621 NW 53rd Street, Suite 265
Boca Raton, FL 33487
tel: 561-571-3800
fax: 561-241-7084

October 28, 2020

Mr. Vivek Galav
Public Utilities Director
City of Hollywood Public Utilities
1621 N. 14th Avenue
PO Box 229045
Hollywood, FL 33022-9045

Dear Mr. Galav:

Transmitted herewith is CDM Smith proposed Exhibit B and other supporting documentation of the Continuing Service contract for the reference project. The proposed scope of work addresses the City's needs as presented in the RFQ and subsequent discussions leading to our understanding of certain regulatory agency requirements regarding the Stormwater Master Plan and associated facilities. We trust this meets your needs.

Please let me know if we can provide additional information. We look forward to working with you and your staff in this very important assignment.

Thank you for your kind assistance and consideration.

Sincerely,

Suzanne E. Mechler, PE, BCEE
Associate, Client Service Leader

SM/bm

Enclosures
FILE: 242876.PM

cc: Raul Wainer, PE w/e

EXHIBIT B

STORM WATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

CONTINUING SERVICES CONTRACT

CITY OF HOLLYWOOD DEPARTMENT OF PUBLIC UTILITIES PROJECT NO. 20-11053

CDM SMITH INC.

October 19, 2020

This Authorization and Scope of Services is undertaken under the Professional Services Agreement (Agreement) between City of Hollywood (CITY) and CDM Smith Inc. (CONSULTANT) dated _____, 2020 for the development of a Stormwater Master Plan (Project).

BACKGROUND INFORMATION

The CITY desires to develop a comprehensive Citywide Stormwater Master Plan (SWMP) that updates of prior work by others, which includes the following specific tasks or considerations:

1. Data Collection and Review of prior related Projects;
2. Review of latest condition assessment of stormwater facilities;
3. Update existing stormwater system inventory using high density topographic LiDAR and City's stormwater GIS maps;
4. Develop a hydraulic/hydrological stormwater model of the entire City;
5. Identify Basins/Neighborhoods existing facilities, flooding conditions, and preliminary conceptual drainage improvements projects;
6. Incorporate Sea Level Rise (SLR) and Storm Surge (SS) scenarios to the conceptual drainage improvement projects;
7. Coordination with permitting agencies having jurisdiction over the Project;
8. Prepare a SWMP that includes updates of prior SWMP(s) sections;
9. Generate conceptual level cost estimates for of the stormwater system capital improvements;
10. Permit approval of the SWMP with the conceptual plans of the different basins and Neighborhoods, including new and upgrades to Stormwater Pump Station facilities;
11. Additional services related to the SWMP; and
12. Develop an associated, prioritized capital improvements program (CIP) which includes SLR.

The Study Area for this SWMP is the City of Hollywood as shown in **Figure 1**, with consideration of upstream inflows and downstream SWFMD canals and tidal systems as boundary conditions. The area of coverage is approximately 30.5 sq. mi.

SCOPE OF SERVICES

CONSULTANT will undertake the following initial Scope of Services to develop this SWMP update:

TASK 1. Kick off Meeting, Project and Quality Management (Year One and Year Two)

Activities performed under this task consist of those general functions required to maintain the Project on schedule, within budget, and that the quality of the work products defined within this Scope of Services is consistent with the CONSULTANT's quality management (QM) standards and CITY's requirements.

1. Develop a project management plan that establishes communication protocols, detailed schedule by Task for each phase and update monthly.
2. Prepare for and conduct a kickoff meeting, bi-monthly project meetings over the course of the project (12 meetings), and a final presentation of the project. CONSULTANT will prepare and distribute meeting summaries and handouts (in e-mail format) of each meeting as appropriate.
3. Project manager will prepare and submit monthly status reports for an anticipated project duration of 24-months from NTP to delivery of final report.

TASK 2. Data Collection and Evaluation Phase (Year One)

1. Reports, Plans, SLR Data, and Models- The CONSULTANT will compile and evaluate available digital data from previous CITY stormwater-related reports, master plans, stormwater models and other available applicable data sources for available digital data for the CITY, Broward County, FDOT projects, FEMA Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs), and State from relevant programs for stormwater, coastal resilience, water quality, groundwater and surface water, floodplain and flood maps, and related GIS data.
    a. CONSULTANT will compile and evaluate relevant digital data from the CITY's most recent Comprehensive Plan, Broward County RER, National Resources Conservation Service (NRCS), U.S. Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration (NOAA), United States Geological Survey (USGS) groundwater wells data, Federal Emergency Management Agency (FEMA), South Florida Water Management District (SFWMD) canal and gate operations and wells, Florida Department of Environmental Protection (FDEP) and Florida Department of Transportation (FDOT), as of October 31, 2020.
    b. CONSULTANT will review Broward County Environmental Protection Growth Management's future conditions maps for groundwater and the inclusion of future rainfall conditions and incorporate sea level rise and storm surge scenarios.
    c. CONSULTANT will consider compliance or mitigation measures, as possible, to the CITY's Sustainability Action Plan.
    d. SLR data will be based on the South Florida Climate Compact projections for two-time horizons to be determined based on SLR elevations (e.g., 18 and 30 inches).

e. CONSULTANT will utilize available regional, state and federal data sources to conduct a literature and data review to inform climate change scenario selection principally focused on sea level rise, storm surge and heavy precipitation events over the planning horizon.

