COASTAL PROTECTION ENGINEERING
5301 N. FEDERAL HWY, SUITE 335
BOCA RATON, FL 33487
561-565-5100

July 22, 2024

Submitted Via Email

Patricia Strayer, Town Engineer
Public Works Department
Town of Palm Beach
951 Old Okeechobee Road
West Palm Beach, FL 33401

Re: Proposal to Provide Professional Coastal Consultant Services for the Mid-Town Extension (Reach 5) Permitting

Dear Mrs. Strayer:

This proposal is being provided to the Town of Palm Beach (Town) for Coastal Protection Engineering LLC (CPE) to provide professional coastal consultant services in support of the Mid-Town Extension (Reach 5) project. The total cost for these services is an estimated, Not-To-Exceed amount of $949,537.16 and will be performed on an hourly (time and materials) basis in accordance with this proposal and the Agreement between the Town and CPE pursuant to RFQ No. 2024-20. The scope of services is provided in Exhibit A and the compensation for services rendered under this proposal will be based on the Fee Estimate enclosed in 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 full staff and sub-consultants will be available and used as needed to achieve the scope of services and to meet the Town's objectives and timelines within the task budget. Should the Town desire additional services beyond this scope, CPE will be available to discuss adjustments as appropriate.

Thank you for the opportunity to serve the Town of Palm Beach. If you have any questions, please feel free to contact me directly at 561-756-2535.

Sincerely,

Thomas P. Pierro, P.E., D.CE
Principal Engineer
Coastal Protection Engineering LLC
Mobile: 561-756-2535
tpierro@coastalprotectioneng.com

cc: Dean Mealy, Town of Palm Beach
Ryan Canterbury, Town of Palm Beach
Tara Brenner, P.G., P.E., CPE
Stacy Buck, CPE

Exhibit A - Scope of Services

This proposal provides professional services for Coastal Protection Engineering LLC (CPE) to assist the Town of Palm Beach (Town) with the U.S. Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) permit application processes for placement of beach compatible sand on the beach or in the water as fill in the south end of Reach 4 and most of Reach 5, herein referred to as the Mid-Town Extension. The scope generally includes preparation of permit applications and corresponding surveys, investigations, exhibits, maps, drawings and related documentation. An estimated level of effort for permit processing, responses to agency requests, attending meetings, and related project support as necessary is also included as further detailed below.

The limits of the Reach 4 beach coastline are from Via Bethesda to 270 Feet South of Banyan Road, FDEP Range Monument R-95 to R-102+300, which is approximately 8,065 feet of beach. The limits of Reach 5 beach coastline are from 270 Feet South of Banyan Road to 170 Feet North of Widener's Curve, FDEP Range Monument R-102+300 to R-110+100, which is approximately 9,065 feet of beach. The proposed project limits to be requested extend from Banyan Road to Southern Boulevard, roughly about 5,400 feet of beach alongshore. The Town's desire is to acquire permits to place sand in the water or on the beach as fill for the Mid-Town Extension during the next regularly scheduled Mid-Town Beach Renourishment Project, in approximately eight years.

The work proposed will be undertaken as described herein with significant coordination with the Town and regulatory agencies at key decision points in the permitting process. This work will be conducted in conformance with industry standards based on previous successful strategies developed for State and Federal permitting of similar coastal projects in the Town. While CPE commits to working diligently on behalf of the Town in the timely execution of this work, regulatory authorizations are not guaranteed. Should the scope of work require additional efforts beyond that which is described herein, CPE will be available to discuss adjustments as appropriate.

In order to provide the range of regulatory requirements to be addressed, a team approach is proposed which includes the following sub-consultants:

- **Geosyntec** is a specialized consulting and engineering firm that acquired Applied Technology and Management (ATM), who has served the Town as a coastal engineering consultant since 1993. For this contract, ATM staff led by Dr. Mike Jenkins will provide overall program support on a task-by-task basis as it relates to the Town's overall coastal program and the Mid-Town project itself.
- **Aptim Environmental & Infrastructure (APTIM)** provides consulting services for coastal engineering projects and is currently conducting BMA monitoring under a CPE contract with the Town. APTIM will support the field investigations related to the environmental investigations required as part of the permitting process for this contract.
- **Terraquatic** is specialized in hydrographic (single and multi-beam), topographic, and boundary surveys, lands determinations, and a multitude of other surveying related disciplines. Terraquatic

will conduct topographic/bathymetric surveys and provide support for mapping of upland boundaries and legal descriptions for easements as needed for the Town under this contract.

