

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANT WORK PLAN
DEP AGREEMENT NO.: R2115**

ATTACHMENT 3

I. TITLE PAGE

1. PROJECT TITLE: Vulnerability Assessment

2. GRANTEE Contact Information:

Organization Name: City of St. Augustine Beach

Name of Authorized Signer: Max Royle

Title: City Manager

Address: 2200 A1A South

City: St Augustine Beach

Zip Code: 32080

Area Code and Telephone Number: (904) 471-2122 ext. 175

E-mail Address: mroyle@cityofsab.org

3. GRANT MANAGER Contact Information:

Organization Name: Public Works Department

Name: William Tredik

Title: Public Works Director

Address: 2200 A1A South

City: St Augustine Beach

Zip Code: 32080

Area Code and Telephone Number: (904) 471-1119

E-mail Address: btredik@cityofsab.org

4. FISCAL AGENT Contact Information:

Organization Name: Finance Department

Name: Patty Douylleiz

Title: Finance Director

Address: 2200 A1A South

City: St Augustine Beach

Zip Code: 32080

Area Code and Telephone Number: (904) 471-2122 ext. 103

E-mail Address: pdouylleiz@cityofsab.org

5. FEID No. (a.k.a. Tax ID#): 59-60560946 Seq No. 011

6. WORK PERFORMED BY: (Select only one)

 Grantee ONLY
 X Subcontractor ONLY
 BOTH the Grantee & Sub-Contractor
 To Be Determined

7. SUBCONTRACTORS CONTACT INFORMATION: *(If applicable & known)*

Organization Name: CMT
Name: Gary Sneddon, PE
Title: Jacksonville, FL Office Manager
Address: 7400 Baymeadows Way, Suite 220
City: Jacksonville
Zip Code: 32256
Area Code and Telephone Number: (904) 448-5300
E-mail Address: gsneddon@cmtengr.com