2. Flood Control Level of Service - The CONSULTANT will collect and evaluate available information on current Level of Service (LOS) provided by the CITY for existing stormwater drainage and water quality systems in the CITY. The CONSULTANT will compile previously Identified areas and infrastructure facilities by the CITY such as water, sewer, stormwater, roadways, seawalls/bulkheads and emergency facilities at risk from rainfall, sea level rise, tidal flooding, and storm surge, for recommendations on design criteria changes as warranted to mitigate said risk.

3. Existing GIS - The CONSULTANT will collect and evaluate the CITY's existing stormwater GIS environment layers and metadata as of October 1, 2020 as provided by the CITY for applicability to the storm water model development.

4. Tidal Boundary Conditions - The CONSULTANT will compile and evaluate current tidal boundary conditions for the Intracoastal Waterway and Atlantic Ocean from various government agencies such as the CITY, SE Florida Climate Compact, USACE, NOAA, United States Geological Survey (USGS), FEMA, SFWMD, FDEP, FDOT and Broward County to create the one-year stillwater tidal boundary condition. The 10- and 100-year stillwater will be taken from the current FEMA FIS, and the 25-year stillwater will be interpolated.

5. Update GIS database - The CONSULTANT will compile and evaluate applicable layers and metadata in the CITY's stormwater Geographic Information System (GIS) database and provide recommendations for use in creating the stormwater models for master planning purposes. CONSULTANT will provide recommendations to CITY before implementing.

   Based on the recommendations, the CONSULTANT will update the City-wide stormwater GIS environment using best available information including existing GIS data, plans, atlas maps, and drawings provided by the CITY. The stormwater GIS database will be configured to support the stormwater planning and modeling process, as well as general system operations and asset management. This process of enhancing the stormwater GIS environment will be as follows:

   a. Geodatabase Design. CONSULTANT will review the architecture of the existing GIS database and adapt it to fit the requirements of stormwater master planning.

   b. Stormwater GIS Development. CONSULTANT will develop a City-wide stormwater GIS base representing the PSMS with information provided by the CITY. This process will be as follows once the CITY provides the information to the CONSULTANT:

      i. Acquire and update the design of the existing GIS database (aerial mapping, digital aerial imagery, GIS layers) to use as the base map for this effort.

      ii. Review and evaluation of up to 250 provided digital plan sets (6,250 digital plan sheets using an average set of 25 sheets). Approximately one-half of the 6,250 sheets evaluated (3,125 sheets) will have stormwater-relevant information to be coded to the GIS.

iii. The 3,125 plan sheets will be georeferenced by matching points between the base data and the plans, and the plan area limit of each plan sheet will be entered into a polygon layer within the GIS database. Each plan area limit polygon will be attributed with plan name, plan date, and plan type, as applicable and related to an intersection or fixed points. This process will result in a polygon layer of plan area limits and the layer will be linked to scanned images of each plan to allow the CITY to access historical plans via the GIS environment.

iv. Update of the City's stormwater GIS database by transcribing available stormwater information (pipes, manholes, inlets, and structures, inverts, pumps) from the up to 3,125 plan sheet source documents to the GIS database. If features to be mapped are visible on aerial base mapping, they will be "snapped" to these locations. If features are not visible on base mapping, the location will be estimated based on information available on source documents. As each structure point is placed, available manhole information on the source document will be entered into the geodatabase. Attribute information not available on source documents will be coded as "null" in the GIS database. System pipes and conveyance structures will be converted from plans to the GIS database. Conveyance structures will be "snapped" to associated structure points, be digitized in the direction of flow, and be coded with pipe size and other information noted on plans. Attribute information not available on source documents will be coded as "null" in the GIS database.

v. Develop a geometric network to connect the PSMS to be modeled system and indicate proper direction of flow and feature snapping. The network will be used to flow trace the final stormwater network to verify proper stormwater system flow.

vi. Perform a quality review process in which a combination of automated tools (developed using Esri's "data reviewer" and "map automation" technology) and manual checks will be used to review data developed.

vii. Development of a series of map atlases using ArcGIS' Data Driven Pages functionality to become the new City-wide stormwater facilities atlas to a scale chosen by the CITY.

c. The Digital Elevation Model (DEM) will be created from the LiDAR provided by Broward County at the resolution in the file – the metadata for the LiDAR declares that it was processed (in 2017) to create a high-resolution hydrologically corrected DEM at 0.5 Feet with a vertical accuracy of 0.192 Feet. CONSULTANT will use the data directly and assumes no additional manipulation is required for its use for this project, other than verification survey as defined in Task 2.6A below.

6. Field Survey and Data Verifications

a. The CONSULTANT will conduct a field data collection effort, where deemed necessary by the CONSULTANT, to support model development and the GIS update process in areas

where existing plan/record drawing information is incomplete or conflicting. This task includes the location and inventory of up to 1,500 structures (x,y to 1 ft accuracy and z elevations to 0.03 ft accuracy), and 400 building finished floor elevations to standard survey accuracy by a registered professional land surveyor.

b. The CONSULTANT will Incorporate bathymetric cross sections as available from the City, Broward County and SFWMD. Bathymetric survey will be conducted to fill in data gaps for up to 25 canal cross-sections. Cross sections will be determined from LiDAR maps to the extent of the floodplain.

c. The CONSULTANT will conduct 20 geotechnical soils tests (DRI) and 25 saturated hydraulic conductivity tests (KSat) citywide to merge with available existing data to create the GIS surfaces of the parameters for the model.