The Scope of Services has been organized into the following Tasks that will be executed collectively and simultaneously by the project team for the duration of the project:

Task 1 – Meetings and Coordination

This task is intended to support the Town of Palm Beach with both scheduled and impromptu meetings or presentations that may arise relating to the design and permitting of the Mid-Town Extension project. This may include but not be limited to responding to requests from Town staff, the Shore Protection Board, and Town Council, preparation of memorandums, assembling and analyzing existing documents and information, preparing for and/or participating in conference calls, field support/site visits, meetings and/or presentations, planning, and coordination with other local, state, and federal entities as needed. This task also includes an estimated level of effort for attending monthly meetings with the USACE Project Development Team (PDT) and associated coordination.

Task 2 – State and Federal Permitting

Although sand has never been placed directly in the Mid-Town Extension project area, this area is part of the federally authorized Palm Beach Shore Protection Project, Mid-Town Segment. Following the impacts of Hurricane Ian and Hurricane Nicole, the USACE received funding to repair federally authorized Shore Protection Projects at 100% federal cost under the Flood Control and Coastal Emergencies (FCCE) program. Permitting the Mid-Town Extension has become a critical factor in this process as the Town must demonstrate a commitment to the USACE for securing permits and easements to construct this area as an integral part of the federal project moving forward. Furthermore, the long-term plan for the Mid-Town project is to move the project to an 8-year renourishment cycle. These factors will serve as the basis for the project design and permitting process described in this Task.

2.1. Engineering Design

To support the project design and permitting effort, CPE will first conduct a review of associated federal design documents, previous monitoring reports, and other available documents for the Mid-Town project area. It is expected that the fill template will be based on the federal design established in the USACE General Design Memorandum (GDM) with considerations for an 8-year nourishment interval. This effort will include, but may not be limited to, survey data compilation and analysis, coastal processes assessments, fill template design options, and related equilibrium toe of fill (ETOF) evaluations. Shoreline and volume changes will be evaluated to assess volume needs and distribution on the existing beach conditions. This process is expected to involve coordination with the USACE PDT members from the Jacksonville office through virtual meetings and/or teleconference.

The proposed design will be based on existing conditions and maintain focus on minimizing the potential for adverse impacts to the hardbottom resources nearshore of the project. A cross-shore equilibrium profile analysis of the proposed design will be conducted to evaluate the potential for hardbottom impacts. Advanced numerical modeling is likely to be required by the regulatory agencies

to aid in the assessment of project alternatives in support of the required avoidance, minimization, and mitigation measures for nearshore hardbottom as further described below.

A preliminary design will be prepared based on the most effective project template that achieves the federal design standard considering volume requirements, updated beach conditions, nearshore hardbottom, and other relevant factors of the proposed project. CPE engineers will utilize the most recent data available and the proposed template to prepare the permit sketches for the Mid-Town Extension project.

The permit sketches will include plan view and cross-sections of the beach fill template, available construction access(es) and staging areas, topographic and bathymetric survey data, identified regulatory restrictions, known hardbottom areas, and other relevant features as deemed necessary to permit the project. The permit sketches will be signed and sealed by a Professional Engineer registered in the State of Florida and provided with the application.

2.2. Numerical Modeling

Considering the proximity of nearshore hardbottom to the fill template, a numerical modeling study will be conducted in coordination with the project team and regulatory agencies to analyze waves, currents, sediment transport, and morphological changes within the general vicinity of the project area. Based on the knowledge of the study area's coastal processes, CPE will develop and evaluate conceptual fill placement alternatives using the Delft3D numerical model, which is a state-of-the-art model developed by TU Delft/Deltares in the Netherlands.

Delft3D is a comprehensive, process-based suite of models capable of replicating the evolution of complex coastal systems. It encompasses two-dimensional and three-dimensional representations of flows, waves, sediment transport, and morphology (erosion and sedimentation), allowing for the simulation of various processes such as waves and flows, beach erosion, and sedimentation. Waves in Delft3D are simulated using SWAN (Simulating Waves Nearshore), an advanced model that incorporates nearshore wave transformation processes, including breaking, shoaling, refraction, diffraction, and bottom friction. SWAN will transform waves from deepwater to nearshore as they interact with seabed contours. Water levels, currents, sediment transport, and bathymetric changes are simulated by coupling SWAN with Delft3D.

