



**AGREEMENT BETWEEN BROWARD COUNTY AND GEOSYNTEC CONSULTANTS, INC.,
FOR CONSULTANT SERVICES FOR 100-YEAR FLOOD ELEVATION MAP
AND ASSOCIATED MODELING
(RFP #R2114367P1)**

This Agreement ("Agreement") is made and entered into by and between Broward County, a political subdivision of the State of Florida ("County") and Geosyntec Consultants, Inc., a Florida corporation ("Consultant") (collectively referred to as the "Parties").

IN CONSIDERATION of the mutual terms, conditions, promises, covenants, and payments hereinafter set forth, the Parties agree as follows:

ARTICLE 1. DEFINITIONS AND IDENTIFICATIONS

The following definitions and identifications set forth below apply unless the context in which the word or phrase is used requires a different definition:

1.1 **Board:** The Board of County Commissioners of Broward County, Florida, which is the governing body of the Broward County government created by the Broward County Charter.

1.2 **Consultant:** The architect or engineer selected to perform the services pursuant to this Agreement.

1.3 **Contract Administrator:** The Director of County's Environmental Planning and Community Resilience Division, who is the representative of County concerning the Project. In the administration of this Agreement, as contrasted with matters of policy, all Parties may rely upon instructions or determinations made by the Contract Administrator; provided, however, that such instructions and determinations do not change the Scope of Services.

1.4 **Contractor:** The person, firm, corporation or other entity who enters into an agreement with County to perform the services for the Project.

1.5 **County Administrator:** The administrative head of County pursuant to Sections 3.02 and 3.03 of the Broward County Charter.

1.6 **County Attorney:** The chief legal counsel for County who directs and supervises the Office of the County Attorney pursuant to Section 2.10 of the Broward County Charter.

1.7 **County Business Enterprise or "CBE":** A small business located in Broward County, Florida, which meets the criteria and eligibility requirements of Broward County's CBE Program and must be certified by Broward County's Office of Economic and Small Business Development ("OESBD").

1.8 **Notice To Proceed:** A written authorization to proceed with the Project, phase, or task thereof, issued by the Contract Administrator.

1.9 **Project:** 100-Year Flood Elevation Map and Associated Modeling.

1.10 **Subconsultant:** A firm, partnership, corporation, independent contractor (including 1099 individuals), or combination thereof providing services to County through Consultant for all or any portion of the services under this Agreement.

ARTICLE 2. PREAMBLE

In order to establish the background, context, and frame of reference for this Agreement and to generally express the objectives and intentions of the respective Parties hereto, the following statements, representations, and explanations shall be accepted as predicates for the undertakings and commitments included within the provisions which follow and may be relied upon by the Parties as essential elements of the mutual considerations upon which this Agreement is based.

2.1 County has budgeted funds for the Project. This Project is funded with County funds.

2.2 Negotiations pertaining to the services to be performed by Consultant were undertaken with Consultant, and this Agreement incorporates the results of such negotiations.

ARTICLE 3. SCOPE OF SERVICES

3.1 Consultant's services shall consist of the phases set forth in Exhibit A, attached hereto and made a part hereof. Consultant shall provide all services as set forth in Exhibit A including all necessary, incidental, and related activities and services required by the Scope of Services and contemplated in Consultant's level of effort.

3.2 The Scope of Services does not delineate every detail and minor work task required to be performed by Consultant to complete the Project. If, during the course of the performance of the services included in this Agreement, Consultant determines that work should be performed to complete the Project which is in Consultant's opinion outside the level of effort originally anticipated, whether or not the Scope of Services identifies the work items, Consultant shall notify Contract Administrator in writing in a timely manner before proceeding with the work. If Consultant proceeds with said work without notifying the Contract Administrator, said work shall be deemed to be within the original level of effort, whether or not specifically addressed in the Scope of Services. Notice to Contract Administrator does not constitute authorization or approval by County to Consultant to perform the work. Performance of work by Consultant outside the originally anticipated level of effort without prior written County approval is at Consultant's sole risk.

3.3 Exhibit A is for the first portion of services related to the Project and that additional negotiations will be required for subsequent phases or for additional services except as otherwise provided herein. County and Consultant may negotiate additional scopes of services, compensation, time of performance, and other related matters for future phases of Project. If County and Consultant cannot contractually agree, County shall have the right to immediately terminate negotiations at no cost to County and procure services for future Project phases from another source.