7. Pump Stations - The CONSULTANT will review and evaluate the available stormwater pump station condition assessment being developed by others. CONSULTANT will gather information from existing as-builts for other facilities for pump data not included in the condition assessment but needed for operations for the model.

8. National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit and Water Quality - The CONSULTANT will collect and evaluate available data for PSMS connectivity from the City for the CITY's NPDES MS4 permit and water quality data for impaired waters and as available for the North and South Lake Systems. Impairments and permit considerations will be included in the stormwater model and the SWMP.

9. Data Gaps Analysis - The CONSULTANT will perform a Data Gap Analysis to identify areas of the CITY's system where there is insufficient data to develop a comprehensive stormwater model and provide an action plan for further data acquisition, under the Allowance task. Data gaps will be assessed in terms of impact on the project budget and schedule. The findings will be summarized in a Data Gap Technical Memorandum.

10. FEMA Repetitive Loss Data- The CONSULTANT will review available FEMA repetitive loss data provided digitally by the CITY and available data from CITY and County flooding complaint records within its City limits and create a GIS map of known flooding problems to be used in the analysis.

11. Flood Stage Monitoring - The CONSULTANT will review available surface water level monitoring locations and data and recommend potential locations for additional monitoring locations and/or stage measurements. The CONSULTANT will provide conceptual equipment standards or data sheets.

12. Stormwater Utility Review – The CONSULTAULT will review the evaluate the CITY's existing stormwater utility, fee structure, and stormwater ordinance and provide recommendations for enhancement and optimization options for the CITY to consider.

13. Permit Agency Coordination - The CONSULTANT will coordinate with permitting agencies (SFWMD, FDEP, Broward County) and hold a pre-project meeting with each to discuss the CITY's goals, master plan approach, and discuss permitability.

a. Broward County

North Lake and South Lake Evaluation and Regulatory Concurrence

i. CONSULTANT will coordinate and attend a meeting with appropriate Broward County staff to discuss permitting and the models developed as part of the SWMP with consideration of the dredge and fill and water quality requirements for the Broward County Development and Environmental Regulation Division Aquatic and Wetland Resources Section.

ii. The CONSULTANT will review available bathymetry, and sediment quality data for the North and South Lake system as provided by the CITY. The CONSULTANT will review applicable water quality data for the C-9, C-10, C-11, and North and South Lake systems with focus on impaired waters (e.g. copper). The CONSULTANT will recommend additional Best Management Practices (BMPs) and/or NPDES compliance measures to address the impairment parameters.

iii. Based on the Broward County meeting and data review, as necessary, the CONSULTANT will develop a proposed modeling approach and recommend potential refinements to meet the County's permit requirements for the SWMP and pump stations as components.

b. SFWMD

i. CONSULTANT will evaluate SFWMD requirements for pre-post SWMP water quantity flow rate and volume, water quality treatment in equivalent inches, aquifer recharge, and wetlands requirements.

14. Grant, Loans, and Bonds Review - The CONSULTANT will review available grants, loans, and bonds and provide recommendations for the CITY to consider.

15. Regulatory/ Legislative Support – The CONSULTANT will review upcoming rule changes required by SB 712 dealing with various impacts to water quality and quantity issues with ratification by the legislature and provide feedback to the CITY on potential impacts.

16. Project Milestones - The CONSULTANT will provide progress updates to the City's Project Manager via Technical Memorandums as draft report sections, at the following stages:

i. Data Collection and Evaluation (and Gap Analysis).

ii. Initial Model Development and Verification - Development of DTM, Delineation of Sub-Basins, Definition of PSMS, and delineation of model extents.

TASK 3 Stormwater Modeling and CIP Development Phase (Year One and Year Two)

TASK 3.A Stormwater Modeling and CIP Development Phase (Year One)

1. LIDAR Topography - The CONSULTANT will utilize the provided 2017 LiDAR data set for the development for the digital terrain model (DTM) sufficient for the modeling analyses and delineate sub-basins and watersheds based on the DTM data.

2. Boundary Conditions - The CONSULTANT will establish tidal and riverine boundary conditions (at inflows to the City and outflows from the City) using existing Broward County model data, and groundwater elevation estimates from USGS and BCEPGM monitoring well data.

3. Primary Stormwater Management System - The CONSULTANT will define the Primary Stormwater Management System (PSMS) and model extents. The PSMS model will include a total of up to 500 hydrologic units and up to 1,000 conduits (open channels and pipes 24-inches in diameter and larger).

4. Existing Conditions Stormwater Model - The CONSULTANT will develop an Existing Conditions (EC) model or the PSMS system utilizing the US EPA-SWMM 5 (1-D) model platform.

   The North and South Lake systems will be modeled in USEPA SWMM 5 in 1-D for the North and South Lake systems with tidal boundary conditions at the Intracoastal Waterway (ICW). Upstream and lateral stormwater inflows will be included.

5. Anecdotal Video Reports - The CONSULTANT will apply the stormwater models for one recent storm event to verify peak flood stages based on available CITY provided high water marks, anecdotal video reports of flooding and initial Public Workshops as identified in Task 6.

6. Evaluate Existing Flood Control - The CONSULTANT will evaluate EC land use and hydraulic conditions for the 5-year / 24-hour, 10-year / 72-hour, 25-Year / 72-hour, and 100-year / 72-hour SFWMD design storm events and develop summary tables of peak stages, flows and velocities from model results to determine existing LOS.