This study will be used to assess the coastal processes contributing to the sediment transport dynamics in the area and evaluate the performance of fill placement alternatives and potential interactions with the nearshore hardbottom. The model will be set up utilizing existing studies, literature, and publicly accessible data, as available. Existing data include but are not limited to, aerial and ground photographs, water levels, waves, winds, discharge, sediment data, bottom composition, topography, and bathymetry. The insights and data obtained from these sources will be used to set up the project domain and as inputs for the model, including boundary conditions, initial conditions, and grid generation.

Assuming recent oceanographic data in the project area is unavailable from existing sources, this scope includes gauge deployment to collect the information needed to calibrate the model. The

model will be constructed and calibrated utilizing data collected with an Acoustic Doppler Current Profiler (ADCP) as part of this modeling study. Two gages are proposed to be deployed for one (1) month to collect water levels, current speed, and waves both nearshore and offshore of the study area. The ADCP data will be processed and used to calibrate the wave and flow models by comparing the model results with the measured data.

After the model grids are constructed, the models will be run iteratively for calibration to select the best parameters for simulating water levels, currents, and waves in the study area. Once calibrated for waves and flows, the morphology model will be adjusted to match the observed morphological changes in the project area. Morphology calibration will be based on beach profile and bathymetry changes for a period between two different surveys, selected according to data availability. The model will be fine-tuned throughout this process for consistency with the observed volume changes to the best extent of the model's capability.

Conceptual alternatives for beach and dune nourishment will be developed and evaluated from a coastal process standpoint. Up to five (5) alternatives will be developed in coordination with the Town and USACE PDT. The alternatives will be simulated under average short-term (1-year model simulation), long-term (5-years), and one (1) storm condition. The alternatives may include options such as different beach fill templates, dune templates, and/or combinations thereof. The alternatives will be evaluated comparatively with a baseline no-action scenario for their performance, sand spreading into and out of the Midtown Extension area, and the potential for hardbottom impacts. The best-performing alternative will be recommended for further engineering design and permitting.

The findings and results of the numerical modeling study will be compiled into a modeling report that will include a summary of the literature/data review and coastal process analyses, an overview of the numerical modeling efforts, a description of the development of project alternatives, and a detailed model results analysis. The modeling results and report will be provided to the regulatory agencies as part of the permit application or to address Requests for Additional Information (RAIs) thereafter. This effort has the potential to extend the full length of the permitting process depending on agency feedback and requests.

2.3. State Permitting

The Mid-Town Extension will require authorization from the State of Florida in the form of a Joint Coastal Permit (JCP). Our staff will coordinate with the Town and FDEP staff to define the project parameters and perform early coordination with agency representatives to determine the most appropriate path forward. Based on information known at this time, the following services will be provided:

FDEP Pre-Application Meeting. Prior to preparing the JCP application, CPE will request, prepare for, and attend a pre-application meeting with FDEP regulatory staff and representatives from Florida Fish and Wildlife Conservation Commission (FWC). The meeting(s) will be held virtually via webinar, but this proposal also includes the option to attend an in-person meeting with FDEP in Tallahassee if requested by the Town. The overall purpose of the pre-application meeting is to

present the proposed project, obtain agency input and guidance and identify any additional data needs and concerns. Feedback received during the pre-application meeting will be used to refine the proposed field investigations, complete the design, and prepare and submit a thorough and complete JCP application.

Joint Coastal Permit Application. CPE will develop the JCP application to request a 15-year multiple-use permit that includes relevant aspects and features of the proposed project based on the pre-application coordination and preliminary design described above. This effort includes coordination with State agencies, including FDEP and FWC, during the development and submittal of the permit application. The application will consist of the application form and associated attachments to describe the proposed project and be submitted in digital form in accordance with the State's paperless initiative. It is assumed that an authorized Town representative will sign the application, authorizing CPE to serve as the Town's agent.