3.4 Consultant shall pay its Subconsultants and suppliers providing services under this Agreement within fifteen (15) days following receipt of payment from County for such subcontracted work or supplies. Consultant agrees that if it withholds an amount as retainage from a Subconsultant or supplier, it will release such retainage and pay same within fifteen (15) days following receipt of payment of retained amounts from County. The Contract Administrator may, at its option, increase allowable retainage or withhold progress payments unless and until Consultant demonstrates timely payments of sums due to all its Subconsultants and suppliers.

**ARTICLE 4. TIME FOR PERFORMANCE;
CONTRACTOR DAMAGES; LIQUIDATED DAMAGES**

4.1 Consultant shall perform the services described in Exhibit A within the time periods specified in the Project Schedule included in Exhibit A; said time periods shall commence from the date of the Notice to Proceed for such services.

4.2 Prior to beginning the performance of any services under this Agreement, Consultant must receive a Notice to Proceed. Consultant must receive a Notice to Proceed from the Contract Administrator prior to beginning the performance of services in any subsequent phases of this Agreement. Prior to granting approval for Consultant to proceed to a subsequent phase, the Contract Administrator may, at his or her sole option, require Consultant to submit the itemized deliverables and documents identified in Exhibit A for the Contract Administrator's review.

4.3 In the event Consultant is unable to complete the above services because of delays resulting from untimely review by County or other governmental authorities having jurisdiction over the Project, and such delays are not the fault of Consultant, or because of delays which were caused by factors outside the control of Consultant, County shall grant a reasonable extension of time for completion of the services and shall provide reasonable compensation, if appropriate. It shall be the responsibility of Consultant to notify the Contract Administrator promptly in writing whenever a delay in approval by a governmental agency is anticipated or experienced, and to inform the Contract Administrator of all facts and details related to the delay.

4.4 In the event Contractor fails to substantially complete the Project on or before the substantial completion date specified in its agreement with County or if Contractor is granted an extension of time beyond said substantial completion date, and Consultant's services are extended beyond the substantial completion date, through no fault of Consultant, Consultant

shall be compensated in accordance with Article 5 for all services rendered by Consultant beyond the substantial completion date.

4.5 In the event Contractor fails to substantially complete the Project on or before the substantial completion date specified in its agreement with County, and the failure to substantially complete is caused in whole or in part by Consultant, then Consultant shall pay to County its proportional share of any claim or damages to Contractor arising out of the delay. By reference hereto, the provisions for the computation of delay costs/damages and any amounts included therein, whether direct or indirect, in the agreement between the Contractor and County are incorporated herein. This provision shall not affect the rights and obligations of either party as set forth in Section 10.8, Indemnification of County.

4.6 In the event services are scheduled to end due to the expiration of this Agreement, Consultant agrees that it shall continue service upon the request of the Contract Administrator. The extension period shall not extend for greater than three months beyond the term of this Agreement. Consultant shall be compensated for the service at the rate in effect when the extension is invoked by County upon the same terms and conditions as contained in this Agreement. The Purchasing Director shall notify Consultant of an extension authorized herein by written notice delivered prior to the end of the term of this Agreement.

ARTICLE 5. COMPENSATION AND METHOD OF PAYMENT

5.1 Amount and Method of Compensation

5.1.1 Maximum Amount Not-To-Exceed Compensation. Compensation to Consultant for the performance of Services identified in Exhibit A as payable on a "Maximum Amount Not-To-Exceed" basis, and as otherwise required by this Agreement, shall be based upon the Salary Costs as described in Section 5.2 up to a maximum amount not-to-exceed of \$716,894. Consultant shall perform all Services designated as Maximum Amount Not-To-Exceed set forth herein for total compensation in the amount of or less than that stated above.

5.1.2 Reimbursable Expenses. County has established a maximum amount not-to-exceed of \$1,000 for potential reimbursable expenses which may be utilized pursuant to Section 5.3. Unused amounts of those monies established for reimbursable expenses shall be retained by County.

5.1.3 Salary Costs. The maximum billing rates payable by County for each of Consultant's employee categories are shown on Exhibit B and are further described in Section 5.2.

If, for services designated as payable on a Maximum Amount Not-To-Exceed, Consultant has "lump sum" agreements with any Subconsultant(s), then Consultant shall bill all "lump sum" Subconsultant fees with no "markup." Likewise, Consultant shall bill, with no mark-

up, all maximum not to exceed Subconsultant fees using the employee categories for Salary Costs on Exhibit B as defined in Section 5.2 and Reimbursables defined in Section 5.3. All Subconsultant fees shall be billed in the actual amount paid by Consultant.