TASK 3.B Stormwater Modeling and CIP Development Phase (Year Two)

1. Alternatives Evaluation - The CONSULTANT will develop two alternatives citywide and simulate 5-year / 24-hour, 10-year / 72-hour, 25-Year / 72-hour, and 100-year / 72-hour SFWMD design storm events with improvements to mitigate water quantity problems based on level of flooding, system capacity, cost-benefit considerations, and water quality and requirements set forth by Federal, State, and Local regulations for the Intracoastal Waterway (ICW) and other receiving waters and create floodplain maps for each (8 maps).

   The first alternative will consider the CITY's current level of service standards, and if these are not practicable, the CONSULTANT will identify a second retrofit level of service alternative.

   The CONSULTANT will develop summary tables of peak stages, flows and velocities from the two alternatives model results to compare to existing conditions for the 5-year 24-hour, 10-year 72-hour, 25-Year 72-hour, and 100-year 72-hour SFWMD design storm events. CONSULTANT will prioritize the 20-yr CIP in increments (e.g. 5-yr) selected jointly with the CITY.

2. Water Quality Treatment - The CONSULTANT will calculate water quality treatment in equivalent inches for each major watershed using SFWMD guidelines in a spreadsheet format for pre- and post- CIP.
3. Evaluate Benefits - The CONSULTANT will consider project flood reduction benefits (i.e., flood damage reduction and cost for the capital projects using FEMA-HAZUS (Hazard US) method Benefit-Cost Analysis (BCA) Tool for two alternatives (under Task 3.6 – desired LOS, relaxed LOS and compare to existing condition) for the four design storms CITY-wide, (12 total scenarios: 1 EC + 2 Alts = 3 x 4 design storms = 12 total).
4. Design Criteria - The CONSULTANT will provide updated stormwater system design criteria recommendations and provide updated design tailwater conditions maps in a GIS format for both upland and tidal influenced areas. This will include green and grey coastal resilience systems for seawalls, floodwalls, levees, and backflow preventers with respect to height, geotechnical considerations, and structural considerations. CONSULTANT will provide technical assistance with specific adaptation and coastal protection measures in accordance with the CITY's desire to consider both storm surge, sea level rise, and heavy rainfall. CONSULTANT will provide conceptual ideas for problem and coastal areas that will require unique solutions.
5. Project Milestones - The CONSULTANT will provide progress updates to the City's Project Manager via Technical Memorandums as draft report sections, at the following stages:
    i. Model Application - Hydrologic and hydraulic modeling of existing land uses without CITY's Existing Conditions LOS, Hydrologic and Hydraulic Modeling of Existing Land Uses.
    ii. Alternatives Evaluation - Identification, Ranking and Prioritizing of Future City Flood Protection Projects under design that take into consideration the cost-benefit analysis (including social, equity and environmental costs and benefits), flood protection and sustainability based on sea level rise and incremental LOS improvements.
    iii. Update of City Stormwater Infrastructure Database (GIS).
6. Pursuant to the completion of the above-mentioned Technical Memorandums, in Task 2.A.18 and 3.2.6, provide the model results and solutions in a comprehensive deliverable hard copy report and electronic formats for future use by the CITY.

TASK 4. Sea Level Rise and Storm Surge Evaluation and Considerations (Year Two)

To support Sea Level Rise and Storm Surge Evaluation and Considerations, the CONSULTANT will perform the following subtasks:

1. SLR Scenarios - Project two potential ranges of sea level rise (SLR) (1.5 ft and 2.5 ft) on normal and extreme tide and surge conditions utilizing current SLR information from the southeast Florida Climate Compact which is based on information from the SFWMD, Miami-Dade County, USACE, NOAA, USGS and evaluate the potential impact of intermediate and high SLR scenarios on the PSMS over the chosen different sea level rise elevations superimposed using the existing conditions stormwater model on the 5-, 10-, 25-, and 100-year design storms.

2. Potential Future Rainfall Simulation - Evaluate one additional design storm for potential increased rainfall City-wide (i.e., 25- or 100-year storm adjusted for potential climate change rainfall amounts as identified by SFWMD), or a 500-year rainfall amount as a "worst case" event for critical structures as recommended by the CONSULTANT.
3. Engineering Analyses, Flood Mitigation Typologies, and Toolkit Concepts - Development of blue-green-gray integrated infrastructure toolkit concepts for the CITY based on the results of the modeling for both in the short-term and long-term application. A total of eight to ten typologies with associated toolkits will be developed and graphics will be provided. (total of 30 toolkit graphics maximum)

TASK 5. Capital Improvement Program Phase and Conceptual Permit Application (Year Two)

In performing this Task, the CONSULTANT will:

1. Develop a 20-year, phased Capital Improvement Plan (CIP) itemizing the capital improvement projects that can be implemented and constructed on a basin-level. For the Capital Improvement Program phase, CONSULTANT will, at a minimum, implement a mixture of the following CIP categories for public and private systems:
    a. Neighborhood or community stormwater drainage improvements
    b. PSMS improvements including:
        i. Pump stations.
        ii. Waterways, canals, and waterbodies.
        iii. Pipes and culverts.
        iv. Storage (i.e., wet detention as allowed by Broward County, dry retention, swales).
        v. Exfiltration.
        vi. Recharge wells (gravity and pumps as allowable).
        vii. Roadways.
        viii. Pretreatment for trash and debris.
    c. Coastal areas:
        i. Bulkheads, floodwalls, and levees.
        ii. Blue-green-gray integrated infrastructure.
        iii. Backflow preventers in outfalls.
    d. Property acquisition
2. Vulnerability Analysis - Conduct a vulnerability analysis of community assets and stormwater infrastructure. This will include the following by the CONSULTANT:
    a. Assess critical access and mobility, business impact, and social equity considerations.

