CUMMINS | CEDERBERG
Coastal & Marine Engineering

Tidal Flooding Mitigation and Shoreline Protection

City of Hollywood

DCM-19-001187

SCOPE OF WORK

Cummins Cederberg, Inc. (Consultant) in coordination with its subconsultants developed this Scope of Work for the City of Hollywood (City) to provide the engineering, environmental permitting, and construction phase services for the Tidal Flooding Mitigation and Shoreline Protection Project (Project) to address coastal flooding in areas of North and South Lakes as well as isolated segments of the barrier island. The scope of work is based on Figure 1 below, which was provided by the City to identify and prioritize 22 Project areas.

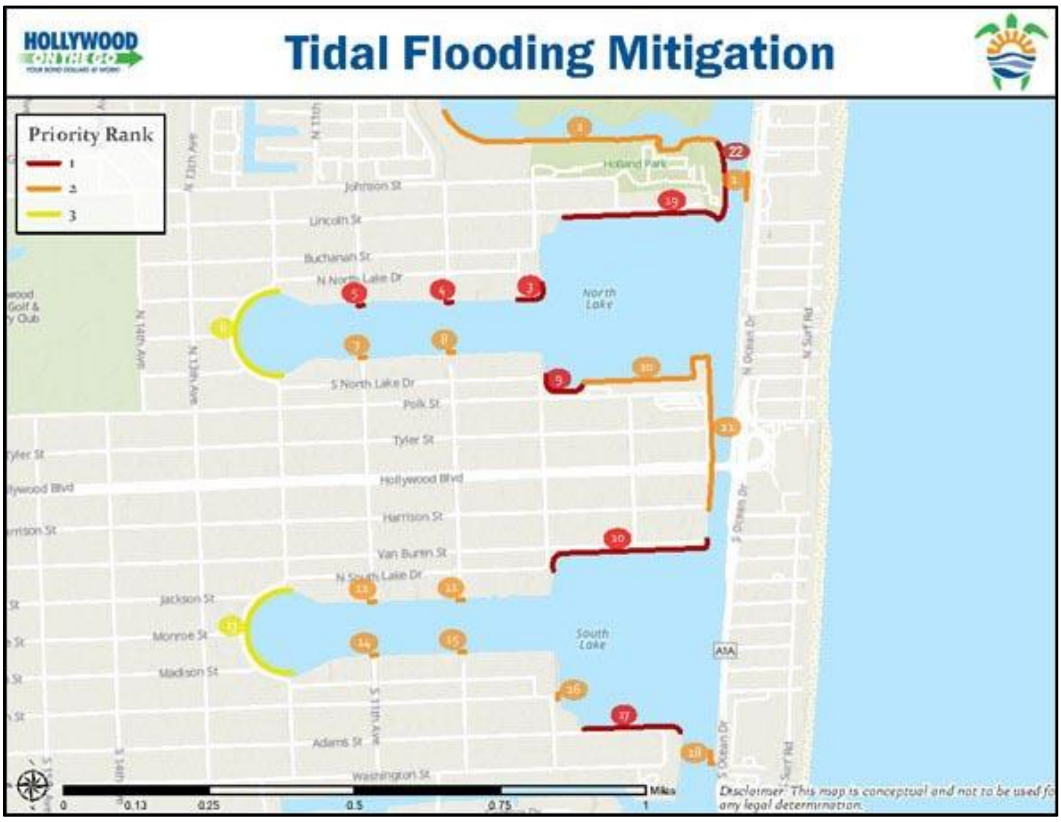

Figure 1: Project Elements and Priority Ranking

TASK 1 – FIELD INVESTIGATIONS & DATA COLLECTION

a. LiDAR Review & Processing: Publicly available LIDAR survey data will be compiled to complement existing survey data provided by the City, as well as Project specific survey data collected under Task 1b. Consultant will confer with Broward County to obtain the recently collected LiDAR data for review, processing, and analysis. The survey data will be used to develop a Digital Elevation Map (DEM) of the Project area, which will be used to evaluate existing ground elevations relative to projected sea level rise, tidal, and storm surge water elevations. The DEM will also be used to understand flood paths along the waterfront and to support engineering design of tidal flood barriers.

b. Topographic/Bathymetric Surveying: Topographic and bathymetric surveying will be completed for the Project area to serve as the basis for subsequent analysis, planning, design, and regulatory permitting. Topographic and bathymetric data collection will be limited to the Priority 1 Project areas as depicted above. The surveys will extend from the edge of water to approximately 75-feet upland for the topographic portion and from the edge of water to 50-feet waterward for the bathymetric portion. Elevation transects will be obtained at intervals of approximately 50 feet, including intermediate changes in grade where evident. The survey will be referenced horizontally to the Florida State Plane Coordinate System (NAD83/11) and vertically to the North American Vertical Datum of 1988 (NAVD88). The surveys will include the following:

- Lot lines and right-of-way lines
- Bridge, walkways, light poles
- Sidewalks, driveways, roadways, and striping
- MHW line to the extent it can be determined
- Property boundaries
- Submerged lands
- Existing shoreline conditions (seawall, rock slope, etc.)
- Visible surface utilities
- Outfalls with invert elevations, pipe sizes, and material to the extent they can be determined
- Upland drainage structures, within the survey limits, including invert elevations, pipe sizes, and material to the extent they can be determined
- Tree and vegetation outlines denoting DBH, sizes, and common names
- Basic arborist report to document tree species, confirm sizes, and determine overall health and structure of the trees
- Existing dock footprints or other marine structures along shoreline
- Existing FEMA flood zones

c. Marine Environmental Surveys: A marine resource was conducted under a separate scope of services within the federally recognized seagrass growing season (June 1 through

September 30). The present task includes a mangrove/coastal wetland survey. The survey will be conducted to identify and delineate important ecological resources that are protected and regulated along the waterfront. The surveys will include the area upland of the existing shoreline. As part of the environmental permitting process, the location of resources that will be impacted must be identified to potentially avoid or minimize, where possible.

A coastal wetland/mangrove survey will be conducted by biologists experienced in the identification and mapping of mangroves and other important coastal wetland species. The biologists will identify the species and aerial limits of lateral branches and prop roots in key locations within the Project areas. Exotic vegetation along the shoreline will be located, as these areas may be used to provide ecological mitigation.

A mangrove survey report will be prepared documenting survey methodology and summarizing the findings of the survey. The report will include representative photographs and a map showing the location of important ecological resources.

d. Site Assessments: Engineering assessments will be conducted along the shoreline to assess each of the 22 Project areas depicted above. A team of engineers led by a Professional Engineer will perform an investigation of the existing waterfront structures, shoreline stabilization and existing stormwater infrastructure (e.g. outfall structures) at each of the 22 Project areas. The scope will include a visual assessment of the structural components (e.g. cap, piles, panels, rocks) to identify deterioration including cracks, displacement, corrosion, erosion or voids. Where accessible, existing drainage structures within the Project area will be visually inspected to confirm the current condition, particularly at the existing stormwater outfalls. Underwater investigations will be conducted where the waterfront structures extend below the waterline including seawalls and revetments. Field notes will be collected to document observations, which will be referenced to stationing established along the shoreline. Photographs will also be obtained to document the assessments. The field work will be generally conducted following methods provided in the Standard Practice Manual for Waterfront Facilities Inspection and Assessment, ASCE Manual No. 130.

Conduct a site visit utilizing the tree survey, arborist report and other information collected under Task 1(a and b) to assess and document the general site conditions for the Project area. General information will be gathered to inform opportunities and constraints for potential improvements (e.g. pocket parks, walking trails, passive parks). Additionally, site reconnaissance will be conducted to document site/neighborhood context, environmental conditions (e.g. wind, sun, shad) that may influence site solutions.

A report will be prepared to summarize the engineering observations and findings of the assessments. The report will also include assessments of the existing marine structures and shoreline stabilization at the 22 Project areas and recommendations for repairs, replacement

or additional measures to meet Project goals. Site photographs will be incorporated into the report. The report sections will be signed and sealed by a Florida Registered Professional Engineer, as applicable.

This information will be utilized to support the Engineering Analyses described in Task 2, to evaluate coastal resiliency, and to determine if potential flood mitigation concepts can be incorporated into maintenance/rehabilitation projects. Relevant engineering data (e.g. rock size, cap dimensions) will be obtained to support the design phases of the Project.

Consultant will capture aerial photography of the shoreline and adjacent upland area at the 22 Project sites. The aerial photography will be collected with a small unmanned aircraft system (sUAS) at strategic locations and will be utilized as visual aids to support the planning and development of proposed improvements.

e. Geotechnical Investigations: A geotechnical investigation will be conducted for the Priority 1 Project areas. The subsurface exploration and engineering analyses will provide the foundational recommendations for design and construction of the planned shoreline improvements. The investigations will include a total of 12 Standard Penetration Test (SPT) borings distributed relatively evenly amongst the Priority 1 Project segments. The borings will be conducted to a depth of approximately 30 feet below grade and 6 percolation tests to a depth of 15 feet below grade. The SPT borings will be performed in general accordance with ASTM D-1586. The percolations tests will be performed in general accordance with South Florida Water Management District's *Usual Open Hole Procedure*. Prior to commencement of geotechnical investigations, Sunshine One Call will be contacted for information pertaining to the location of underground utilities. <u>All available information regarding the locations of underground utilities known by the City must be provided prior to commencing this work.</u>

An Engineering Report will be prepared providing:

- Drawings showing boring locations, a boring summary of the subsurface conditions, and boring logs with detailed descriptions of the materials encountered.
- Discussion of generalized subsurface conditions at the site including groundwater levels, and hydraulic conductivities.
- Evaluation from a geotechnical perspective, of the suitability of the site for the proposed works.
- Discussion of feasible foundation types for the proposed construction.
- Design parameters for the recommended foundation types, including vertical and lateral load resistance.
- Construction considerations including impacts of existing foundations and impacts for adjacent structures.
- Geotechnical soil parameters such as saturated unit weights, passive/active coefficients or internal friction angles, wall friction angles, cohesion.

f. Tide Measurements: The Project site is located relatively far from existing operational tidal stations with reference measurements (i.e. Virginia Key in Miami and Port Everglades in Fort Lauderdale), thus significant variations may exist between locations. Additional monitoring stations may exist in nearby waterways; however, the relationship between the conditions at the Project site and available recording stations is important to correlate historical data and published projections specific to the Project for design purposes. The Consultant will deploy three (3) tide gauges in strategic locations within the Project vicinity to capture local tidal variations and redundancy over the installation period. The location and vertical level of the gauges will be referenced to the Project datum. The deployed gauges will record water level measurements for 30 days prior to initial retrieval. Upon retrieval of the gauges, the recorded measurements will be filtered through a low-pass filter to eliminate background noise (i.e. waves). The gauges will then be redeployed for an additional 5 months, to produce a 6-month data set. The water surface elevations will be used for comparison with existing tidal datums and subsequent analysis of design water levels (Task 2).

Deliverables: *LIDAR Coverage Map and*
Topographic/Bathymetric Survey (CAD/PDF), Sign/Sealed by Professional Surveyor and Mapper
Mangrove/Wetland Report (PDF)
Site Assessment Report, Sign/Sealed by Professional Engineer(s) (PDF)
Geotechnical Investigation Report, Sign/Sealed by Professional Engineer (PDF).
Tide Gauge Deployment Memo and Water Level Measurements (PDF)

TASK 2 – ENGINEERING ANALYSES

a. Background Study Review: Review existing background studies for the Project areas to identify previously collected and analyzed data, which may support the subsequent planning and design of waterfront improvements. Published studies for the area will be reviewed including, but not limited to, the South Florida Regional Climate Change Compact's *2019 Compact Unified Sea Level Rise Projection,* Broward County Flood Study and Broward County's recently adopted Regional Standard for tidally influenced water bodies relative to seawalls and revetments.

The team will gather, review, and evaluate available topographic surveys, planning documents, codes, ordinances, atlases, design drawings, record drawings, shop drawings, permit documents, maintenance reports, and/or drainage pipe inspection videos relevant to the existing, recently installed, and planned stormwater infrastructure within and adjacent to the Project area. Relevant feedback will be obtained from City staff on the existing stormwater infrastructure within the Project area. We will coordinate with the City and their consultants to gather available relevant information related to the stormwater modeling analysis to be

completed during the upcoming Stormwater Master Plan Modeling and Design Implementation Contract (Project #20-11053). Any available drainage pipe inspection videos provided by the City will be reviewed to confirm the current condition the existing outfall pipes. The need for stormwater infrastructure improvements to be implemented within the Project area to address the impacts of the shoreline and seawall modifications will be identified. Engineer(s) will walk the Project sites and obtain photographs of potential obstructions and encroachments that may negatively impact the feasibility of the proposed stormwater improvements.

b. Coastal Resiliency Evaluation: Consultant will perform an engineering analysis to evaluate the effects of sea level rise, king tides, and coastal storms on Project area. The projected water levels will be evaluated relative to impacts at the Project site and potential mitigation strategies. Consultant will adopt sea level rise projections published by the South Florida Climate Compact and develop site-specific tidal water levels based on analysis of available long-term tidal and onsite measurements (Task 1f). Published tidal datums will be compared with actual recorded measurements, both locally obtained and from established tidal stations. The variability of projections over spatial and temporal ranges will be considered. Consultant will review and adopt the storm surge elevations for various return period storms published by the Federal Emergency Management Agency (FEMA), as well as the more recent Flood Study conducted by the U.S. Army Corps of Engineers in partnership with Broward County, to evaluate low frequency storm events and water levels over the service life of the existing and proposed Project components.

c. Design Criteria: Conduct a review of the coastal and resiliency factors (e.g. hurricanes, waves, rainfall, tides, sea level rise) to be considered during the engineering design of the 22 Project segments. Areas will be assessed relative to tidal and storm impacts (e.g. storm surge, king tides). The assessments will be quantitative based on-site observations, previous studies/documentation, field data collected under Task 1, along with associated engineering analyses conducted herein. The design criteria for subsequent coastal structure design is anticipated to include water level elevations, wave conditions, scour potential, as well as hydraulic, soil, surcharge, and other loads.

d. Inundation Mapping: Assess potential inundation for various scenarios related to existing and projected sea level rise and king tide events based upon topographic and bathymetric data collected and compiled in Task 1. The inundation mapping will be developed utilizing the MIKE21 hydrodynamic model to provide dynamic inundation mapping during sea level rise and king tide events at defined frequencies and magnitudes to identify flood pathways under existing and ultimately proposed conditions. The inundation mapping will be conducted for the entire North and South Lake regions encompassing the 22 Project segments, as many of the sites are interrelated and flood pathways may exist outside the immediate Project footprint. The City-wide vulnerability study being prepared by Hazen and Sawyer, which includes modeling of sea level rise, will be reviewed and incorporated as appropriate into this mapping effort. The mapping will provide insight into problematic flood areas under existing conditions

and water levels, as well as provide a virtual tool to simulate existing and proposed conditions during future water levels. Snapshot images and video of the simulations will be generated to document the results of the modeling.