5.1.4 Phased Payments. Payments for Services shall be paid out pursuant to the project phasing specified in Exhibit A and in accordance with the percentage amount set forth below. The retainage amount set forth in Section 5.5 shall be applied to the percentage amount for each task stated herein.

Project Task	Fee %	Fee Amount/Task
Task 1: Project Kick off and Schedule Development	2.04%	\$14,628
Task 2: Initial Data Collection and Review	6.29%	\$45,124
Task 3: Community Stakeholder Meeting Support	6.66%	\$47,756
Task 4: Supplemental Data Collection Based on Stakeholder Meetings	14.51%	\$104,012
Task 5: Develop ArcGIS Tool - MODFLOW Groundwater Output to MIKE-SHE Boundary Conditions	2.44%	\$17,528
Task 6: Update Current Conditions MIKE-SHE/MIKE 11 Model	25.70%	\$184,264
Task 7: Develop Future Conditions MIKE-SHE/MIKE 11 Model Input	11.12%	\$79,722
Task 8: Future Model Execution and Results Processing	8.03%	\$57,536
Task 9: Develop ArcGIS Tool - Coastal Zone A Model Results Integration with MIKE-SHE	6.58%	\$47,156
Task 10: Develop ArcGIS Tool - Generate Future 100-year Flood Contour Map	4.6%	\$32,952
Task 11: CRS Evaluation and Recommendations	2.69%	\$19,308
Task 12: Presentation of Results to County and Stakeholders	2.4%	\$17,196
Task 13: Prepare and Submit Draft Summary Report	2.85%	\$20,400
Task 14: Prepare and Submit Final Summary Report	1.57%	\$11,280
Task 15: Project Management	2.52%	\$18,032
Total Services Fee	100%	\$716,894

5.1.5 The dollar limitation set forth in Section 5.1 is a limitation upon, and describes the maximum extent of, County's obligation to pay Consultant, but does not constitute a limitation, of any sort, upon Consultant's obligation to incur such expenses in the performance of services hereunder.

5.2 Salary Costs. The term Salary Costs as used herein shall mean the hourly rate actually paid to all personnel engaged directly on the Project, as adjusted by an overall multiplier which consists of the following: 1) a fringe benefits factor; 2) an overhead factor; and 3) an operating margin. Said Salary Costs are to be used only for time directly attributable to the Project. The fringe benefit and overhead rates shall be Consultant's most recent and actual rates determined in accordance with Federal Acquisition Regulations ("FAR") guidelines and audited by an independent Certified Public Accountant ("CPA"). For the purposes of this Agreement, the rates must be audited for fiscal periods of Consultant within eighteen months preceding the execution date of this Agreement. These rates shall remain in effect for the term of this Agreement except as provided for in this Section 5.2 inclusive of the subsections below.

5.2.1 Consultant shall require all of its Subconsultants to comply with the requirements of Section 5.2.

5.2.2 Salary Costs for Consultant and Subconsultants as shown in Exhibit B are the Maximum Billing Rates which are provisional, subject to audit of actual costs, and if the audit discloses that the actual costs are less than the costs set forth on Exhibit B for Consultant or any Subconsultant, Consultant shall reimburse County based upon the actual costs determined by the audit.

5.2.3 Unless otherwise noted, the Salary Costs stated above are based upon Consultant's "home office" rates. Should it become appropriate during the course of this Agreement that a "field office" rate be applied, then it is incumbent upon Consultant to submit a supplemental Exhibit B reflective of such rates for approval by Contract Administrator and invoice County accordingly.

5.2.4 The total hours payable by County for any "exempt" or "non-exempt" personnel shall not exceed forty (40) hours per employee in any week. In the event the work requires Consultant's or Subconsultant's personnel to work in excess of 40 hours per week, any additional hours must be authorized in advance, in writing, by the Contract Administrator. If approved, Salary Costs for additional hours of service provided by nonexempt (hourly) employees or exempt (salaried) employees shall be invoiced to County at no more than one and one-half of the employee's hourly rate and in a manner consistent with Consultant's or Subconsultant's applicable certified FAR audit and all other provisions of Section 5.2. In the event a "Safe Harbor" rate is elected for use by Consultant or Subconsultant, then the additional hours are payable at no more than the employee's regular rate.