Erosion Control Line. It is understood that an erosion control line (ECL) has been recorded for the Mid-Town Extension project area (R-102 to R-107). The ECL document was accepted and recorded in the public records of Palm Beach County on August 17, 2021, based on a mean high water survey conducted on November 30, 2020. This task will include coordination with FDEP to include the existing ECL documents with the permit application.

Agency Response and Coordination. Following submittal of the JCP application, CPE will continue coordination with State agencies, including FDEP and FWC, to respond to Requests for Additional Information (RAIs) during the permit review process. The FDEP will have 30 days to review the permit application and either issue a Notice of Completeness or issue an RAI. FDEP RAIs may also include comments from the FWC, other State agencies and the general public. We will coordinate with the Town on the extent of the response and what the implication may be to the permitting process and construction timeline. We will draft the RAI response and provide the Town an opportunity for review prior to submittal to the agencies. In cases where coordination and response efforts may exceed the level of effort estimated herein, CPE will contact the Town to discuss an approach and can develop a supplemental proposal if requested.

Minimization, Mitigation, & Monitoring Plan. CPE will develop a Minimization, Mitigation, & Monitoring Plan to support permitting. The MMMP includes three main components: impact minimization efforts, mitigation details, and monitoring. The minimization section will detail efforts to identify and relocate coral colonies that meet certain criteria from the impact site to the mitigation reef. The FWC Coral and Octocoral Mitigation Relocation Recommendations will be used as guidance for this effort. The mitigation section will provide details of the mitigation site, including distance from shore, water depth, sand depth overlying bedrock, proximity to other existing artificial reefs, and buffers from natural hardbottom resources. It will also include the artificial reef design, including materials, proposed relief, stability analysis, available acreage, and construction techniques. The monitoring section outlines success criteria for the mitigation reef and details the monitoring methods that will be implemented on the Mid-Town Extension mitigation reef and the reference site as well as reporting requirements.

The plan will use means of calculating impacts and determining mitigation requirements utilizing the FDEP's Uniform Mitigation Assessment Method (UMAM). UMAM provides a standardized procedure for assessing the ecological functions provided by nearshore resources, the amount that those functions may be reduced by a proposed impact, and the amount of mitigation estimated to offset that loss. CPE biologists will work closely with Department staff to complete the UMAM assessment in a fair and equitable manner to support development of the mitigation plan.

Mitigation Planning and Engineering Design. It is anticipated that the Mid-Town Extension will create the potential for unavoidable impacts to nearshore hardbottom resources. CPE will design an artificial reef as mitigation for the Mid-Town Extension project. Our staff will coordinate with the Town and Department staff to define the project parameters and perform coordination with agency representatives to determine the appropriate mitigation strategy based on the results of the UMAM assessment. Existing data available from recent investigations will be used to the greatest extent practicable for siting and designing the mitigation reef. CPE will perform a stability analysis of the proposed mitigative artificial reef based on the depths of water at the site assuming the reef will be comprised of limestone boulders. The submerged artificial reef will be subject to hydrodynamic forces associated with the ocean environment, which will be addressed in the analysis. The analysis will also include an assessment of the required boulder size, need for anchoring, and foundation type (i.e. sand over substrate, geotextile fabric, marine mattress, etc.) necessary to address wave-induced displacement, settlement, and general viability.

CPE will prepare permit sketches with sufficient detail to support the mitigation portion of the environmental permit application. The proposed location will be identified, and the layout will consider nearby hardbottom and foundation requirements. The drawings will include plan views, typical cross-sections, and preliminary material quantities as typically required to obtain environmental permits. Relevant exposed hardbottom and hydrographic survey data available from third party efforts or collected under other tasks will be included in the drawings where appropriate. The artificial reef permit sketches will be signed and sealed by a Professional Engineer registered in the State of Florida and provided with the application.

2.4. Federal Permitting

CPE will coordinate with federal agencies to support the Town and U.S. Army Corps of Engineers (USACE) in the process to apply for a Department of the Army (DA) permit as the federal authorization for the Mid-Town Extension project. This includes coordination with, but not limited to, the USACE, National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS). The USACE will coordinate Section 7 consultation under the Endangered Species Act with USFWS and NMFS Protected Resources Division (NMFS-PRD) and consultation under the Magnuson-Stevens Fishery Conservation and Management Act with NMFS Habitat Conservation Division (NMFS-HCD). Coordination may include efforts such as responses to data requests, preparation of maps and plans, and participation in meetings and conference calls to discuss issues raised by the agencies.