b. Establish “priority areas” for the next step of project identification. “Priority areas” would be those that have *both* 1) socially vulnerable communities and 2) high physical vulnerability to stormwater induced flooding. Identify the vulnerability of future stormwater management features to flooding under the two selected sea level rise scenarios. Identify assets that may lose critical access with a Connectivity Module. Estimate risk consequence or as a way of doing broad potential economic impact assessments from identified threats.

c. Determining where under-resourced neighborhoods are located relative to current and future flooding and current stormwater infrastructure and highlight vulnerability of assets that may be critical to such communities such as assisted housing, food and medical facilities, small businesses and transportation access.

3. CIP – CONSULTANT will develop a prioritized list of CIP projects, incorporating the social equity and vulnerability analysis noted, over the next 20 years and provide justifications for the areas of highest concern and based on cost benefit analysis and its impact for sea level rise, resiliency, and water quality.

   a. Provide project scenario zone of influence assessments detailing potential benefits over the baseline community and stormwater infrastructure asset vulnerability assessment.

   b. Develop materials to explain the business case for adaptation, and also find innovative ways to utilize the cost-benefit analysis to advance projects and support for adaptation.

   c. Provide a discussion of planning-level, future project concepts to consider for long-term adaptation to SLR (e.g., 50-yr time frame).

   d. Factors that will be considered in the development of CIP projects include:

      - Water quality and environmental benefits.
      - Adaption to future climate conditions (i.e., storm surge, increased and more intense rainfall, sea level rise).
      - Flood damage avoidance in dollars using a tool such as the FEMA HAZUS, numbers of houses and citizens affected, social and community impacts.
      - Coordination with CITY water and wastewater existing and future projects. The list of proposed projects will be cross-referenced with other water, sewer or complete streets projects so that the timing of stormwater facilities upgrades can be coordinated with other projects going on in the right-of-way.
      - Packaging of similar projects or within the same vicinity which will allow efficient implementation.
      - Citizen involvement – A project that is not accepted by the local community can be problematic to implement and can put staff and elected officials in a difficult position.
      - Cost-benefit – A favorable cost-benefit ratio makes it easier to obtain grant funding and have acceptance from the local community and elected officials.

- Multi-purpose – A project that can provide benefits in multiple areas (e.g., flood protection, water quality, recreation, etc.) has a greater chance of having a favorable cost-benefit ratio and having community acceptance.

- Operations and maintenance (O&M) – The O&M associated with a project is an important consideration. To help with that, the CITY's O&M staff will be included at the review stage to understand their concerns and adjust the recommendations to make it easier and less costly to maintain.

e. Capital and operational costs

4. Permitting

   a. Recommend stormwater improvement projects which comply with Environmental Resource Permit (ERPs), National Pollutant Elimination System (NPDES) and Total Maximum Daily Load (TMDL) goals for impaired waters.

   b. SFWMD Conceptual ERP Support - Complete a SFWMD Conceptual Environmental Resource Permit (ERP) Application for the CITY-wide approved CIP, attend one meeting to present the application to the District reviewers, and provide up to one request for additional information (RAI) response as needed.

5. Grant, Loans, and Bonds Review - Funding sources considered will include WIFIA, State SRF, Storm Water and Water quality grants as well as FDEP funding grants, State Legislature Appropriations, and SFWMD Local Cost Sharing programs.

6. Design and Construction Standards – CONSULTANT will make recommendations for the CITY's storm water design and construction standards based on anticipated sea level rise and storm surge. The goal is to make future storm water infrastructure adaptable to a range of future climate impacts.

TASK 6. Public Involvement and Community Engagement (Year One and Year Two)

As part of Project Outreach Plan, CONSULTANT will develop clear goals, determine audiences, key stakeholders, and develop appropriate lists for distribution of such information. Target audiences include:

- City Commissioners (individual meetings, if requested)
- Residents & Area Businesses
- Neighborhood Associations
- Business Community (Chamber of Commerce event)
- City Management and Department Staff

TASK 6.A Public Involvement and Community Engagement (Year One)

Initial outreach material will be developed regarding the project, specifically a flyer for public consumption. These outreach materials will be in the form a flyer for printing to be distributed, as needed, and also digital forms for use in emails, on social media and on the CITY's website. Meetings will include the following:

1. Initial District Workshops - CONSULTANT will assist in the coordination and planning of the initial Workshops to share the project goals, educate the community on sea level rise science, and solicit early feedback on areas of flooding concern. The audiences for and locations of each Workshop will be coordinated with the CITY, but it is recommended to divide the CITY based upon Commission districts, holding a total of three (3) meetings. CONSULTANT will assist with the creation of promotional materials, but the CITY will assist in the advertising the workshops, mailers to residents, and securing the venue for promoting the Workshops.
2. Public Information Meetings - CONSULTANT will coordinate, present and facilitate public meetings and will assist in the development of presentations and handout materials, coordinating the final materials. CONSULTANT will coordinate and facilitate three (3) public information meetings to advance public information program on the project, share the goals of the project, and receive initial public feedback. The format for these meetings will be town hall style where the CONSULTANT and CITY staff will present the details of the planning effort. Community input will also be solicited from the public at this time to allow the community to share concerns early in the process. CITY will be responsible for advertising the meeting and securing a venue for the meetings.
3. Commissions Meetings -Assist the CITY in facilitating up to 5 presentations to the City Commission, community at large, or stakeholders.