5.2.5 Consultant and any of its Subconsultants may alternatively use a "Safe Harbor" combined fringe benefit and overhead rate of 110% in lieu of providing fringe benefit and overhead cost factors certified by an independent Certified Public Accountant in accordance with the FAR guidelines. The Safe Harbor rate, once elected, shall remain in place for the entire term of this Agreement, and be applicable for use as "home" and "field" fringe benefit and overhead rates, if applicable, and shall not be subject to audit under this Agreement. All other provisions of Section 5.2 remain in place.

5.2.6 Notwithstanding Section 5.2.5, if a Subconsultant that elected to use the "Safe Harbor" rate completes an independent CPA audit of its fringe benefit and overhead cost factors in accordance with the FAR guidelines during the term of this Agreement, it may submit a revised Exhibit B Salary Costs with a copy of the audit for review by County's Contract Administrator once during the Agreement term. If accepted by County's Contract Administrator, the hourly rates shall be set forth on an amended Exhibit B executed by the Contract Administrator and the Consultant, provided that no increase in the Maximum Amount Not-To-Exceed Compensation is authorized due to the revision.

5.3 Reimbursables. For reimbursement of any travel costs, travel-related expenses, or other direct nonsalary expenses directly attributable to this Project permitted under this Agreement, Consultant agrees to adhere to Section 112.061, Florida Statutes, except to the extent, if any, that Exhibit B-1 expressly provides to the contrary. County shall not be liable for any such expenses that have not been approved in advance, in writing, by the Contract Administrator. Reimbursable Subconsultant expenses are limited as described herein when the Subconsultant agreement provides for reimbursable expenses.

5.4 Method of Billing

5.4.1 For Maximum Amount Not-To-Exceed Compensation under Section 5.1.1. Consultant shall submit billings which are identified by the specific project number on a monthly basis in a timely manner for all Salary Costs and Reimbursables attributable to the Project. These billings shall identify the nature of the work performed, the total hours of work performed, and the employee category of the individuals performing same. Billings shall itemize and summarize Reimbursables by category and identify same as to the personnel incurring the expense and the nature of the work with which such expense was associated. Where prior written approval by Contract Administrator is required for Reimbursables, a copy of said approval shall accompany the billing for such reimbursable. Billings shall also indicate the cumulative amount of CBE participation to date. The statement shall show a summary of Salary Costs and Reimbursables with accrual of the total and credits for portions paid previously. External Reimbursables and Subconsultant fees must be documented by copies of invoices or receipts which describe the nature of the expenses and contain a project number or other identifier which clearly indicates the expense is identifiable to the Project. Subsequent addition of the identifier to the invoice or receipt by Consultant is not acceptable except for meals and travel expenses. Internal expenses must be documented by appropriate Consultant's cost accounting forms with a

summary of charges by category. When requested, Consultant shall provide backup for past and current invoices that records hours and Salary Costs by employee category, Reimbursables by category, and Subconsultant fees on a task basis, so that total hours and costs by task may be determined.

5.5 Method of Payment

5.5.1 County shall pay Consultant within thirty (30) calendar days from receipt of Consultant's proper statement, as defined by County's Prompt Payment Ordinance, ninety percent (90%) of the total shown to be due on such statement. When the services to be performed on each phase of the Project are fifty percent (50%) complete and upon written request by Consultant and written approval by the Contract Administrator that the Project is progressing in a satisfactory manner, the Contract Administrator, in his or her sole discretion, may authorize that subsequent payments for each phase may be increased to ninety-five percent (95%) of the total shown to be due on subsequent statements. No amount shall be withheld from payments for Reimbursables.

5.5.2 Upon Consultant's satisfactory completion of each phase and after the Contract Administrator's review and approval, County shall remit to Consultant that ten percent (10%) or five percent (5%) portion of the amounts previously withheld. Final payment for the Project must be approved by the Director of the Broward County Purchasing Division.

5.5.3 Payment will be made to Consultant at:

Geosyntec Consultants, Inc.
900 Broken Sound Parkway NW, Suite 200
Boca Raton, Florida 33487-2775

ARTICLE 6. ADDITIONAL SERVICES; CHANGES IN SCOPE OF SERVICES

6.1 County or Consultant may request changes that would increase, decrease, or otherwise modify the Scope of Services to be provided under this Agreement. Such changes must be made in accordance with the provisions of the Broward County Procurement Code and must be contained in a written amendment, executed by the Parties hereto, with the same formality and of equal dignity herewith, prior to any deviation from the terms of this Agreement, including the initiation of any Additional Services.

6.2 Costs of Additional Services identified by the Contract Administrator during the life of this Agreement and as contained in a written amendment will be compensated on an hourly basis, or an agreed upon lump sum, or as a reimbursable as provided in Article 5. Additional Services authorized by the Contract Administrator shall include a required completion date for Consultant's performance of those additional services.