USACE Pre-Application Meeting. Prior to preparing the DA permit application, CPE will request, prepare for, and attend a pre-application meeting with USACE regulatory staff and representatives from National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS), if available. The meeting can be held virtually via webinar or as an in-person meeting with USACE in the Palm Beach Gardens regulatory office, according to the preferences of the Town staff. The overall purpose of this meeting is to present the proposed project, obtain agency input and guidance and identify any additional data needs and concerns. Feedback received during this meeting will be used to refine the proposed field investigations and prepare and submit a thorough and complete permit application.

Department of the Army Permit Application. CPE will compile the Department of the Army permit application with associated attachments for submittal to the USACE. We will review existing data and the federal design beach fill template on current conditions, generate new permit sketches, and assemble the permit application attachments. Shoreline and volume changes will be updated to evaluate volume needs and distribution on the existing beach conditions using the federal design template. The permit sketches will include plan view and cross-sections of the beach fill template and existing borrow area(s) (or as otherwise developed under separate work efforts), available construction access(es) and staging areas, topographic and bathymetric survey data, identified regulatory restrictions, and known hardbottom areas. The permit sketches will be signed and sealed by a Professional Engineer registered in the State of Florida and provided with the application. Pending the findings of the ongoing Town-wide Sand Search, it is anticipated that an excavation plan for any new borrow areas will be developed that is sufficient for regulatory review under that effort and will be provided to CPE in support of this permitting effort. Accordingly, there is no borrow area design work included in this proposal.

12-Point Mitigation Plan. It is anticipated that the Mid-Town Extension will create the potential for unavoidable impacts to nearshore hardbottom resources. CPE will coordinate with the USACE to determine the impact acreage in the project area and the mitigation requirements determined from a Uniform Mitigation Assessment Method (UMAM) evaluation. The 12-Point Mitigation Plan will include the results of the UMAM, a description of the site selected as a mitigation placement area, the construction methods proposed, and the mitigation reef specifications. Biological and physical parameters for monitoring the mitigation reef, along with performance standards and reporting requirements will also be included in the plan.

Agency Response and Coordination (RAI). After application submittal, CPE will continue to coordinate with the USACE and respond to Requests for Additional Information (RAIs) during the permit review process. RAIs may include comments from NMFS, USFWS, and the public. If multiple RAIs are received, CPE will attempt to consolidate the agencies' RAIs into a single response. We will coordinate with the Town on the extent of the response and what the implication may be to the permitting process and construction timeline. We will draft the RAI response and provide the Town an opportunity for review prior to submittal to the agencies. In cases where coordination and response efforts may exceed the level of effort estimated herein,

CPE will contact the Town to discuss an approach and can develop a supplemental proposal if requested.

Task 3 – Field Investigations

3.1. Benthic Survey

CPE will conduct a nearshore hardbottom benthic assessment on the hardbottom adjacent to the Mid-Town Extension project area. The assessment will start north of the project area (R-101) and extend to the south where the hardbottom historically terminates near R-105. The benthic survey will include twelve (12) 50-m long, shore-perpendicular transects. Quadrat assessments will be collected along each transect and will include up to eleven (11) 0.5-m^2 quadrats per transect at approximately 5-m spacing. Line-intercept, interval sediment depth, and video documentation will also be collected along each transect. Transects will be assessed for characterization purposes only and will not be marked with permanent pins, but coordinates will be collected at the start and end of each transect. It is estimated that this assessment will take up to four (4) field days to complete.

The benthic data will be compiled and entered into an Access database. Raw data will be submitted in the form of scanned datasheets, excel spreadsheets with quadrat data, interval sediment depth measurements and line-intercept data, shapefiles of the transects surveyed, and video and photo documentation. A benthic characterization report will be prepared and provided to the Town and ultimately submitted to the regulatory agencies to support the permitting process. The report will include a map of the project area and adjacent hardbottom resources with the hardbottom edge delineation (from the annual BMA monitoring) and monitoring transects overlaid onto recent, clear aerial photographs.