8. PROJECT LOCATION:

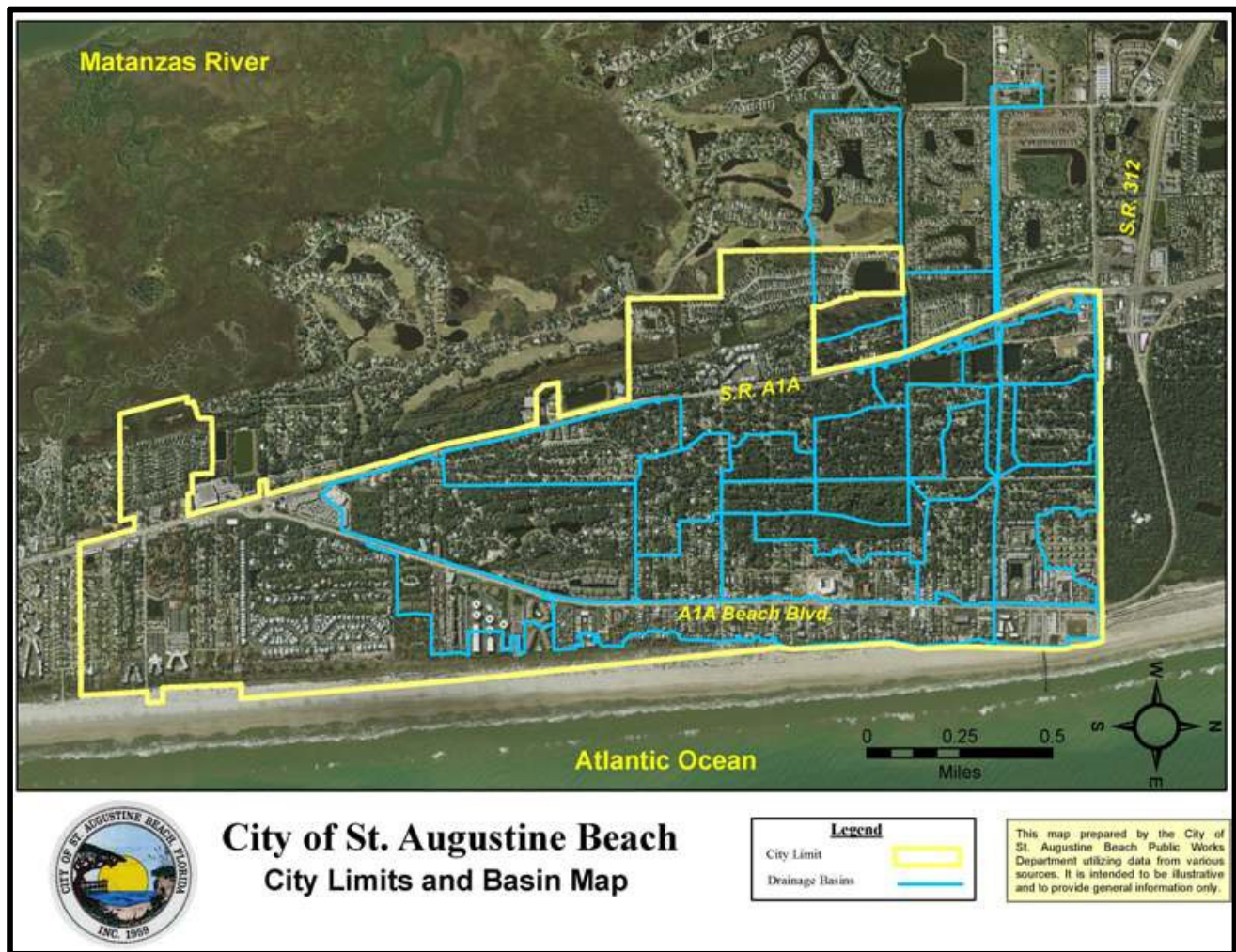
A. List of County(ies): St Johns

B. List of City(ies)/Town(s)/Village(s): City of St Augustine Beach

C. State Lands Lease Agreement Number(s): N/A
Provide lease agreement number(s) for any work that will be performed on State Lands. If work will not be on any state lands, please indicate N/A.

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II. WORK PLAN



9. **PROJECT SUMMARY:** St. Augustine Beach is requesting funding for a Coastal Vulnerability Assessment and Adaptation Plan to support compliance with Peril of Flood legislation set forth in Sec. 163.3178(2)(f), Florida Statutes. The Plan will analyze City vulnerabilities to sea level rise, extreme tides and storm surge, and propose adaptation measures. The City and the Northeast Florida Regional Council (NEFRC) will engage the community in a public workshop, to maximize involvement in Plan development. The NEFRC's *Regional Resilience Exposure Tool* will be utilized to further public engagement in this process. Community feedback will be incorporated into the Final Plan, which will be presented to the City Commission at a second public meeting. Strategies developed will support resiliency planning efforts and guide future capital improvement plan development.
10. **PROJECT DESCRIPTION:** Bordered by the Atlantic Ocean on the east, Matanzas River on the west and Salt Run to the north, St. Augustine Beach is a small coastal community, vulnerable to the impacts of sea level rise and coastal flooding. The City currently has a Conservation/Coastal Management Element in its Comprehensive Plan. The current Coastal Management Element mandates that the city participate with the NEFRC in developing a local mitigation strategy to better prepare the City for natural disasters and to lessen the damages from such disasters.

Recent damage to the City's master drainage system caused by Hurricanes Matthew and Irma – in conjunction with three large storms in four years – brings home the reality of the trend towards increased

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frequency and intensity of severe weather events. A Comprehensive Plan Amendment – including a new Sea Level Rise Objective and supporting Policies – is currently in the final stages of approval at the State.

The City is also currently updating its capital improvements plan (CIP). Vital to the development of a resilient CIP is a clear understanding of vulnerabilities in the face of climate change and rising sea levels. The City must understand where vulnerabilities lie, and what adaptability measures can be taken to maximize long-term resiliency. This Plan provides an opportunity to better understand and document these vulnerabilities, engage the citizenry and develop consensus on the need to invest in a sustainable future. The findings in the plan will be used to evaluate and prioritize future capital improvements and resiliency measures.