6.3 In the event a dispute between the Contract Administrator and Consultant arises over whether requested services constitute additional services and such dispute cannot be resolved by the Contract Administrator and Consultant, such dispute shall be promptly presented to County's Director of Purchasing for resolution. The Director's decision shall be final and binding on the Parties. The resolution shall be set forth in a written document in accordance with Section 6.1 above, if applicable. During the pendency of any dispute, Consultant shall promptly perform the disputed services.

6.4 Each proposed contract modification request that, by itself or aggregated with previous modification requests, increases the contract value by ten percent (10%) or more of the initial contract value shall be reviewed by County for opportunities to include or increase CBE participation. Consultant shall demonstrate good faith efforts to include CBE participation in change order work and shall report such efforts to the OESBD.

ARTICLE 7. COUNTY'S RESPONSIBILITIES

7.1 County shall assist Consultant by placing at Consultant's disposal all information County has available pertinent to the Project including previous reports and any other data relative to design or construction of the Project.

7.2 County shall arrange for access to, and make all provisions for, Consultant to enter upon public and private property as required for Consultant to perform its services.

7.3 County shall review the itemized deliverables/documents of Consultant identified in Exhibit A and respond in writing with any comment within the time set forth on the approved Project Schedule.

7.4 County shall give prompt written notice to Consultant whenever County observes or otherwise becomes aware of any development that affects the scope or timing of Consultant's services or any defect in the work of the Consultant.

ARTICLE 8. INSURANCE

8.1 For purposes of this article, the term "County" shall include Broward County and its members, officials, officers, and employees.

8.2 Consultant shall maintain, at its sole expense and at all times during the term of this Agreement (unless a different time period is otherwise stated herein), at least the minimum limits of insurance coverage designated in Exhibit D (inclusive of any amount provided by an umbrella or excess policy) in accordance with the terms and conditions stated in this article. All required insurance shall apply on a primary basis, and shall not require contribution from, any other insurance or self-insurance maintained by County. Any insurance, or self-insurance, maintained by County shall be in excess of, and shall not contribute with, the insurance provided by Consultant.

8.3 Insurers providing the insurance required by this Agreement must either be: (1) authorized by a current certificate of authority issued by the State of Florida to transact insurance in the State of Florida, or (2) except with respect to coverage for the liability imposed by the Florida Workers' Compensation Act, an eligible surplus lines insurer under Florida law. In addition, each such insurer shall have and maintain throughout the period for which coverage is required, a minimum A. M. Best Company Rating of "A-" and a minimum Financial Size Category of "VII." To the extent insurance requirements are designated in Exhibit D, the applicable policies shall comply with the following:

8.3.1 Commercial General Liability Insurance. Policy shall be no more restrictive than that provided by the latest edition of the standard Commercial General Liability Form (Form CG 00 01) as filed for use in the State of Florida by the Insurance Services Office (ISO), with the exception of endorsements specifically required by ISO or the State of Florida, and liability arising out of:

Mold, fungus, or bacteria

Terrorism

Silica, asbestos or lead

Sexual molestation

Architects and engineers professional liability, unless coverage for professional liability is specifically required by this Agreement.

County shall be included on the policy (and any excess or umbrella policy) as an "Additional Insured" on a form no more restrictive than ISO form CG 20 10 (Additional Insured – Owners, Lessees, or Contractor). The policy (and any excess or umbrella policy) must be endorsed to waive the insurer's right to subrogate against County.

8.3.2 Business Automobile Liability Insurance. Policy shall be no more restrictive than that provided by Section II (Liability Coverage) of the most recent version of the standard Business Auto Policy (ISO Form CA 00 01) without any restrictive endorsements, including coverage for liability contractually assumed, and shall cover all owned, non-owned, and hired autos used in connection with the performance of work under this Agreement. County shall be included on the policy (and any excess or umbrella policy) as an "Additional Insured." The policy (and any excess or umbrella policy) must be endorsed to waive the insurer's right to subrogate against County.

8.3.3 Workers' Compensation/Employer's Liability Insurance. Such insurance shall be no more restrictive than that provided by the latest edition of the standard Workers' Compensation Policy, as filed for use in Florida by the National Council on Compensation Insurance (NCCI), with the exception of endorsements required by NCCI or the State of Florida. The policy must be endorsed to waive the insurer's right to subrogate against County in the manner which would result from the attachment of the NCCI form "Waiver of our Right to Recover from Others Endorsement" (Advisory Form WC 00 03 13) with

County scheduled thereon. Where appropriate, coverage shall be included for any applicable Federal or State employer's liability laws including, but not limited to, the Federal Employer's Liability Act, the Jones Act, and the Longshoreman and Harbor Workers' Compensation Act.