3.2. ESA-Listed Coral Species Survey

An Endangered Species Act (ESA) listed coral species survey will be conducted within 500 feet of the equilibrium toe of fill (ETOF). This survey will be conducted as per the NMFS recommended protocol for ESA-listed coral colony and Acropora critical habitat along the project area shoreline from R-101.5 to R-105. The survey area will include the nearshore hardbottom located within 500 feet of the equilibrium toe of fill (ETOF).

Based on historic hardbottom within the investigation area, it is anticipated that 20 sampling sites will be surveyed. Each 1-hectare sampling site will be surveyed by two marine biologists in a grid pattern to assess the entire site. Raw data will be submitted in the form of scanned datasheets, excel spreadsheets with coral data, and photographs. A listed coral survey report will be prepared and provided to the USACE to support ESA Section 7 consultation. The report will include a map of the project area and adjacent hardbottom resources with the survey results overlaid onto recent, clear aerial photographs.

3.3. Topographic / Bathymetric Survey

Our subconsultant, Terraquatic, will conduct a topographic and bathymetric survey with a combination of single-beam sonar and conventional RTK GPS topography from R-102 to R-107 with

transects every 100' perpendicular to the construction baseline or R-Monument azimuths (approximately 60 cross sections). The transects will be from the landward limits of fill (LLOF) extending east to the approximate elevation of -20' NAVD 88. The survey will be compliant with 62B-40.008 (1)(e). Final deliverables will be xyz data points, contour map referenced to NAVD 88, and CAD drawing in dwg format.

3.4. Artificial Reef Siting (Bathymetric Survey)

Our subconsultant, Terraquatic, will conduct a bathymetric survey within an area located offshore of the natural hardbottom between approximately R-96.5 and R-98.5 to support artificial reef site selection. Bathymetric depths will be collected via multi-beam sonar. Multi-beam sonar data will be combined with RTK GPS and motion stabilized with a three axis inertial navigation system (approximately 30 acres). Final deliverables will be xyz data points, contour map referenced to NAVD 88, and CAD drawing in dwg format.

Task 4 – Mid-Town Program Support

This task is being provided to support the Town with related features of the Mid-Town project for incorporating the Mid-Town Extension into future renourishments by the USACE.

4.1. Easements

Construction of a federally authorized project by the USACE requires real estate approvals for use of private lands. CPE will support the Town's easement acquisition efforts with technical assistance on an as needed basis. This support may include services such as: ECL boundary determination, volume calculations for sand placement estimates, site visits to verify property features, various maps and graphics to convey concepts, and related coordination and meetings. As part of this Task, our subconsultant, Terraquatic, will be available to generate legal descriptions and associated sketches for perpetual easements for the 32 parcels between R-102 and R-107 to support USACE real estate assessments and lands determination for attachment to the required easements. All easements will be bound by the established ECL to the east and the Landward Limits of Fill (LLOF) to the west. The LLOF to be provided upon submission of the topographic data or determined in the field by location of the crest of dune, seawall, and/or similar like structure (natural or man-made). It is anticipated the Town will provide the deed of each subject parcel. CPE staff will also be available to attend an in-person meeting with the Town and USACE project team in Jacksonville if needed as part of this effort.

4.2. Public Access and Parking

In order to calculate the federal cost share for the Mid-Town Extension project area, the USACE will require documentation of public access and parking availability in the project area as detailed in Engineering Regulation (ER) 1105-2-100. As it relates to public use of beaches for federal cost participation, the regulation states that "reasonable public access" is defined as "approximately every one-half mile or less." CPE will work with Town staff to review current and potential public access locations and evaluate potential opportunities for additional parking/access to contribute to the federal cost share. As part of this Task, our staff will be available for general assessments of existing

information, site visits to ground truth assumptions, and coordination with the USACE to confirm interpretations and seek concurrence on the findings.

4.3. Funding Support

The USACE has indicated that the federal project agreement includes the opportunity for In-Kind Services credit as a portion of the Town's contribution to the project. As part of our work under this Task, CPE will support the Town with coordination, reviews, documentation, and general consulting as funding support related to the Mid-Town Extension and the federal project's cost share records.

