). The seaward limit of 150 m was determined based on current monitoring requirements regulated by FDEP that are commonly applied in south Florida and supported by examination of aerial delineations in this area, which show that hardbottom does not generally extend beyond this distance from shore. An *a priori* power analysis will be conducted to ensure this sampling size is appropriate prior to finalization of the characterization plan. Transect location will be based on a stratified-random approach within the designated sampling area. The following methodologies will be applied to collect *in situ* benthic data.

Quadrat Sampling. Benthic communities will be evaluated along each of the shore-perpendicular transects using the quadrat-based Benthic Ecological Assessment for Marginal Reefs (BEAMR) methodology (Lybolt and Baron, 2006). The number of 1.0 m² quadrats to be sampled will be determined by a power analysis of previous data collected on similar habitat within Palm Beach County. This will provide an estimate of variability expected in the cross-shore sampling. The quadrat sampling method will collect physical characteristics (maximum relief and maximum sediment depth), and estimates of planar percent cover. Functional groups include: sediment, macroalgae, turf algae, encrusting red

algae, sponge, hydroid, octocoral, scleractinian coral, tunicate, bare hard substrate, anemone, barnacle, bryozoan, bivalve, *Millepora* spp., seagrass, sessile annelid, worm rock, and zoanthid. The macroalgae percent cover data will be augmented by a genus-level breakdown of macroalgae percent cover for all genera with at least 1% cover. In addition to percent cover data, coral density is estimated by individual colony count. Also, the maximum diameter (cm) and species of each stony coral (Scleractinia), and the maximum height (cm) and genus of each soft coral (Octocorallia) are recorded. Encrusting octocorals are measured by their maximum diameter (cm) similar to stony corals. Although coral colonies are measured to the nearest centimeter, individuals that are less than 1 cm are recorded as < 1 cm to differentiate from colonies that are truly 1 cm. Any abnormal conditions of the colony e.g., bleaching, disease, and encrusting organisms, are also noted. Photographs using a scaled framer will be conducted at each quadrat for documentation purposes.

Sediment Cover. The line-intercept methodology will be used to document sediment cover and the location of physical transitions in the nearshore habitat along the shore-perpendicular transects. The location of hardbottom boundaries interrupted by sand patches larger than 0.5 m in length will be documented using two substrate designations: nearshore hardbottom and sand. Nearshore hardbottom is clearly exposed consolidated substrate with the potential for recruitment of benthic organisms and sand is defined as sediment with a depth of greater than 1 cm with no emerging biota. Areas where biota emerges through sand are considered hardbottom regardless of sand depth in the line-intercept survey since a sand designation requires an uninterrupted 0.5-m expanse of sand. The line-intercept data will provide a ratio of hardbottom to sand for the area along each transect, extending from the inshore hardbottom edge to the seaward limit of the hardbottom or 150 m seaward of the hardbottom edge, whichever is less.

Sediment Depth. Sediment depth will be collected using plastic rulers graduated in millimeters at 1-m intervals along each shore-perpendicular transect. A maximum value of 300 mm will be documented. Sediment depth data provide a snapshot of the cross-shore sand distribution along each nearshore transect. The relief of the hardbottom edge will also be measured (cm) at the westernmost hardbottom-sand border adjacent to each transect.

Video Documentation. *In situ* video will be recorded using a digital video camera in an underwater housing along each shore-perpendicular transect to provide a video record of the conditions of each transect at the time of the survey. The speed of the video will not exceed 5 m per minute and the camera will be held at a height of 40 cm above the substrate (Porter *et al.*, 2002).

Raw data will be entered into our Access-based database for easy extraction and analysis. Data analyses will include parametric and non-parametric tests. Parametric statistical analyses will be conducted using Microsoft Excel and PRIMER v6 (Clark and Gorley, 2006; Clark and Warwick, 2001). Since this is a characterization, the analyses will primarily consist of spatial comparisons to detect potential cross-shore and longshore variations in the hardbottom habitat. This may include two-tailed t-tests, analysis of variance (ANOVA), repeated measures analysis of variance, and Student-Newman-Keuls (SNK) test. Non-parametric multivariate statistical analyses will be applied using PRIMER v6 and will be primarily applied to the BEAMR data.