Deliverables: Engineering Analysis Report, Signed/Sealed by Professional Engineer(s) (PDF)

TASK 3 – FLOOD MITIGATION CONCEPTS AND PLANNING

Consultant will develop flood mitigation and shoreline stabilization concepts for the 22 Project sites to combat existing and/or future inundation, as well as provide shoreline stabilization and coastal resiliency. Multiple options may be considered for each site such as vertical walls, both at and landward of the shoreline, rock revetments, and living shorelines. The concepts will be based on providing increased resiliency in both the short and long term, based on the anticipated design life of the type of structure. Adaptability of the proposed concept for future variations in projected water levels will be evaluated. In addition, consideration will be given to the feasibility of the concepts relative to local (i.e. Broward County RER), State (i.e. FDEP, FBC), and Federal (i.e. FEMA, USACE) guidelines and requirements. The concepts will include elements to maintain the use and feel of the community, in addition to the robust engineered solution. Opportunities and constraints will be evaluated for potential incorporation of park type features to maintain or increase connectivity between the community and the waterfront, albeit from a position of increased protection. The concepts will consider the following criteria:

- Level of protection relative to sea level rise and king tides for the design life of the structure
- Construction and maintenance costs
- Impacts to marine resources and coastal wetlands
- Permit feasibility
- Potential phasing of future adaptation
- Stakeholder impacts and/or enhancements
- Service life
- Schedule

The various flood mitigation concepts will be evaluated and compared relative to the above criteria and a matrix will be developed for ease of comparison. Based on the concepts, the City will select a preferred design approach and concept for each Project segment, which will then be further developed in subsequent design tasks.

Deliverables: Conceptual Design Report and Drawings (PDF).

TASK 4 – REGULATORY DUE DILIGENCE

a. Upland Ownership Evaluation: Documentation of sufficient riparian upland ownership must be submitted to support environmental permit applications. Coordination with the City regarding upland ownership, review of deeds, and review of property titles will be conducted under this task. The City will provide copies of available Deeds, Warranty Deeds, easements, covenants, and boundary surveys adjacent to the Project areas. Consultant will evaluate these documents against the surveys conducted under Task 1 and the schematic designs prepared under subsequent scopes below.

b. Submerged Lands Ownership Evaluation: As portions of the Project may be located over Sovereign Submerged Lands owned by the Board of Trustees (BOT) of the Internal Improvement Trust Fund (TIITF), Consultant will request a title determination for each of the 22 Project areas to determine whether or not the adjacent submerged lands are Sovereign or privately owned. The City will supply Consultant with any existing submerged lands leases, easements, and deeds for any areas where such agreements exist.

c. Pre-Application Meetings: Coordinate and participate in pre-application meetings with each of the environmental regulatory agencies that have jurisdiction over the Projects – the U.S. Army Corps of Engineers (USACE), Florida Department of Environmental Protection (FDEP), and Broward County. The conceptual designs will be presented to the agencies, along with results of the topographic, bathymetric, marine resource, and mangrove surveys. Consultant will present the design components of each of the 22 Projects areas pursuant to each agency's regulations and will solicit input as to the acceptability and/or concerns of various design elements.

Pre-application meetings with FDEP and Broward County will include Surface Water Management Program representatives to discuss the Project and to confirm the permit requirements for any proposed stormwater infrastructure improvements. The feasibility and the constructability of the stormwater infrastructure improvements to be implemented within the entire Project area will be confirmed. Meeting minutes documenting the discussions with each agency will be prepared and disseminated to the team.

d. Interdepartmental Coordination: Facilitate coordination among the various City Departments involved with the Project. Coordination efforts will be led by City staff. The Consultant will provide support through participation in meetings and preparation of exhibits. This task anticipates coordination among Public Works, Parks, Commission, Community Redevelopment Agency, and other Departments as appropriate for the duration of Project services. Consultant will participate in up to eight (8) meetings, in person, by teleconference, or by video conference, including preparation of exhibits, under this task. If additional budget is required to provide additional support for interdepartmental coordination, an addendum budget will be provided for City approval.

Deliverables: Summary of upland and submerged land ownership findings (PDF), Meeting Minutes from each meeting (PDF).