8.3.4 Professional Liability Insurance. Such insurance shall cover Consultant for those sources of liability arising out of the rendering or failure to render professional services in the performance of the services required in this Agreement. If policy provides coverage on a claims-made basis, such coverage must respond to all claims reported within at least three (3) years following the period for which coverage is required, unless a longer period is indicated in Exhibit D.

8.4 Within fifteen (15) days after the full execution of this Agreement or notification of award, whichever is earlier, Consultant shall provide to County satisfactory evidence of the insurance required in this Agreement. With respect to the Workers' Compensation/Employer's Liability Insurance, Professional Liability, and Business Automobile Liability Insurance, an appropriate Certificate of Insurance identifying the project and signed by an authorized representative of the insurer shall be satisfactory evidence of insurance. With respect to the Commercial General Liability, an appropriate Certificate of Insurance identifying the project, signed by an authorized representative of the insurer, and copies of the actual additional insured endorsements as issued on the policy(ies) shall be satisfactory evidence of such insurance.

8.5 Coverage is not to cease and is to remain in force until County determines all performance required of Consultant is completed. If any of the insurance coverage will expire prior to the completion of the Services, proof of insurance renewal shall be provided to County prior to the policy's expiration.

8.6 Consultant shall provide County thirty (30) days' advance notice of any cancellation of the policy except in cases of cancellation for non-payment for which County shall be given ten (10) days' advance notice.

8.7 In the event of a claim, Consultant shall provide, within thirty (30) days after receipt of a written request from County, a copy of the policies providing the coverage required by this Agreement relevant to the claim and all information required from an insured pursuant to Section 627.4137, F.S. When providing copies of policies, Consultant may identify portions of the policies that are exempt from public records disclosure by identifying the relevant Florida law providing exemption for each portion the policies so identified.

8.8 County and Consultant, each for itself and on behalf of its insurers, to the fullest extent permitted by law without voiding the insurance required hereunder, waive all rights against the other party and any of the other party's contractors, subcontractors, agents, and employees for damages or loss to the extent covered and paid for by any insurance maintained by the other party.

8.9 If Consultant uses a Subconsultant, Consultant shall require each Subconsultant to endorse County as an "Additional Insured" on the Subconsultant's Commercial General Liability policy.

ARTICLE 9. EQUAL EMPLOYMENT OPPORTUNITY AND CBE COMPLIANCE

9.1 No party to this Agreement may discriminate on the basis of race, color, sex, religion, national origin, disability, age, marital status, political affiliation, sexual orientation, pregnancy, or gender identity and expression in the performance of this Agreement. Consultant shall comply with all applicable requirements of County's CBE Program as established by Broward County Business Opportunity Act of 2012, Section 1-81, Broward County Code of Ordinances (the "Act"), in the award and administration of this Agreement.

Consultant shall include the foregoing or similar language in its contracts with any Subconsultants, except that any project assisted by the U.S. Department of Transportation funds shall comply with the non-discrimination requirements in 49 C.F.R. Parts 23 and 26.

Failure by Consultant to carry out any of the requirements of this section shall constitute a material breach of this Agreement, which shall permit County to terminate this Agreement or to exercise any other remedy provided under this Agreement, Broward County Code of Ordinances, Broward County Administrative Code, or under other applicable law, all such remedies being cumulative.

9.2 Consultant acknowledges that the Board, acting through the OESBD, may make minor administrative modifications to the CBE Program which shall become applicable to this Agreement if the administrative modifications are not unreasonable. Written notice of any such modification shall be provided to Consultant and shall include a deadline for Consultant to notify County if Consultant concludes that the modification exceeds the authority under this section. Failure of Consultant to timely notify County of its conclusion that the modification exceeds such authority shall be deemed acceptance of the modification by Consultant.

County may add or increase the required participation of CBE firms under this Agreement in connection with any amendment, extension, modification, or change order to this Agreement that, by itself or aggregated with previous amendments, extensions, modifications, or change orders, increases the initial Agreement price by ten percent (10%) or more. Consultant shall make a good faith effort to include CBE firms in work resulting from any such amendment, extension, modification, or change order and shall report such efforts, along with evidence thereof, to the OESBD.