Exhibit B – Fee Estimate

The work estimated herein will be undertaken as described in Exhibit A with significant coordination with the Town and regulatory agencies at key decision points in the permitting process. This work will be conducted in conformance with industry standards based on previous successful strategies developed for State and Federal permitting of similar coastal projects in the Town. While CPE commits to working diligently on behalf of the Town in the timely execution of this work, regulatory authorizations are not guaranteed. Although this proposal is detailed by separable items and estimated by specific staff and categories as shown in the Tables below, it is anticipated that some work elements will exceed the estimate while others fall below the estimate to complete. Our full staff and sub-consultants will be available and used as needed to achieve the scope of services and to meet the Town's objectives and timelines within the task budget. Should the scope of work require additional efforts beyond that which is described herein, CPE will be available to discuss adjustments as appropriate.

Town of Palm Beach
Reach 5 Permitting

Table 1. Cost Estimate Summary

Fee Proposal - 7/22/2024

Task	Description	CPE Labor Cost	CPE Reimbursable Costs	APTIM	Terraquatic	Geosyntec	Markup on Subs	Total Task Budget
1	Meetings and Coordination	$57,960.00	$250.00	$0.00	$0.00	$12,180.00	$1,218.00	$71,608.00
2	State and Federal Permitting	$613,670.00	$10,180.40	$17,000.00	$0.00	$12,600.00	$2,960.00	$656,410.40
3	Field Investigations	$59,870.00	$900.00	$31,503.60	$38,140.00	$11,820.00	$8,146.36	$150,379.96
4	Mid-Town Program Support	$26,000.00	$1,556.80	$0.00	$32,500.00	$7,120.00	$3,962.00	$71,138.80
	Sub Total Cost	$757,500.00	$12,887.20	$48,503.60	$70,640.00	$43,720.00	$16,286.36	$949,537.16

Coastal Protection Engineering LLC

Table 2. Cost Estimate Details

Fee Proposal - 7/22/2024

			Labor												Reimbursable Costs					Sub-Consultants		
Task	Description	Task Total	Principal Engineer (Hours)	Principal Coastal Scientist (Hours)	Senior Coastal Engineer (Hours)	Senior Marine Biologist (Hours)	Senior Coastal Modeler (Hours)	Coastal Engineer II (Hours)	Marine Geologist (Hours)	Coastal Modeler (Hours)	Coastal Engineer I (Hours)	Junior Coastal Geologist (Hours)	Junior Marine Biologist (Hours)	CAD/GIS Operator (Hours)	Mileage (miles)	Travel (Direct Cost)	SCUBA Diving (diver/day)	ADCP Deployment (Month)	non-RTK-Drone (day)	APTIM (Cost)	Terraquatic (Cost)	Geosyntec (Cost)
1	Meetings and Coordination	$71,608.00	72	6	64	72	0	20	0	4	20	4	8	16	0	$0	0	0	1	$0.00	$0.00	$12,180.00
2	State and Federal Permitting	$656,410.40	328	52	120	746	400	312	20	1224	234	76	100	208	120	$4,950	2	1	0	$17,000.00	$0.00	$12,600.00
3	Field Investigations	$150,379.96	6	0	0	128	0	0	0	0	2	16	300	0	0	$0	12	0	0	$31,503.60	$38,140.00	$11,820.00
4	Mid-Town Program Support	$71,138.80	40	0	40	0	0	8	0	0	32	0	0	8	40	$1,280	0	0	1	$0.00	$32,500.00	$7,120.00
	Total =		446	58	224	946	400	340	20	1228	288	96	408	232	160	6230	14	1	2	$48,503.60	$70,640.00	$43,720.00
	Rate =		$290.00	$290.00	$210.00	$180.00	$165.00	$145.00	$140.00	$130.00	$125.00	$115.00	$110.00	$105.00	$0.67	1.0	$75.00	$5,000.00	$250.00	1.1	1.1	1.1
	Cost =		$129,340.00	$16,820.00	$47,040.00	$170,280.00	$66,000.00	$49,300.00	$2,800.00	$159,640.00	$36,000.00	$11,040.00	$44,880.00	$24,360.00	$107.20	$6,230.00	$1,050.00	$5,000.00	$500.00	$53,353.96	$77,704.00	$48,092.00

Total Labor Cost =	$757,500.00
Total Reimbursable Costs =	$12,887.20
Total Sub-Consultants Costs =	$179,149.96
Total Project Costs =	$949,537.16

Coastal Protection Engineering LLC