TASK 5 – FUNDING COORDINATION

a. Funding Opportunity Research: Consultant will research and evaluate grant funding opportunities, timing, and budget for potentially available funds to assist in the design, permitting, and construction of tidal flooding mitigation, shoreline protection, living shorelines, boardwalks, walkways, parks, and other Project components as appropriate. Grants to be reviewed include, but will not be limited to, Building Resilient Infrastructure and Communities, Florida Resilient Coastlines Program Resilience Planning Grant, and NOAA Coastal Resilience Grants Program.

b. Grant Applications and Processing: Once grant opportunities have been identified and the City has confirmed which grants, if any, they would like to pursue, with consideration of any required matching funds, the Consultant will prepare grant application packages for up to two (2) grants. The Consultant will process the grants towards securing funds for the selected Project elements. If the City would like to apply for additional grants, an addendum scope will be provided to the City for approval.

Deliverables: Summary report of available grant funding opportunities (PDF)
Prepare, submit and process two (2) grant application packages

TASK 6 – PUBLIC OUTREACH

a. Outreach Plan & Kickoff: Consultant will develop a Project Outreach Plan to identify Project goals, create promotional materials, develop presentation materials, and prepare timelines. An initial meeting will be conducted between the Consultant and the City's Office of Communications, Marketing & Economic Development (CMED), as well as other relevant City staff, to solicit input into the Project Outreach Plan. Initial outreach and education materials for the Project will be developed and key stakeholders will be identified. A project template for social media, project updates and flyers will be developed.

Consultant will assist in the coordination and planning of the initial workshops to share Project goals, educate the community on coastal protection infrastructure, and solicit early feedback. The audiences for and locations of each Workshop will be coordinated with the City. Consultant will assist in the creation of promotional materials, but the City will assist in the promotion of the workshops. Consultant will provide workshop outline, schedule, recommendations, and other pertinent information to the City to facilitate planning of the

workshops. Two (2) public workshops are included in this scope. The content of the workshops will be the same, but they will be held at different dates/times to allow for the greatest audience reach. Venues will be selected with input and support from the CMED. The format for the workshops is anticipated to be town hall style where the Consultant team and City staff will present the details of the planning effort. Community input will be solicitated from the public to provide an opportunity for the community to share concerns early in the process. Participant comments, materials presented, notes and photos will be compiled and provided into a workshop summary report.

Deliverables: *Project templates and Outreach Plan*
Initial Public outreach flyer and infographic
Two (2) workshops and summary report

b. Project Updates: Consultant will provide content for three (3) project updates on regular intervals based on the created template that can be shared with the general public, City staff, and City leadership during the design phase of Project. These updates will identify project progress, graphics, and promote a transparent process for the community. Consultant shall remain available to the City to support resolution of issues as they arise related to community outreach with the Project.

Deliverables: *Three (3) Project updates*
Two (2) internal City meetings related to community outreach

c. Public Design Charettes: Coordinate, present, and facilitate public design charette workshops at the appropriate time during the Project to share design and solicit feedback from community stakeholders. As with previous meetings, the audiences for and locations of each workshop will be coordinated with the City. Consultant will assist in the creation of promotional materials, but the City will assist in the promotion of the workshops. Consultant will provide workshop outline, schedule, recommendations, and other pertinent information to the City to facilitate planning of the workshops.

The charettes will be used to present the proposed conceptual designs for shoreline stabilization, stormwater infrastructure, and park improvement elements, and solicit public input relative to final design and implementation. Two (2) public design charettes are included in this scope; venues to be selected with input and support from the City. The content of the workshops will be the same, but they will be held at different dates/times to allow for the greatest audience reach.

Consultant will be responsible for:

1. Determining public meeting dates
2. Coordination with the local homeowners' association to ensure the meeting is publicized through their distribution lists
3. Assist City in researching and securing venues for the public meetings

4. Providing content for workshop/public meeting flyers and electronic invitations
5. Promoting workshops/public meetings, including, but not limited to visiting area businesses to invite, remind and confirm attendance to meetings in addition to promotion via City blogs, and social media and webpage
6. Preparing necessary documentation and equipment for the public meeting, i.e.: agenda, name tags, sign-in sheets, comment cards, audio recorder, project packet for the public with other pertinent Project information;
7. Setting up, staging and facilitating at public meetings and workshops
8. Taking meeting minutes during public meetings and workshops and providing minutes to team and City for review;
9. Preparing reports to include minutes, comments and photos of the public meetings and workshops

Deliverables: *Facilitation of Two (2) public design charette workshops*
Public Design Charette Summary Report (PDF).