TASK 6.B Public Involvement and Community Engagement (Year Two)

1. Final Public Workshops – CONSULTANT will assist in the coordination and planning of Final Public Workshops at the appropriate time during the project to share the master plan, capital improvements prioritization list, as well as detail some of the projects that are proposed as part of the master plan. As with the previous meetings, the audiences for and locations of each Workshop will be coordinated with the CITY. CONSULTANT will assist with the creation of promotional materials, but the CITY will assist in the promotion of the Workshops. CONSULTANT will coordinate, present and facilitate public meetings and will assist in the development of presentations and handout materials, coordinating the final materials. CONSULTANT will coordinate and facilitate five (5) public information meetings to advance public information program on the project, share the goals of the project, and receive initial public feedback.

TASK 7. Stormwater Master Plan (Year Two)

The CONSULTANT will develop the SWMP Report and will develop a digital (pdf) and five hardcopies of the SWMP Report with Appendices. The Report will include an update to the sections of the prior Stormwater Master Plan. The SWMP is anticipated to consist of the following sections:

a. Executive Summary
b. Introduction
c. Existing Stormwater Systems including updated LiDAR and City's Stormwater GIS maps
d. Systems Requirements
e. Systems Evaluation and Cost Estimates

f. City Approved Proposed Basins/Neighborhood Conceptual Stormwater Improvement

g. Neighborhood Drainage Improvement Projects

h. Conceptual Design and Levels of Service

i. Stormwater System Capital Improvement Program

j. Implementation Schedule and Potential Funding Sources

k. Appendices

TASK 8. Additional Services Contingency Allowance (Year One and Year Two)

In developing this Project, CONSULTANT may be requested to perform additional work considered beyond the scope of Basic Services as specified and authorized by the CITY in accordance with the Agreement, including but not limited to:

a. The CONSULTANT will set up and apply a 2-dimensional USEPA Environmental Fluid Dynamics Code (EFDC) hydrodynamic and water model for the North and South Lake system to address the Broward County permit application RAI and potential evaluations for additional pump station discharges into the systems.

   The EFDC model would be simulated for a typical range of tidal cycles with stormwater flows superimposed from the City-wide USEPA SWMM for a 5-year /24-hour event and a 100-year /72-hour event for the pump discharges. Results will be summarized in tabular form.

   CONSULTANT will prepare responses to any requests for additional materials within 30 days of issuance. Response will include written responses and any necessary demonstrative simulations.

b. Additional meetings, supplemental model analyses, special studies, model refinements, additional required data gathering, survey, testing, and field work, GIS work and database enhancements, development of supplemental web-based data collaboration tools and applications, training, or other desired work..

c. Provide technical support to assist ongoing data configuration, data maintenance, and web and mobile applications implementation beyond that in the basic scope of services and installation of data on CITY's system.

d. North Lake and South Lake Stormwater Model - The CONSULTANT will develop a 2-D model platform subsequent with meeting with Broward County. This allowance includes development of the model to meet the expected permit requirements. Additional analysis on sediment data is not included. Oversight and review of CIP program implementation and progress.

e. If regulators submit more than one Requests for Additional Information (RAIs), this allowance will capture the additional coordination/ response required.

f. Support of conceptual designs and cost estimates for locations so that the work will be shovel ready quickly as money becomes available. The list of proposed projects will also be cross-referenced with other water, sewer or complete streets projects so that the timing of

stormwater facilities upgrades can be coordinated with other near-term projects going on in the right-of-way.

g. CONSULTANT will contract with a specialist sub-contractor, to provide the CITY with two separate four-day PMP training classes. Pricing for each four-day training class assumes (is budgeted for) up to ten (10) attendees per class.

h. Additional Public Involvement -

- Project Update Meetings - CONSULTANT will provide a total of three (3) project updates on regular intervals based on a created template that can be shared with the general public, and CITY staff and leadership. These updates identify project progress, graphics, and create a transparent process for the community.
- Resilience Vision - The SWMP is the CITY's roadmap to resilience and will be branded to create resilient infrastructure factsheets that will share the existing adaptation work of the CITY. Four (4) adaptation factsheets will be created providing examples of the type of infrastructure that will be proposed as part of the Stormwater Master Plan Update.

i. FEMA Coordination

- FEMA CRS Program Review and Support - The CONSULTANT will review and provide recommendations for required information that will assist the CITY in complying with the National Flood Insurance Program's Community Rating Services (NFIP-CRS) requirements. CONSULTANT will review the CITY's recent CRS activities, score sheets, and timing for upcoming assessments and recommend deliverables to synchronize with this project. Likely activities include the completion of a 2100 sea level rise scenario and a model that could be used for subsequent use as part of the completion of a Watershed Master Plan (which is necessary for a Class 4 rating). Findings will be summarized in a memorandum to the CITY and transmitted electronically.
- FEMA Advocacy - CONSULTANT will review the CITY's pending preliminary Coastal RISK Maps and attend up to three meetings on behalf of the CITY to discuss maps with FEMA and other affected stakeholders. CONSULTANT will prepare up to two sets of written comments in response to inquiries from FEMA. Comments will be reviewed with the CITY as they are developed, and the CITY will transmit official comments to FEMA for inclusion in the public record.

j. Model Training - Provide on-site training for up to 24 hours on the USEPA SWMM model with user manuals and training materials. Training will include model setup and application for the SWMP, sea level rise considerations, example development review, and an example CIP project evaluation.

k. Policy Review and Recommendations - CONSULTANT will explore specific policies that will reduce flood risk and assist with the overall resilience of the CITY. CONSULTANT will determine if and how the plan can provide addition points through the Community Rating System.