9.3 Consultant will meet the following CBE participation goal by utilizing the CBE firms for the following percentage of Services under this Agreement:

CBE participation goal	13%
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Consultant stipulates that each CBE firm utilized to meet the CBE participation goal must be certified by the OESBD. Consultant shall inform County immediately when a CBE firm is not able to perform or if Consultant believes the CBE firm should be replaced for any other reason, so that the OESBD may review and verify the good faith efforts of Consultant to substitute the CBE firm with another CBE firm. Whenever a CBE firm is terminated for any reason, including cause, Consultant shall provide written notice to the OESBD and shall substitute another CBE firm in order to maintain the level of CBE participation required herein, unless otherwise provided herein or agreed in writing by the Parties. Such substitution shall not be required in the event the termination results from County modifying the scope of services and there is no available CBE to perform the new scope of services, in which event Consultant shall notify County and the OESBD may adjust the CBE participation goal by written notice to Consultant. Consultant may not terminate for convenience a CBE firm without County's prior written consent, which consent shall not be unreasonably withheld.

9.4 In performing the services for this Project, the Parties hereby incorporate the list of Consultant's participating CBE firms, addresses, scope of work, and the percentage of work amounts identified on each Letter of Intent into this Agreement (Exhibit C). Promptly upon execution of this Agreement by County, Consultant shall enter into a formal contract with the CBE firms listed in Exhibit C and, upon request, shall provide copies of the contracts to the Contract Administrator and the OESBD.

9.5 Consultant shall provide written monthly reports to the Contract Administrator attesting to Consultant's compliance with the CBE participation goals stated in this article. In addition, Consultant shall allow County to engage in on-site reviews to monitor Consultant's progress in achieving and maintaining its contractual and CBE Program obligations. Such review and monitoring shall be by the Contract Administrator in conjunction with the OESBD, unless otherwise determined by the County Administrator. County shall have access, without limitation, to Consultant's books and records, including payroll records, tax returns and records, and books of account, on five (5) business days' notice.

9.6 In the event of Consultant's noncompliance with its CBE participation goal (including without limitation the unexcused reduction of a CBE firm's participation), the affected CBE firm shall have the right to exercise any remedies as may be available as between the CBE firm and Consultant.

9.7 The presence of a "pay when paid" provision in a Consultant's contract with a CBE firm shall not preclude County or its representatives from inquiring into allegations of nonpayment.

9.8 By execution of this Agreement, Consultant represents that it has not been placed on the discriminatory vendor list as provided in Section 287.134, Florida Statutes. County hereby materially relies on such representation in entering into this Agreement. An untrue representation of the foregoing shall entitle County to terminate this Agreement and recover

from Consultant all monies paid by County pursuant to this Agreement, and may result in debarment from County's competitive procurement activities.

ARTICLE 10. MISCELLANEOUS

10.1 Ownership of Documents. All finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, specifications and reports prepared or provided by Consultant in connection with this Agreement shall become the property of County, whether the Project for which they are made is completed or not, and shall be delivered by Consultant to Contract Administrator within fifteen (15) days after the receipt of the written notice of termination. If applicable, County may withhold any payments then due to Consultant until Consultant complies with the provisions of this section.

10.2 Termination.

10.2.1 This Agreement or any Work Authorization issued under this Agreement may be terminated for cause by the aggrieved party if the party in breach has not corrected the breach within ten (10) days after written notice from the aggrieved party identifying the breach. This Agreement may also be terminated for convenience by the Board. Termination for convenience by the Board shall be effective on the termination date stated in written notice provided by County, which termination date shall be not less than thirty (30) days after the date of such written notice. If this Agreement or Work Authorization was entered into on behalf of County by someone other than the Board, termination by County may be by action of the County Administrator or County representative (including his or her successor) who entered in this Agreement on behalf of County. This Agreement may also be terminated by the County Administrator upon such notice as the County Administrator deems appropriate under the circumstances in the event the County Administrator determines that termination is necessary to protect the public health or safety. If County erroneously, improperly or unjustifiably terminates for cause, such termination shall be deemed a termination for convenience, which shall be effective thirty (30) days after such notice of termination for cause is provided.