The Plan will consist of the following key tasks:

- Updating Drainage and Topographic GIS Mapping to determine areas vulnerable to sea level rise and storm surge, including:
 - Analyze the City’s coastal dune system to find vulnerabilities to storm surge
 - Update and analyze public and private drainage conveyances to determine vulnerability to backflow from the Matanzas River and Salt Run
 - Mapping of all low-lying lands which may provide overland conveyance of storm surge into the City of St. Augustine Beach
- Updating the Citywide stormwater model to include new data, including:
 - Running the updated model for multiple storm events, including at least two sea level rise scenarios in conjunction with current flooding events during high tide, storm surge and stormwater runoff.
 - Develop GIS maps showing inundation associated with various model runs. This process will yield a comprehensive set of maps and an interactive GIS data base to allow for the results to be displayed dynamically at public workshops and public hearings. The first public workshop will be conducted at the completion of the modeling update to present the maps and to summarize the results through a PowerPoint presentation and other appropriate graphic methods.
- Synthesize the results from the first two phases and develop strategies to reduce flood risk from sea level rise and storm surge. The scope of strategies may include land use policies, land acquisition, regulatory strategies, incentive-based programs and engineering solutions. These options will be evaluated based on feasibility, public acceptance, cost effectiveness and other measures. Following a second public meeting, objectives and policies will be drafted in the form of a prioritized action plan to be used in development of future capital improvement programs.

11. PROJECT NEED AND BENEFIT:

- A. Explain the demonstrated need, which the project addresses.** Located between the Atlantic Ocean, the Matanzas river and Salt Run, the City of St. Augustine Beach is inherently vulnerable to flood events. In order to reduce flood potential, the City operates and maintains a citywide drainage system and regional stormwater treatment area and continues to implement drainage improvements outlined in its Master Drainage Plan. Unfortunately, the City has not yet developed a comprehensive policy framework and prioritized action plan to reduce and mitigate the potential impact of continued sea level rise and the compounding effect when evaluated in conjunction with storm surge. The requested grant funding will enable the City to clearly see its vulnerabilities to these threats. The updates to its drainage and topographic mapping, stormwater modeling, and the development of high-quality comprehensive GIS maps and effective visual aids will allow the public and elected officials to readily comprehend the spatial extent, severity and impacts of sea level rise and storm surge. As the City continues to redevelop, elected officials will thus be in a

better position to make informed decisions in prioritizing policy alternatives, regulatory options and capital investments to effectively reduce and mitigate the threat of coastal flooding.

B. Explain how the proposed project meets the purpose of one or more of the Goals and Priorities for FRCP. The requested grant funding will allow the City to better understand the vulnerabilities associated with sea level rise and storm surge. The project will address several aspects of priority areas, including:

- **Compliance with the “Peril of Flood” statute (Sec. 163.3178(2)(f) F.S.)** - The City currently has a Coastal Management Element in its comprehensive plan. A Comprehensive Plan Amendment – including the addition of a Sea Level Rise Objective and supporting Policies – is in the final stages of State approval. This Vulnerability Assessment and Adaptation Plan will support both the current Comprehensive Plan and the Proposed amendments and further the City’s compliance with the Peril of Flood Statute by including strategies and engineering solutions to reduce flood risk in coastal areas which result from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise. The deliverables associated with this Plan will allow city elected officials, staff and citizens to better prioritize policy alternatives, regulatory options and capital investments to effectively reduce and mitigate the threat of coastal flooding.
- **Development of Adaptation Action Areas and associated Goals, Objectives, and Policies for communities with a Coastal Management Element in their comprehensive plan** - Though the City’s Coastal Management element complies with the requirements of the Peril of Flood Statute, the Plan will assist the City in developing Adaptation Action Areas. The City is a low-lying coastal community that experiences coastal flooding due to extreme high tides and storm surge and is very vulnerable to the impacts of sea level rise. Outputs will include products such as maps showing at least two sea level rise scenarios in conjunction with high tide events, storm surge, flash floods, and stormwater runoff; sign in sheets and summaries from at least two public meetings; model ordinance language; draft goals, objectives, and policies.
- **Vulnerability Assessments, Adaptation Plans or Resilience Plans other than that necessary for compliance with Peril of Flood requirements** – The Plan will include a vulnerability assessment (VA) consisting of measuring the impact of sea level rise on the City of St. Augustine Beach and identifying the people, infrastructure, and land uses that may be affected. Strategies and an adaptation plans will use the outputs from the VA to identify potential actions to address the vulnerabilities found.
- **Regional collaboration efforts** – The City intends to work closely with the NEFRC and St. Johns County in the development of the Plan.