Such additional work and corresponding fees shall be authorized through supplemental authorization.

DELIVERABLES

Task 1 - Kick off meeting minutes; Monthly status reports

Task 2 - Meeting minutes and schedule updates; Data Gap Analysis; Listing of recommendations for required information for (NFIP-CRS) requirements

Task 3 - Electronic (pdf) Technical Memoranda (Model Development, Model Application, Alternatives Evaluations) and Updated City Stormwater Infrastructure Database (GIS)

Task 4 - Digital files of GIS SLR flood maps

Task 5 - Baseline exposure, vulnerability, and risk scoping analysis of all assets and facilities provided as GIS and tabular data inventory of analysis outputs; Twenty-year Capital Improvement Plan

Task 6 - Presentation materials for public meetings in digital format; I

Task 7 - Stormwater Master Plan (pdf); Digital media of model files (input and output) for all scenarios performed

CITY'S RESPONSIBILITIES

CITY will:

1. Provide available data as requested.
2. Provide seawall survey and ownership data performed by others.
3. Attend and participate in periodic project progress meetings as requested at project milestones and assist in coordination of meetings with CITY staff and stakeholders.
4. Assist CONSULTANT to the extent possible with obtaining information from sources or agencies unresponsive to CONSULTANT.
5. Perform timely reviews of deliverables.
6. Assign a direct single point of contact at the CITY assigned to the CONSULTANT for this project.

BASIS OF ESTIMATE/ASSUMPTIONS

1. CITY stormwater system is comprised of 225 miles of stormwater infrastructure and is represented by the data within the provided GIS. The PSMS is populated with pertinent data for development of the models.
2. Modeling of the North and South Lakes area is not included in this initial phase.
3. CITY will request and obtain information on other interconnected stormwater systems (in electronic format) from entities such as FDOT, neighboring municipalities, Broward County in a timely manner at the outset of the project.
4. CONSULTANT will map the location of stormwater features within the accuracy of information available from key source documents. Where features are visible on aerial

imagery, they will be referenced. Where features are not available, the location will be estimated using standard industry practices. Field survey will not be completed to verify existing available information within the current GIS database.

5. Field survey will be used to map areas that are deemed incomplete or inaccurate with respect to the PSMS. As the extent of these areas are unknown, this budget may only cover a portion of the field work necessary to complete system mapping of incomplete areas. If additional field verification is required, CONSULTANT will provide CITY with a supplemental authorization for additional services to complete this effort.
6. Seawall survey and ownership is being performed by others and will be provided as a GIS file at the outset of the project for use by the CONSULTANT.
7. CONSULTANT will utilize Broward County Sea Wall Ordinance to add sea wall heights of 4 and 5 in the future…
8. GIS development does not include implementation of a web application. CITY's existing web application will be used to help the CITY view GIS information during the GIS development process. This tool will be used to support more efficient collaboration and quality control.
9. Recommendations for stage-gauge monitoring network does not include detailed design, purchase, construction, connection, or monitoring of equipment by the CONSULTANT

TIME OF COMPLETION / SCHEDULE

CONSULTANT shall commence work within 14 calendar days after issuance of a written notice-to-proceed (NTP) and purchase order (PO) from the CITY. Timeframe for completion is estimated to be approximately 24 months as shown on Figure 2. This schedule is approximate as it is dependent upon the accuracy and adequacy of the provided existing data and the extent of required data gathering and field services to be performed to complete the scope of work. Accordingly, schedule updates will be provided by the CONSULTANT as the project milestones progress.

COMPENSATION AND PAYMENT

In accordance with the Attached Fee Proposal (Exhibit ? to the Agreement), the CONSULTANT will be compensated for services performed under this Work Order as follows:

1. For the Services performed under Tasks 1 through 7 of this Authorization, CITY agrees to pay a Lump Sum fee of $2,075,655 for Year 1 services and a Lump Sum of $2,082,413 for Year 2 including other direct costs and subconsultants. A Not-To Exceed (NTE) allowance of $545,645 is provided for compensation of Task 8 Additional Services which is not to be used by CONSULTANT without prior written approval of the Department Director or its designee. The total value of this work order is a NTE of **$4,703,712.**

2. CONSULTANT will submit monthly invoices for partial payments to be made in proportion to the estimated percentage of work completed for each task. For invoicing purposes only, Table One provides the estimated total value by task. A written project status report will accompany each progress billing.