TASK 7 – PRIORITY 1 PROJECTS

a. Schematic Design: Update the conceptual designs and prepare Schematic Design (SD) plans in sufficient detail for stakeholder review of the Priority 1 Projects including North Northlake (Areas 19 & 22), Central Northlake (Areas 3, 4, 5, & 9), North Southlake (Area 10), and South Southlake (Area 17). The plans will be prepared in CAD format using industry standards for this type of construction. The SD plans will incorporate the findings of the Field Investigations & Data Collection, Regulatory Due Diligence, and Engineering Analyses described above. Geotechnical engineering, coastal engineering, civil engineering, and landscape architecture considerations will be included in the schematic design.

b. Design Development: Update the SD plans and prepare Design Development (DD) plans in sufficient detail for regulatory review of the Priority 1 Projects including North Northlake (Areas 19 & 22), Central Northlake (Areas 3, 4, 5, & 9), North Southlake (Area 10), and South Southlake (Area 17). The plans will be prepared in CAD format using industry standards for this type of construction. The DD plans will incorporate preliminary engineering design for the waterfront improvements and structures planned for each site (e.g. bulkhead, revetment). Geotechnical engineering, coastal engineering, civil engineering, and landscape architecture considerations will be included in the preliminary design.

c. Final Design: Finalize the DD plans and prepare Construction Document (CD) plans in sufficient detail for construction of the Priority 1 Projects including North Northlake (Areas 19 & 22), Central Northlake (Areas 3, 4, 5, & 9), North Southlake (Area 10), and South Southlake (Area 17). The plans will be prepared in CAD format using industry standards for this type of construction. The technical specifications will be incorporated into the plans. The plans,

technical specifications, and calculations will be signed and sealed by a Florida registered Professional Engineer. Geotechnical engineering, coastal engineering, civil engineering, and landscape architecture will be included in the final design. The following drawing sheets are anticipated:

- Cover Sheet – Location maps, titles
- General Notes – Specifications, materials, list of abbreviations
- Existing Site Conditions – Topographic survey, bathymetric survey
- Proposed Site Improvements – Plan views, layouts, access, staging
- Proposed Cross Sections – Cross sections, structural details

d. Constructability Review: Perform a constructability review for each Priority 1 Project. The feasibility of construction will be based on Consultant's experience with similar waterfront improvement projects in South Florida. The constructability review will consider the effect of land/water-based construction methods on site access, schedule, and cost. The impact to neighbors, marine resources, traffic, and existing infrastructure will also be considered. If the City elects to utilize a CM at Risk or other contracting vehicle, early input from Contractor will be obtained at this stage as well.

e. Cost Estimates: Prepare an Opinion of Probable Cost (OPC) for each Priority 1 Project based on the SD, DD, and CD plans. The OPCs will be based on Consultant's best judgment as an experienced and qualified professional generally familiar with the industry. Recent unit price data for similar projects will be incorporated into the OPC. In addition to material costs, the OPC will incorporate line items relevant to the construction cost including mobilization, demobilization, as-built/layout surveys, site restoration, and environmental compliance. Quantities will be calculated based on the proposed quantities shown in the SD, DD, and CD plans, respectively.

f. Geodatabase Development: Develop a geodatabase for incorporation into the City's GIS platform, which includes Priority 1 Projects. The geodatabase will be developed using ESRI software and may include digital versions of relevant Project design files including topographic/bathymetric information, Mean High Water (MHW) delineations, limits/footprints of proposed improvements, photographs, and locations of geotechnical borings. Metadata for each feature class will be incorporated into the geodatabase.

g. Environmental, Surface Water, and City Permitting: Permits will be required by the environmental regulatory agencies including the USACE, FDEP, and Broward County for all Priority 1 Projects. The Consultant will prepare comprehensive permit application packages to the USACE, FDEP, and Broward County. Permit applications will include descriptive cover letters, application forms, a completed manatee key, National Marine Fisheries Service (NMFS) Protected Resource Division (PRD) checklists, permit drawings (SD drawings will be used), and survey reports to initiate the permitting process. This scope of services assumes

that any ecological impacts can be sufficiently avoided and minimized through the design process or they will be offset by other Project design elements.

In addition to the environmental components of the Project, the proposed modifications to the existing shorelines and seawalls within the Project limits are expected to require modifications to the existing stormwater infrastructure, replacement of the existing stormwater infrastructure, and/or implementation of new stormwater infrastructure within adjacent right-of-way areas, which will require regulatory permits for surface water. The Consultant will gather, review, and evaluate any existing stormwater permits issued by the relevant regulatory agencies for the Project area. Previously issued stormwater permits for the Project area will define the peak allowable discharge via the existing outfalls into surrounding surface waters, which can limit the extent of the potential stormwater improvements that can be authorized without modifying the existing structures. Team members will obtain, review, and complete permit applications, and will prepare backup documentation required by the regulatory permitting agencies. Surface Water Management applications will be prepared and submitted to the FDEP and Broward County, as well as the City. Upon obtaining review comments from the regulatory agencies, the team will revise applications, plans, and technical specifications as per comments received and re-submit for permit approvals.

The FDEP Environmental Resource Permit (ERP) will authorize both the shoreline stabilization components and the surface water management components of the Project. Broward County will issue an Environmental Resource License (ERL) for the shoreline stabilization components and a Surface Water management License (SWL) for the surface water management components of the Project. Additionally, as dewatering will likely be required to support construction activities, a Water Use (WU) Permit will be required from the FDEP.