C. Discuss how the project is feasible and can be completed by the grant period deadline. The schedule assumes that the Grant Agreement will be fully executed by July 1, 2020. The City of St. Augustine currently has a continuing contract with CMT to provide engineering services in support of City projects. CMT has a detailed knowledge of City infrastructure, access to the City GIS layers and a working ICPR stormwater model of the City’s drainage system. Their knowledge and abilities will allow them to quickly complete the initial phases of the process and complete the Plan within the required timeframes.

D. Explain how this project is addressing social vulnerability or vulnerability of historic resources or stormwater management systems. The Plan will provide significant help addressing social vulnerability. Some of the benefits of the Plan include:

- Identification and mapping of areas prone to flooding due to sea level rise and storm surge will allow better estimates of needed supplies such as food, water medicine and bedding during and after natural disasters
- Using the maps to determine the number of likely impacted homes will help decision makers estimate the number of emergency personnel required
- Using the maps to identify the areas which will need continued support to recover after a flooding event.

The City will coordinate with and share Plan information with St. Johns County, the NEFRC and others to best allocate resources and reduce social vulnerability.

The Plan will also allow the City to best plan for sea level rise and take appropriate action to harden its infrastructure to the effects of increased storm surges and more frequent tidal flooding. These actions will significantly reduce the impacts on historic resources and stormwater resources and help reduce social vulnerability in the City.

12. DESCRIPTION OF PROJECT OUTCOMES: The anticipated outcomes of from the Plan include the following:

- Updated GIS database identifying all areas susceptible to coastal flooding associated with sea level rise, storm surge, extreme tides and flash flooding. The updated GIS database will allow easy development of maps for use by City staff, elected officials, NEFRC, St. Johns County, citizen groups and others to better visually describe the City's vulnerabilities and areas.
- Identification of and mapping of pathways for storm surge into the City. A comprehensive understanding of these pathways – and the ability to graphically demonstrate them during planning – is essential to allowing decision makers to best understand needs and anticipated outcomes of policy changes, capital improvements, and resiliency measures.
- An updated master stormwater model. Updating the City stormwater model is essential in allowing the City to quickly determine impacts associated with development, capital improvements or other changes which may impact conveyance of runoff. Application of this model with consideration of sea level rise and predicted storm surge will help policy makers better determine the appropriate allocation of funds for adaptation measures.

13. BUDGET SUMMARY: Allowable budget categories and form of payment with the costs for this project are listed in the table below.

BUDGET SUMMARY BREAKDOWN

Budget Categories	Payment	Task 1	Task 2	Task 3	Grant Amount Awarded
Salaries & Fringe	Fixed Price	\$0	\$0	\$0	\$0
Contractual Services	Fixed Price	\$17,500	\$35,000	\$20,000	\$72,500
GRANT AGREEMENT TOTAL		\$17,500	\$35,000	\$20,000	\$72,500

- A. Describe how the project costs was determined:** Project costs represent an opinion of probable costs for the consultant to complete work as detailed in the project workplan. This estimate is based upon the likely consultant cost for each component of the work, considering all aspects of the work effort, including data collection, analysis, GIS layer construction, modeling, public meetings, and final synthesis and preparation of the Final Plan. The City will work with the consultant to ensure that the Final Plan is completed within the grant amount requested and will be responsible for any expenditures greater than the requested Grant amount.

B. Contractual Services Selection*: Upon a selected Sub-Contractor(s) (if applicable), the Grantee will Provide a signed certification statement giving a description of the procurement process that was utilized for the selection of the sub-contractors. The description must include:

- a. What procurement process was utilized
- b. Justification as to how & why you made your final selection.
- c. For competitively obtained Sub-Contractor also include:
 - i. A list of all entities that you received bids/quotes from,
 - ii. Names and addresses of those entities that provided bids/quotes,
 - iii. Actual amounts of the bids/quotes that were submitted.