Table One – Value by Task for Invoice Purpose Only (TBD)

Task	Description	Value

			PROFESSIONAL SERVICES							PROFESSIONAL SUPPORT SERVICES					PROJECT SUPPORT SERVICES				SUBCONSULTANTS										
		CDM Smith Total Hours	Senior Officer	Senior Technical Expert/ Lead Engineer	Associate/ Senior Project Manager	Principal	Senior Professional/ Engineer	Professional II/ Engineer		Senior Stormwater Modeler	Staff Stormwater Modeler	Senior GIS Specialist	Staff GIS Specialist		Contract Administrator/ Project Administration	Document Control Specialist		CDM Smith Total Labor	Anfield Consulting (Grant, Loans, and Bonds)	Biscayne Engineering (Survey)	Brizaga (Public Outreach)	Collective Water (QC and Water Quality)	Curtis + Rogers (Resilience Infrastructure)	FernLeaf (Vunerability Assessment, Social Equity)	Nutting Engineers (Geotechnical)	Tetra Tech (Pump Station, Infrastructure CIP)	Tobon Engineering (CIP Prioritization)	PMP Certification Firm	Reimbursables	
	Bill Rate >		$ 285.00	$ 255.00	$ 234.00	$ 210.00	$185.00	$ 150.00		$ 205.00	$ 135.00	$ 190.00	$ 130.00		$ 115.00	$ 75.00													
	Contract Type: Lump Sum																											
Year 1																												
Task 1	Kick off Meeting, Project and Quality Management	644	52	196	78	44	2	64		76	54	2	38		24	14		$ 134,262				$ 8,657						$ 1,500	$ 144,419
Task 2	Data Collection and Evaluation Phase	3412	42	226	98	40	0	672		44	8	64	2218		0	0		$ 512,332	$ 5,500	$ 275,000		$ 11,660	$ 38,500		$ 33,000	$ 55,000		$ 1,000	$ 931,992
Task 3	Stormwater Modeling and CIP Development Phase	4078	88	492	70	24	16	68		1240	1764	0	252		64	0		$ 717,580				$ 82,203		$ 20,900		$ 55,000	$ 5,500	$ 500	$ 881,683
Task 4	Sea Level Rise and Storm Surge Evaluation and Considerations	0	0	0	0	0	0	0		0	0	0	0		0	0		$ -										$ -	$ -
Task 5	Capital Improvement Program Phase and Conceptual Permit Application	0	0	0	0	0	0	0		0	0	0	0		0	0		$ -										$ -	$ -
Task 6	Public Involvement and Community Engagement	158	38	49	19	20	0	0		32	0	0	0		0	0		$ 38,531			$ 57,530		$ 11,000	$ 5,500				$ 5,000	$ 117,561
Task 7	Stormwater Master Plan	0	0	0	0	0	0	0		0	0	0	0		0	0		$ -										$ -	$ -
																		$ 1,402,705											**$ 2,075,655**
Year 2																													
Task 1	Kick off Meeting, Project and Quality Management	634	50	196	76	42	0	64		76	54	0	38		24	14		$ 132,054										$ 1,500	$ 133,554
Task 2	Data Collection and Evaluation Phase	0	0	0	0	0	0	0		0	0	0	0		0	0		$ -										$ -	$ -
Task 3	Stormwater Modeling and CIP Development Phase	2862	48	128	46	0	0	124		856	1284	0	296		80	0		$ 472,184				$ 158,472		$ 56,100				$ 500	$ 687,256
Task 4	Sea Level Rise and Storm Surge Evaluation and Considerations	348	26	68	12	0	0	16		136	16	0	74		0	0		$ 69,618										$ 1,000	$ 70,618
Task 5	Capital Improvement Program Phase and Conceptual Permit Application	1350	112	336	44	44	40	200		176	238	0	104		56	0		$ 262,706	$ 16,500			$ 34,705	$ 99,000			$ 220,000	$ 40,271	$ 1,000	$ 674,182
Task 6	Public Involvement and Community Engagement	474	114	147	57	60	0	0		96	0	0	0		0	0		$ 115,593			$ 81,180		$ 22,000	$ 15,400				$ 5,000	$ 239,173
Task 7	Stormwater Master Plan	888	56	142	90	40	0	160		80	160	0	40		120	0		$ 162,630								$ 110,000		$ 5,000	$ 277,630
																		$ 1,214,785											**$ 2,082,413**
Task 8	Additional Services Contingency Allowance																												
	Monitoring TM	70	2	0	0	4	0	56		4	0	0	4		0	0		$ 11,150											$ 11,150
	2D North and South Lake Modeling		12	60	10	4	2	10		180	252	0	36		8			$ 100,290											$ 100,290
	Additional Field Survey/ Geotech Support	216	0	0	28	8	0	120		12	0	0	48		0	0		$ 34,932		$ 165,000									$ 199,932
	Additional Public Involvement (Project Updates & Resilience Vision)	0																$ -			$ 24,915								$ 24,915
	FEMA Coordination (Flood Maps & CRS)	0																$ -				$ 65,258							$ 65,258
	Regulatory/ Legislative Support	0																$ -	$ 11,000										$ 11,000
	Additional Vunerability Assessments (Critical Access/ Mobility, Business Imp	0																$ -						$ 100,100					$ 100,100
	PMP Training	0																										$ 33,000	$ 33,000
																		$ 146,372											**$ 545,645**
																		$ 2,763,862	$ 33,000	$ 440,000	$ 163,625	$ 360,954	$ 170,500	$ 198,000	$ 33,000	$ 440,000	$ 45,771	$ 33,000	**$ 4,703,712**