The USACE, FDEP, and EPGMD permit applications will be processed through the respective agencies to secure Federal, State, and County approval for the Priority 1 Projects. Consultant will coordinate with the City and Project team to respond to Requests for Additional Information (RAIs). Consultant will confer with regulatory agency staff to advise them of the details of the Projects and to address staff comments and RAIs. Consultant will maintain contact with agency staff to expedite their review and processing of the permit applications to secure regulatory approvals for the Priority 1 Projects.

In addition to the environmental regulatory permits, a City Building Permit will be required through the City of Hollywood Building Department. It is anticipated that City Building Department approvals will be handled jointly by the Consultant, City Staff, and the selected contractor. Consultant will respond to Requests for Information (RFIs) from the Contractor and the City on construction drawings and structural calculations to aid in the processing of the City building permits for the Priority 1 Projects.

h. Bidding Support Services: Consultant will provide bidding support services to supplement the City's procurement process for the Priority 1 Projects. Services include preparation of bid documents to compile with the City's standard front end documents, review of Contractor bids, issuance of addenda, issuance of a bid recommendation letter, attendance at one (1) pre-bid meeting, and review/response to Contractor questions during the bid advertisement period.

i. Construction Phase Services: Consultant will provide construction administration services for the Priority 1 Projects to support full time construction oversight by City staff during an assumed 18-month construction period. Services include review of Contractor submittals, technical advising to City staff relative to the construction documents, construction progress meetings, periodic site visits, responses to Requests for Information (RFIs) relating to unforeseen conditions, required field changes and/or other items as required, approval of payment requests, final/substantial completion walkthroughs, permit compliance, and Project closeout. Progress meeting agendas, meeting minutes, and Field Observation Reports (FORs) will be prepared. In addition, response to specific public inquiries and/or support in providing project updates to the community will be provided herein. Materials testing (if required) will be provided by the Contractor**.**

As the final construction design and schedule/letting for each site is unknown at this time, the fee for these services has been estimated based on Consultant's experience with similar waterfront projects, discussions with the City and an assumed 18-month construction period. This scope includes approximately 1,300 hours (fee will vary based on staff per approved rate sheet). Hours for the below specific subtasks were estimated based on an assumed 18-month construction period:

- Submittal Review
- Technical Advising
- Construction Progress Meetings
- Periodic Site Visits – biweekly
- Requests for Additional Information (RFIs)
- Substantial Completion Inspection – 2 site visits
- Final Completion Inspection – 1 site visit
- Project Closeout – Permit closeout and documentation

Additional support, if required by the City, will be addressed under an addendum scope of work.

Deliverables: *SD/DD/CD Drawings and Calculations, Signed/Sealed by Professional Engineer (PDF/Hard Copy)*
Cost Estimates
Geodatabase
Environmental Permits

Construction related documentation – e.g. observation reports, submittal reviews, RFI responses, punch-list, etc.

TASK 8 – PROJECT MANAGEMENT AND COORDINATION

Consultant will provide Project management services and coordinate with the City for two (2) years following issuance of Notice to Proceed. Meetings specified below are supplemental to those included in the tasks above. These services include:

- Project kickoff meeting
- Bi-weekly Project updates via email
- Thirty (30) video and/or teleconference calls with City relative to Project progress
- Twelve (12) in person, half-day meetings
- Two (2) City commission meetings

CONDITIONS/ASSUMPTIONS

Engineering/Design

a. Project is intended to evaluate and reduce direct overland tidal flow. Subsurface flow through soil/porous limestone will be reviewed, however, potential changes to upland drainage from groundwater flow can be addressed under a separate scope of services.

b. Any major plan revisions after the Schematic Design has been approved by the City may result in additional fees.

c. This scope does not include an assessment of mechanical, electrical, or plumbing (MEP) components of any structures within or adjacent to the 22 Project sites.

d. Property boundaries will be identified as required to support the above engineering design; however, this scope does not include conducting official boundary surveys for individual parcels.

e. The Consultant is not responsible for designing access to the single-family docks located adjacent to the Project areas beyond the planning and concept level.

f. No fire protection is included in the services outlined in this scope. Any fire suppression systems, pumps, etc. required by the Local Fire Marshal may result in an additional scope of services.

g. Technical specifications will be incorporated in the construction plans. A separate set of technical specifications in Construction Specification Institute (CSI) format can be provided under a separate scope of services.

h. This scope does not include design of lighting.

i. This scope includes basic landscape design, consistent with the character of the surrounding neighborhood, except for sites 1, 2, 3, and 18, as these sites cannot easily accommodate landscaping improvements. If the City wants to design a pocket park, linear park, passive park, or similar, based upon results of the design charettes and identification of funding, or supplement landscaping at sites 1, 2, 3, or 18, these services will be addressed under an addendum scope.

j. Designs will include shoreline stabilization and tidal flood mitigation barriers. Landscaping and civil engineering directly associated with and adjacent to shoreline stabilization and flood mitigation barriers are included.