14. PROJECT TIMELINE: All tasks are to be completed and submitted no later than the task/deliverable due date listed in the table below. Requests for any change must be submitted prior to the current task/deliverable due date listed in the project timeline. Requests are to be sent via separate email to the Department's Grant Manager, with the details of the request being made and the reason for the request.

PROJECT TIMELINE

Task No.	Task Title	Deliverable Due Date	Task Amount
1	Drainage and Topographic GIS Mapping to determine areas vulnerable to sea level rise and storm surge	12/31/2020	\$17,500
2	Update of City stormwater model and output of findings	2/28/2021	\$35,000
3	Synthesis of results and development of strategies to reduce flood risk from sea level rise and storm surge.	4/30/2021	\$20,000
TOTAL			\$72,500

15. PERFORMANCE MEASURES: The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline. The Department's Grant Manager will review the task/deliverables to verify that they meet the specifications in the Grant Work Plan and this task description, to include any work being performed by any sub-contractor(s). Upon review and written acceptance by the Department's Grant Manager of all deliverables under this task, the Grantee may proceed with payment request submittal.

16. CONSEQUENCES FOR NON-PERFORMANCE: The Department will reduce each Task Funding Amount by 5% for every day that the task/deliverable(s) is not received on the specified due date in the most recent Project Timeline, for the Agreement. Should a Change Order or Amendment be requested on the date of or after the most current task/deliverable due date, the 5% reduction of that Task Funding Amount will be imposed until the date of the requested change is received, via email by the Department.

17. PAYMENT REQUEST SCHEUDLE: Grantee may submit a request for the Task Funding Amount to be paid using the Exhibit C, after all deliverables for that task have been approved by the Department. Request(s) for payment must include the Exhibit A showing 100% completion of that task and must be submitted within 45 days of the task/deliverable due date. Please refer to the [website Grants page](#) for "How to Request Payment", and "Checklist for Requesting Payment".

Or

Grantee may submit one request for the Grant Amount Awarded, by using the Exhibit C, after the project is 100% completed. The request for the Grant Amount Awarded, must include an Exhibit A showing 100% completion for all tasks, and must be submitted within 45 days of the last task/deliverable due date.

- 18. FUNDING SOURCE:** Grantee agrees to include on all publications, printed reports, audiovisuals (including videos, slides, and websites except that unless required under special terms of this Agreement, this requirement does not apply to audiovisuals produced as research instruments or for documenting experimentation or findings and which are not intended for presentation to the general public) or similar materials must include the DEP logo (which can be found on the Department's website at <https://floridadep.gov/resilience> or by contacting the Department's Grant Manager for a copy) and the following statement on, the following language.

"This work was funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Resilient Coastlines Program, by a grant provided by the Office of Resilience and Coastal Protection. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies."

The next printed line shall identify the month and year of the publication.

III. TASKS & DELIVERABLES

Task #1

- A. Title:** Update Drainage and Topographic GIS Layers and Mapping to determine and graphically depict areas vulnerable to sea level rise and storm surge.
- B. Goal:** Determine areas within the City of St. Augustine Beach vulnerable to sea level rise extreme tides and storm surge.
- C. Description:** The consultant shall review the City's existing GIS layers to determine their completeness in regard to pathways for inundation from sea level rise, extreme tides, and storm surges. The consultant shall gather, compile and input available existing survey, lidar, and other topographical information to update GIS layers in the City's GIS database. The Consultant shall conduct survey and field investigations, as necessary, to supplement available data and develop a comprehensive representation of pathways in which storm surge and coastal flooding could inundate the City. Using this supplemented GIS database, the Consultant shall create maps of all areas within the City subject to vulnerable to flooding due to their elevation and connection to receiving waters. These maps will be used to identify low-lying areas subject to potential flooding for various storm surge levels.
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
 - 1) Shapefiles and PDF of GIS layer and map showing the City's coastal dune system, highlighting areas vulnerable to penetration or over-wash from storm surge.
 - 2) Shapefiles and PDF of updated GIS Layer and Map showing all public and private drainage connections to receiving waters. Map shall include internal low-lying areas subject to coastal flooding through backflow of drainage conveyances

- 3) Shapefiles and PDF of GIS Layer and Map of all low-lying lands which may provide a pathway for overland conveyance associated with sea level rise, extreme tides or storm surge. Map shall include internal low-lying areas, which may be subject to coastal flooding through overland flow of boundary low-lying areas.