Deliverable: The final deliverable for the benthic characterization will consist of a comprehensive report detailing the nature of the nearshore natural hardbottom habitat within and adjacent to the proposed project area. The report will include maps generated in ArcGIS displaying the project location, project design, nearshore marine resources (dune to subtidal),

hardbottom delineations, and survey sites. The report will also include video documentation and representative photographs from the in situ assessment. All data will be included in an interactive GIS deliverable (see Task 5).

Aerial Analysis of Nearshore Hardbottom Resources

2013 Hardbottom Delineation. Delineation of hardbottom resources will be conducted using the 2013 aerials provided by the Town of Palm Beach and/or Palm Beach County to determine the extent of potential exposed hardbottom within and adjacent to the proposed project area. A GIS specialist will conduct the delineation with assistance and verification by a marine biologist with direct experience in this area.

Historic Hardbottom Delineation. Additionally, the hardbottom delineations between 2000 and 2012 provided by the Town of Palm Beach and Palm Beach County will be analyzed to detail changes in hardbottom exposure over time. The Corps will determine the final methodology for reporting hardbottom acreage within the EIS document. These methods may include:

- 1) The area of hardbottom from the most recent aerial delineation
- 2) The maximum extent of exposed hardbottom
- 3) Persistent hardbottom
- 4) Time-averaged hardbottom

Deliverable: All aerial analyses will be reviewed for quality assurance and quality control (QA/QC) by a marine biologist and GIS specialist. These data will be incorporated into the deliverables for the Quantitative Benthic Assessment of the Nearshore Hardbottom Habitat.

Dune Vegetation Survey

We shall examine aerial photographs to determine specific areas of interest along the project area which may support dune vegetation. These areas will be ground-truthed and the extent of vegetation will be documented using DGPS. Dominant species will be identified and photo-documentation will be collected at each site. Particular effort will be made to identify and document the presence of the endangered plant species beach jacquemontia (*Jacquemontia reclinata*). The location of any endangered plant will be marked using DGPS. Results of the vegetation survey, including edge-of-vegetation and the location of any listed species will be overlaid onto project aerials using GIS. An observation report with maps will be provided to the Town, and shapefiles will be included in the comprehensive GIS deliverable (see Task 5).

Interactive GIS

The GIS deliverable will provide a comprehensive database of all georeferenced data collected in the field and from the aerial analysis specific to the Southern Palm Beach Island Comprehensive Shore Stabilization Project. This will include project location, delineated hardbottom habitat, shore-perpendicular transects, *Acropora* survey sites, dune vegetation delineation, still photographs, and *in situ* benthic data (BEAMR, line-intercept, sediment depth). This will be provided upon completion of all characterization efforts.

Literature Cited

- Clarke, K.R. and R.N. Gorley. 2006. PRIMER-E® (v6): User Manual/Tutorial. PRIMER-E Ltd, Plymouth, UK.
- Clarke, K.R. and R.M. Warwick. 2001. Change in marine communities: An approach to statistical analysis and interpretation, 2nd edition. PRIMER-E Ltd, Plymouth, UK.
- Lybolt, M. and R. Baron. 2006. BEAMR (Benthic Ecological Assessment for Marginal Reefs): a preferred replacement for AGRRA and similar benthic assessment methods tailored for marginal reefs. *Proceedings from the 2006 ISRS European Meeting*. Bremen, Germany.
- National Marine Fisheries Service (NMFS). 2008. Recommended survey protocol for *Acropora* spp. in support of Section 7 Consultation. Prepared by NMFS Office of Protected Resources.
- Porter, J.W., V. Kosmynin, K. Patterson, K.G. Porter, W.C. Jaap, J. Wheaton, K.E. Hackett, M. Lybolt, C.P. Tsokos, G. Yanev, D. Marcinek, J. Dotten, D. Eaken, M. Patterson, O.W. Meier, M. Brill, and P. Dustan. 2002. Detection of Coral Reef Change by the Florida Keys Coral Reef Monitoring Project. In: Porter, J.W. and Porter, K.G. (eds). *The Everglades, Florida Bay, and Coral Reefs of the Florida Keys: An Ecosystem Sourcebook*. CRC Press, Boca Raton, pp 749-769.