k. Civil engineering improvements are limited to incorporating the shoreline stabilization and flood barrier designs into the adjacent civil engineering components. Significant upgrades to roads, stormwater systems, or overall drainage are not included. If required, these will be addressed under a separate scope of services.

l. The civil engineering component of the scope is limited to the planning, design, permitting, and construction services required to implement the ancillary stormwater infrastructure directly related to the impacts of the proposed seawall and shoreline modifications within the Project. This scope does not include the planning, design, permitting, and/or construction services required to implement comprehensive stormwater improvements throughout the surrounding neighborhood.

m. Sanitary sewer design services are not anticipated to be required and are excluded from this scope.

n. All available information regarding the location of underground utilities shall be provided prior to commencement of geotechnical investigations to supplement information identified by Sunshine One Call.

o. City will provide all available topographic surveys, planning documents, atlases, design drawings, record drawings, shop drawings, permit documents, maintenance reports, and/or drainage pipe inspection videos relevant to the existing, recently installed, and planned stormwater infrastructure within the Project area.

p. City will provide all available/relevant information related to the stormwater modeling analysis to be completed during the upcoming Stormwater Master Plan Modeling and Design Implementation Contract (Project #20-11053). Relevant staff from the City and their selected consultant will be available to meet with the Consultant to discuss the modeling analysis to be completed during the upcoming Stormwater Master Plan Modeling and Design Implementation Contract.

Environmental Permitting

a. This scope does not include the regulatory permitting effort required to install new stormwater outfalls or to upsize existing stormwater outfalls within the Project areas, which would likely require a comprehensive stormwater modeling effort. If desired, this can be provided under an addendum scope.

b. Mangroves and coastal wetlands will be incorporated into the Project designs and impacts will be avoided to the extent practicable.

c. If the City desires more impactful designs relative to marine resources, additional fees will be required to support the permitting process, mitigation negotiations, and mitigation design. If ecological impacts cannot be avoided and minimized through the design process to the satisfaction of the environmental regulatory agencies and/or offset by other Project design elements, and design of a mitigation project is required, an addendum scope will be provided for City approval.

d. All permit fees and any mitigation costs will be paid directly by the City.

e. There are no regulatory compliance issues associated with any existing structures within the Project area that must be resolved prior to issuance of environmental permits.

f. There will be no change in public agency regulations or policies following contract execution.

g. There are no property ownership or other legal issues that will complicate the permitting process.

h. It is assumed there will be no legal encumbrance issues, no submerged lands lease issues, and no historic or archaeological resource issues.

Bidding/Construction Administration

a. No underground utility location services are included. The contractor will be required to call for utility location services prior to construction.

b. The City will provide standard construction documents, including General Conditions, contracts, and up-front documents. These documents will be compiled with bid documents prepared by Consultant for Project bidding.

c. The bidding assistance budget and scope is based on a single and successful bid process. Any rebid process will be provided under a separate scope of services.

d. The scope of services for construction administration is based on the selection of qualified, reputable contractors.

e. As-Built surveys will be provided by the Contractor to comply with regulatory permits.

f. Materials testing, including pile installation monitoring, will be provided by an independent firm retained by the contractor.

g. Construction Administration services are budgeted based on anticipated schedules. Full-time construction management services can be provided at the request of the City under an addendum scope.

General

a. Rental fees, translation, and ADA services, if required for public meetings and design charettes, will be provided by the City.

b. The City will assist with promotion of the stakeholder engagement workshops.

c. Consultant cannot be held responsible for damage to below ground structures or utilities which are not identified. We specifically request any available information regarding the location of underground utilities for this Project.

d. This scope does not include the completion of any utility test holes within the Project limits.

e. This scope does not include any title searches to confirm presence of existing utility easements on private property within the Project area.

f. This scope does not include any engineering, survey, or legal services required to establish new utility easements on private property or acquire any new public right-of-way from private property.

PROJECT FEES

The total fees for the scope of professional services associated with this Project are $1,249,870. The fees for each task outlined above are summarized in the following table.

Task	Description	Lump Sum Fees	Hourly NTE Fees
1	Field Investigations & Data Collection	$145,965	
2	Engineering Analysis	$63,550	
3	Flood Mitigation Concepts & Planning	$95,325	
4	Regulatory Due Diligence	$37,930	
5	Funding Coordination	$27,820	
6	Public Outreach	$76,315	
7	Priority 1 Projects	$507,105	$207,260
8	Project Management & Coordination		$88,600

Title	Hourly Rate
Principal	$250
Project Director	$220
Senior Project Manager	$180
Project Manager	$160
Senior Scientist	$160
Project Scientist	$130
Associate Scientist II	$115
Associate Scientist I	$ 95
Senior Engineer	$180
Project Engineer	$150
Associate Engineer II	$130
Associate Engineer I	$115
Senior Designer	$100
Designer	$ 80
Technician	$ 75
Clerical	$ 65