Task #2

- A. Title:** Updating the Citywide stormwater model to include all new data
- B. Goal:** Provide updated City Stormwater system model and GIS maps delineating areas of likely flooding due to sea level rise, extreme tides and storm surge.
- C. Description:** Using information gathered in Task 1, the Consultant shall update the City ICPR stormwater model. New information shall be entered as updated input criteria and existing information shall be revised as appropriate. The updated model will be run for multiple rainfall events, including at least two sea level rise scenarios in conjunction with current flooding events during high tide and storm surge. GIS maps will be developed showing inundation associated with various the various model runs. This process will yield a comprehensive set of maps and an interactive GIS data base to allow for the results to be displayed dynamically at public workshops and public hearings. As part of this task, the first public workshop will be conducted at the completion of the modeling update to present the maps and to summarize the results through a PowerPoint presentation and other appropriate graphic methods. The NEFRC's *Regional Resilience Exposure Tool* will be utilized to further public engagement.
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
 - 1) Summary report describing the methods and results of updating the stormwater model
 - 2) Existing Conditions model results associated for select rainfall events in conjunction with extreme high tides, predicted storm surge and factoring in at least two predicted sea level rise scenarios.
 - 3) Shapefiles and PDFs of the updated GIS maps demonstrating areas subject to coastal flooding based upon model runs. These will be refined version of the maps developed in Task 1 and will reflect anticipated inundations considering the conveyance storm surge through the City drainage network and overland.
 - 4) Public workshop and associated presentations and exhibits.
 - a. Copies of all workshop announcements/advertisements
 - b. Agendas and sign-in sheets from each workshop/meeting, indicating location, date, and time of workshop/meeting
 - c. Presentation(s) and other meeting materials/handouts from each workshop/meeting
 - d. Brief summary report from each workshop/meeting including attendee feedback and workshop outcomes
 - e. Any materials created at each workshop/meeting (as applicable)

Task #3

- A. Title:** Synthesize the results from the first two phases and finalize the Coastal Vulnerability Assessment and Adaptation Plan to develop strategies to reduce flood risk from sea level rise, extreme tides, storm surge and flash flooding.

- B. Goal:** Develop strategies to reduce flood risk from sea level rise and storm surge, including recommended land use policies, land acquisition opportunities, regulatory strategies, incentive-based programs and engineering solutions.
- C. Description:** The results of the first two tasks will be synthesized into a comprehensive report identifying the City's vulnerabilities to sea level rise, extreme tides, storm surges and flash flooding. The final report shall include exhibits of all areas vulnerable to coastal flooding for the various selected storm events, considering at least two sea level rise scenarios and predicted storm surges. The final report shall also make recommendations as to how the vulnerable areas may be made more resilient and protected in the future. The Plan will identify key strategies and options which could be implemented in future capital improvements programs and will incorporate some of these ideas into the updated model for analysis of their effectiveness. These options will be evaluated based on feasibility, public acceptance, effectiveness, cost and other measures. The final plan will be presented at a second public meeting and will be reviewed and approved by the City Commission.
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Report on the updated stormwater model with strategies included to determine effectiveness of proposed solutions
 - 2) Final Coastal Vulnerability Assessment and Adaptation Plan with exhibits.
 - 3) Second public meeting and associated presentations and exhibits.
 - a. Copies of all workshop/meeting announcements/advertisements
 - b. Agenda and sign-in sheets from each workshop/meeting, indicating location, date, and time of workshop/meeting
 - c. Presentation(s) and other workshop/meeting materials from each workshop/meeting
 - d. Brief summary report from each workshop/meeting including attendee input and workshop/meeting outcomes
 - e. Any materials created at each workshop/meeting (as applicable)
 - f. Minutes, records of votes, and resolutions approved by the City Commission