TOWN OF PALM BEACH, FL
BIOLOGICAL CHARACTERIZATION OF NEARSHORE NATURAL RESOURCES
SOUTHERN PALM BEACH ISLAND COMPREHENSIVE SHORE STABILIZATION PROJECT

Exhibit B - Cost Estimate

TASK DESCRIPTION	LABOR COSTS								DIRECT COSTS							COST ESTIMATE BY LINE
	Senior Project Manager (Hours)	Senior Marine Biologist (Hours)	Marine Biologist I (Hours)	Senior CAD Operator (Hours)	GIS Operator (Hours)	Surveyor (Hours)	Boat Captain (Hours)	Ciental (Hours)	Survey Boat 28 Parker (Days)	SCUBA tanks (Tanks)	Video Camera (Days)	Hypack Navigation (Days)	DGPS (Days)	Dive Equipment & Insurance (Days)	CDs (number)	
ACROPORA SURVEY																
Reconnaissance Survey	2	12	16		8	12	16		1	9	1	1	1	3		\$7,622
Acropora Survey	48	52	52			48	56		4	36	4	4	4	12		\$24,743
Data Entry/Analysis			24													\$1,737
Report Production		4	24	2	16			4								\$4,137
BENTHIC CHARACTERIZATION															5	
Develop Characterization Plan	2	16	8	2	8											\$3,555
In Situ Characterization		72	76			72	80		6	54	6	6	6	18		\$36,719
Field Investigations with NMFS		12	12			12	12		1	9	1	1	1	3		\$5,988
Data Entry/Analysis		8	40	2	8											\$4,683
Report Production		24	40					4							5	\$5,599
AERIAL DELINEATION																
2013 Aerial Delineation	2	16		2	40											\$5,794
Aerial Analysis (2000-2013)			8	2	16											\$2,272
DUNE VEGETATION SURVEY																
Aerial Assessment	2		8		8											\$1,674
In Situ Vegetation Survey			12			12							1			\$2,335
Observation Report with Maps		4	16	2	8	8		4							5	\$3,478
INTERACTIVE GIS DELIVERABLE																
GIS Packaging and Publishing	2	4	16		40											\$5,471
Final Review and Production		2	8	2	8			2							5	\$1,946
Hours =	10	222	360	14	160	164	164	14	12	108	13	12	13	36	20	
Rate =	\$195	\$100	\$72	\$142	\$88	\$78	\$62	\$64	\$1,050	\$19	\$115	\$260	\$415	\$75	\$10	
Cost =	\$1,950	\$22,158	\$26,060	\$1,988	\$14,093	\$12,792	\$10,248	\$901	\$12,600	\$2,052	\$1,495	\$3,120	\$5,395	\$2,700	\$200	
Labor Cost =	\$90,191															
Direct Cost =	\$27,562															
Task Cost =	\$117,753															



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September 23, 2013

Mr. Robert Weber
Coastal Coordinator
Town of Palm Beach
951 Old Okeechobee Road, Suite A
West Palm Beach, FL 33401

Re: Proposal for Numerical Modeling in Support of the Environmental Impact Statement for the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project

Dear Rob:

This proposal is provided at your request for Coastal Planning & Engineering, Inc., a CB&I Company (CB&I) to provide numerical modeling services to assist the U.S. Army Corps of Engineers (Corps) in the preparation of the Environmental Impact Statement (EIS) for the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project.

The Corps, as the lead federal agency, has responsibility for the preparation and content of the EIS in accordance with all of the requirements of NEPA (42 U.S.C. § 4321, et seq.), Council of Environmental Quality Regulations (40 C.F.R. Parts 1500-1508) and the NEPA Implementation Procedures for the Regulatory program (Appendix B of 33 C.F.R. Part 325). According to these laws and regulations, specifically 40 C.F.R. § 1506.5(c), CB&I has been selected as the Third Party Contractor (TPC) to perform the work described herein under the direction of the Corps.

Previous Work

Previous work conducted by the Town of Palm Beach and Palm Beach County looked at the projects separately. The applicable portions of that work will be used and adapted for evaluation of the combined project as described in the attached Scope of Services. Upon review of the data available and previous work completed, the USACE has determined additional services are required to obtain necessary data that is not currently available. The USACE directed CB&I to prepare this proposal for the additional services. This proposal has been reviewed by the USACE project manager and USACE engineering division at the Jacksonville District office.

A component of the applicant's purpose and need pertains to providing storm protection to the upland infrastructure and property. However, storm damage modeling has not been conducted by the applicant to determine the level of protection afforded by the existing conditions in the project area. The USACE storm damage model SBEACH will be used to complete this analysis.

As part of a previous study conducted for Palm Beach County, a Delft3D numerical model (CPE, 2013) was developed, calibrated and applied to evaluate project alternatives along the shoreline of South Palm Beach, Lantana and Manalapan. This setup was focused on the South Palm Beach project area and will need to be expanded in order to evaluate the combined project area. The existing model will be modified to include the EIS project area and recalibrated for use in evaluating the proposed actions and alternatives in the EIS and quantifying the potential hardbottom coverage.



The intent of the proposal is to provide required information without duplicating efforts completed in previous work. The proposed work includes using numerical models to prepare an assessment of existing storm damage risks along the entire project area, an evaluation of the performance of the proposed alternatives and an assessment of the potential impacts to hardbottom impacts as a result of the implementation of the proposed alternatives.

Scope of Services

The attached Scope of Services (Exhibit A) summarizes the scientific and technical services to be provided by CB&I, as the TPC for the preparation of the EIS, which in turn will aid the Corps in their decision to issue, modify, condition, or deny a Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and/or Section 404 of the Clean Water Act (33 U.S.C. 1344) permit(s) for the proposed Project. The principal objective of the proposed services is for CB&I to provide the Corps with the documents and analyses to satisfy NEPA in its preparation of the EIS.

This proposal is for numerical modeling necessary for the EIS process. CB&I will perform an assessment of existing storm damage risks, an evaluation of the performance of the proposed alternatives and an assessment of the potential impacts to hardbottom impacts as a result of the implementation of the proposed alternatives.

Fee Proposal

The fee for the services contained in this proposal is not to exceed \$123,877 and will be billed monthly on a time and materials basis. The billing rates for services rendered under this proposal will be based on direct labor costs multiplied by a factor of 3.0 as defined in Section 5.A of the Professional Services Agreement. Attached please find a spreadsheet which delineates the various phases of the work estimated with CPE standard rates and classifications (Exhibit B). Although this proposal is detailed by separable items and estimated by specific staff and categories, it is anticipated that some work elements will exceed the estimate while others fall below the estimate to complete. Our staff will be used as needed to achieve the scope of services and to meet the Town's objectives and timelines.

The services proposed herein will be performed in accordance with this proposal and the Professional Services Agreement between The Town of Palm Beach and Coastal Planning & Engineering, Inc. dated July 15, 2009. The time frame estimated to complete this work is estimated to be six (6) months from receipt of your authorization to proceed, barring any circumstances beyond the control of CB&I. We will commence work upon receipt of a Purchase Order from the Town of Palm Beach.

Thank you for the opportunity to serve the Town of Palm Beach.



If you should have any questions, please call me.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Pierro", written in a cursive style.

Thomas P. Pierro, P.E., D.CE
Vice President
Coastal Planning & Engineering, Inc.

Please reply to: Thomas Pierro
Phone No. 561.361.3150
E-Mail: thomas.pierro@cbi.com

cc: Samantha Danchuk, PhD, PE, CB&I
Brad Rosov, CB&I
Sheri Dindial, CB&I

Exhibit A

Scope of Services

Numerical Modeling for Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS

Under direction of the U.S. Army Corps of Engineers (USACE), Coastal Planning & Engineering, Inc., a CB&I Company (CB&I) is assisting in the development of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS). The initial tasks associated with the effort included public scoping and agency coordination to determine what data was necessary to develop the EIS. After review of the data available and previous work completed, the USACE has determined additional services are required to obtain necessary data that is not currently available. The USACE directed CB&I to prepare this proposal for the additional services. This proposal has been reviewed by the USACE project manager and USACE engineering division at the Jacksonville District office.

The intent of the proposal is to provide required information without duplicating efforts completed in previous work. The proposed work includes using numerical models to prepare an assessment of existing storm damage risks along the entire project area, an evaluation of the performance of the proposed alternatives and an assessment of the potential impacts to hardbottom impacts as a result of the implementation of the proposed alternatives. Previous work conducted by the Town of Palm Beach and Palm Beach County looked at the projects separately. The applicable portions of that work will be used and adapted for evaluation of the combined project as described in the Statement of Work.

TASK 1: Numerical Modeling

1.1 Storm Damage Vulnerability Analysis

A component of the applicant's purpose and need pertains to providing storm protection to the upland infrastructure and property. However, storm damage modeling has not been conducted by the applicant to determine the level of protection afforded by the existing conditions in the project area.

To evaluate the need for the project and the performance of project alternatives, CB&I will perform a storm damage vulnerability analysis for the Southern Palm Beach Island project area (R129-195' to R138+568'). The analysis will utilize the Storm Induced Beach Change Model, SBEACH, developed by Larson and Kraus (Larson and Kraus, 1989) for the US Army Corps of Engineers (USACE). SBEACH simulates changes in the beach profile that could result from coastal storms of varying intensity in terms of storm tide levels, wave heights, wave periods, and storm duration. Information required as input to run the SBEACH model includes the beach

cross-section, the median sediment grain size, and the time histories of the wave height, wave period, and water elevation.

1.1.1 SBEACH Analysis for Existing Conditions

The SBEACH model will be calibrated using pre-storm and post-storm surveys from a recent or historic storm event such as Hurricane Frances (2004) or Subtropical Storm Andrea (2007). Possible sets of input data for the calibration are available from the Florida Department of Environmental Protection (FDEP) beach survey database, National Oceanic and Atmospheric Administration (NOAA) Digital Coast, the NOAA tide gage and weather station at the Lake Worth Pier, the NOAA WAVEWATCH hindcast for the Western North Atlantic, and other sources. The objective of the calibration will be to reproduce the observed volumetric or contour changes above the water line.

To evaluate the potential for storm damage given the present or future conditions, we will develop five (5) synthetic storms with return intervals of 5-years, 15-years and 25-years, 50-years and 100-years. The storm suite has been defined through consultation with the USACE Jacksonville District in order to evaluate the level of protection for a range of events. The characteristics of the two storms will be based on existing data available from various federal agencies including National Oceanic and Atmospheric Administration (NOAA) tide gage at the Lake Worth Pier and the NOAA WAVEWATCH hindcast.

The shoreline will be divided into a maximum of 10 segments for analysis that have similar profile characteristics in terms of dune elevation, dune width, beach slope, and offshore profile configuration. SBEACH will be applied to each shoreline reach using the characteristics of the two synthetic storms. The results of the SBEACH model will be used to identify which structures within each shoreline reach could be impacted by the various return interval storms. Note this analysis will only identify which structures could experience damage due to storm induced erosion caused by a storm having a predetermined return interval or frequency. The analysis does not include an evaluation of damages due to flooding, wave impacts, or wind nor will it quantify the economic impacts resulting from the damage or loss of such structures.

The storm vulnerability analysis will use the existing conditions within the project area (R129-195' to R138+568') that could experience damage to identify the return interval of the storm or storms that would damage upland property and structures.

1.1.2 Alternative Analysis with SBEACH

The performance of the proposed actions/ alternatives will be evaluated using SBEACH. As in the previous task, the model will be run with the five storm scenarios. The results will be used to identify if property and structures along the shoreline will be impacted by the storm scenarios with the project in place.

1.1.3 Assessment of Flood Risk from Wave Overtopping Using SBEACH Output

Upland property is at risk of flooding if seawalls are overtopped by waves. To analyze the likelihood of seawall overtopping, the IH2VOF model will be applied to several reaches with seawalls of common height. The model solves the Reynolds-Averaged Navier-Stokes equation using a Volume-of-Fluid Approach. The eroded profiles generated during the SBEACH analysis of alternatives will be used to analyze the potential for overtopping by waves and to provide visual output of results (Figure 1). The model may also be used to evaluate wave forces on particular structures if the deemed necessary based on the USACE review of the model results.

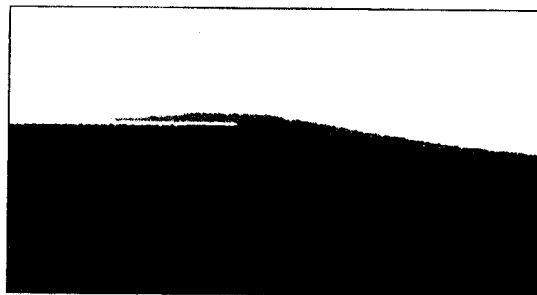


FIGURE 1: Example model output from the IH2VOF model showing a wave overtopping the seawall (<http://ihcantabria.com/IH2VOF/>)

1.2 Delft3D Modeling of Alternatives

As part of a previous study conducted for Palm Beach County, a Delft3D numerical model (CPE, 2013) was developed, calibrated and applied to evaluate project alternatives along the shoreline of South Palm Beach, Lantana and Manalapan. This setup was focused on the South Palm Beach project area and will need to be expanded in order to evaluate the combined project area. The existing model will be modified to include the EIS project area and recalibrated for use in evaluating the proposed actions and alternatives in the EIS and quantifying the potential hardbottom coverage.

1.2.1 Recalibration of Delft3D Model

The existing model will be modified as needed to include the entire EIS study area, R127 to R141, plus the adjacent areas where spreading may occur. This modification of the model setup will require the model to be recalibrated. The calibration will be based on volumetric erosion rates between December 2008 and the most recent survey available, as was conducted in the previous modeling effort.

Existing data will be used for the recalibration effort. No new beach surveys, aerial photography, or environmental investigations will be conducted. Survey data, hardbottom mappings, and aerial photographs collected since 2008 by others will be used as applicable in the model. The model will include seawalls as impermeable vertical walls with finite heights and

the Lake Worth Pier as a permeable structure. Hardbottom will be incorporated into the model by mapping the erodible sediment depth. A hardbottom/bedrock surface was developed for the previous modeling effort and will be adapted to in the current effort. Available aerial delineations of hardbottom will be compared to model results.

1.2.2 Alternative Analysis with Delft3D

The performance of the alternatives developed above will be evaluated using the recalibrated Delft3D model. Each alternative will be simulated for a minimum of 3 years. This scope of work provides for a maximum of five alternatives to be examined, including the “no action” alternative. The “no action” alternative will be used as the baseline for which to compare all other alternatives to, so the impact/benefit of the proposed project can be identified.

Evaluation of the modeling results will focus on the following:

- The amount of fill retained over the study period.
- Impacts to hardbottom.
- Exposure of the existing seawalls.
- Fill distribution and groin locations.
- Potential impacts to adjacent beaches.
- Potential risk of rip current formation near structures.

1.3 Modeling Report

A modeling report will be prepared summarizing the numerical modeling efforts described above. The modeling sections of the report will, to the greatest extent possible, follow FDEP guidelines for numerical modeling studies, consistent with previous work. An initial draft will be provided to the USACE for review, along with a presentation of model results for discussion with USACE staff. Following the review period, comments from the USACE will be addressed and a final report will be prepared and submitted. Key input and outputs from the numerical model simulations and the calibration effort along with graphics and descriptions of the model results will be provided in the report. The alternative that best meets the purpose and need of the project will be identified and recommended for consideration in the EIS.

1.4 Surfing Impact Analysis with BOUSS2D

Concern regarding potential impacts to surfing has previously been expressed in public scoping for projects within the project area. In order to evaluate project-related effects on surfing, the BOUSS-2D model will be used to simulate waves within the project area. BOUSS-2D is a phase-resolving model that can simulate the shoaling, refraction, diffraction, reflection, bottom damping, and breaking of nonlinear waves. BOUSS-2D analyzes wave behavior in the time domain, generating water-surface elevations and horizontal velocities over the wave's period as an output (Figure 2). This approach is highly detailed and can produce graphic animations of wave propagation and interaction with structures.

The BOUSS-2D model will be setup to replicate, as nearly as possible, the preferred wave breaking conditions for surfing at the project area. A BOUSS-2D model was set up and used for the Palm Beach County project to assess the effect of the project on surfing conditions, but was limited to an evaluation of breakwaters in South Palm Beach (CPE, 2010). The conclusions of that report will be used in the evaluation to the greatest extent practicable.

The existing data and previous modeling will be used to avoid duplication of work efforts. We will use existing wave and bathymetric survey data for model setup and verification of the model's ability to replicate the observed surfing conditions. Three wave scenarios (typical, hurricane, and cold front) will be used for model verification and model runs.

A maximum of three (3) structural configurations will be considered to investigate the effects on waves in the nearshore area as they relate to potential surfing impacts of the project design alternatives. The various configurations will be based on the alternatives developed as described in the previous section. These alternatives may include modifications to the proposed groin field design and/or the addition or removal of structures.

For each structural configuration, three (3) model runs will be performed, for a maximum total of nine (9) runs. The first run of each alternative will be used to evaluate average wave conditions, the second run will evaluate hurricane conditions, and the third run will evaluate cold front wave conditions.

The results will be presented in a manner sufficient to visualize the wave propagation patterns with the various structural configurations in place. Surfability will be analyzed in terms of peel angle, peel rate, and other empirical parameters available in the published literature (i.e. Benedet et al, 2005). The presentation of the results will be included in a modeling report with graphics and computer animations as needed to visualize the results.



FIGURE 2: Output of BOUSS-2D from South Palm Beach study of breakwaters (CPE, 2010).

**TOWN OF PALM BEACH, FL
NUMERICAL MODELING IN SUPPORT OF EIS**

Exhibit B - Cost Estimate

TASK	LABOR COST							DIRECT COST Model	COST ESTIMATE BY LINE
	Principal Engineer (Hours)	Senior Project Manager (Hours)	Coastal Engineer III (Hours)	Coastal Engineer I (Hours)	Coastal Modeler II (Hours)	CAD Operator (Hours)	Clerical (Hours)		
1. NUMERICAL MODELING									
1.1 Storm Damage Vulnerability Analysis									
1.1.1 SBEACH Analysis for Existing Conditions		4	6	9	15	4			\$4,915
1.1.2 Alternative Analysis with SBEACH		4	6	10	35	3			\$7,520
1.1.3 Assessment of Flood Risk from Waves		4	6	10	15	3			\$4,920
1.2 DELFT3D Alternatives Analysis									
1.2.1 Recalibration of Delft3D Model		15	13	40	40	10		\$3,000	\$18,145
1.2.2 Alternative Analysis with Delft3D		15	40	40	200				\$38,725
1.3 Modeling Report		4	26	24	100		4		\$20,212
1.4 Surfing Impact Analysis with BOUSS2D		16	54	44	98	4		\$1,000	\$29,440
Total =	0	62	151	177	503	24	4	\$4,000	
Rate =	\$250	\$195	\$140	\$105	\$130	\$100	\$68	1.00	
Cost =	\$0	\$12,090	\$21,140	\$18,585	\$65,390	\$2,400	\$272	\$4,000	
TOTAL LABOR COST = \$119,877									
TOTAL DIRECT COST = \$4,000									
TOTAL COST TASK 1 = \$123,877									