10.2.2 This Agreement may be terminated for cause for reasons including, but not limited to, Consultant's repeated (whether negligent or intentional) submission for payment of false or incorrect bills or invoices, failure to suitably perform the work; or failure to continuously perform the work in a manner calculated to meet or accomplish the objectives as set forth in this Agreement or Work Authorization. This Agreement may also be terminated for cause if Consultant is placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List created pursuant to Section 215.473, Florida Statutes, as amended or if Consultant provides a false certification submitted pursuant to Section 287.135, Florida Statutes, as amended. This Agreement or a Work Authorization may also be terminated by the Board:

10.2.2.1 Upon the disqualification of Consultant as a CBE by County's Director of the OESBD if Consultant's status as a CBE was a factor in the award of this Agreement or the Work Authorization, and such status was misrepresented by Consultant;

10.2.2.2 Upon the disqualification of Consultant by County's Director of the OESBD due to fraud, misrepresentation, or material misstatement by Consultant in the course of obtaining this Agreement or the Work Authorization, or attempting to meet the CBE contractual obligations;

10.2.2.3 Upon the disqualification of one or more of Consultant's CBE participants by County's Director of the OESBD if any such participant's status as a CBE firm was a factor in the award of this Agreement or the Work Authorization, and such status was misrepresented by Consultant or such participant;

10.2.2.4 Upon the disqualification of one or more of Consultant's CBE participants by County's Director of the OESBD if such CBE participant attempted to meet its CBE contractual obligations through fraud, misrepresentation, or material misstatement; or

10.2.2.5 If Consultant is determined by County's Director of the OESBD to have been knowingly involved in any fraud, misrepresentation, or material misstatement concerning the CBE status of its disqualified CBE participant.

10.2.3 Notice of termination shall be provided in accordance with the "NOTICES" section of this Agreement except that notice of termination by the County Administrator which the County Administrator deems necessary to protect the public health or safety may be verbal notice that shall be promptly confirmed in writing in accordance with the "NOTICES" section of this Agreement.

10.2.4 In the event this Agreement or a Work Authorization issued under this Agreement is terminated for convenience, Consultant shall be paid for any services properly performed under this Agreement or Work Authorization through the termination date specified in the written notice of termination. Consultant acknowledges and agrees that it has received good, valuable and sufficient consideration from County, the receipt and adequacy of which are hereby acknowledged by Consultant, for County's right to terminate this Agreement for convenience.

10.2.5 In the event this Agreement or a Work Authorization is terminated, for any reason, any amounts due Consultant shall be withheld by County until all documents are provided to County pursuant to Section 10.1.

10.3 Public Records. To the extent Consultant is acting on behalf of County as stated in Section 119.0701, Florida Statutes, Consultant shall:

- a. Keep and maintain public records required by County to perform the services under this Agreement;
- b. Upon request from County, provide County with a copy of the requested records or allow the records to be inspected or copied within a reasonable time and at a cost that does not exceed that provided in Chapter 119, Florida Statutes, or as otherwise provided by law;
- c. Ensure that public records that are exempt or confidential and exempt from public record requirements are not disclosed except as authorized by law for the duration of this Agreement and following completion or termination of this Agreement if the records are not transferred to County; and
- d. Upon expiration or termination of this Agreement, transfer to County, at no cost, all public records in possession of Consultant or keep and maintain public records required by County to perform the services. If Consultant transfers the records to County, Consultant shall destroy any duplicate public records that are exempt or confidential and exempt. If Consultant keeps and maintains the public records, Consultant shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to County upon request in a format that is compatible with the information technology systems of County.

The failure of Consultant to comply with the provisions of this section shall constitute a material breach of this Agreement entitling County to exercise any remedy provided in this Agreement or under applicable law.

A request for public records regarding this Agreement must be made directly to County, who will be responsible for responding to any such public records requests. Consultant will provide any requested records to County to enable County to respond to the public records request.

Any material submitted to County that Consultant contends constitutes or contains trade secrets or is otherwise exempt from production under Florida public records laws (including Florida Statutes Chapter 119) ("Trade Secret Materials") must be separately submitted and conspicuously labeled "EXEMPT FROM PUBLIC RECORD PRODUCT – TRADE SECRET." In addition, Consultant must, simultaneous with the submission of any Trade Secret Materials, provide a sworn affidavit from a person with personal knowledge attesting that the Trade Secret Materials constitute trade secrets under Florida Statutes Section 812.081 and stating the factual basis for same. In the event that a third party submits a request to County for records designated by Consultant as Trade Secret Materials, County shall refrain from disclosing the Trade Secret Materials, unless otherwise ordered by a court of competent jurisdiction or authorized in writing by Consultant. Consultant shall indemnify and defend County and its employees and agents from

any and all claims, causes of action, losses, fines, penalties, damages, judgments and liabilities of any kind, including attorneys' fees, litigation expenses, and court costs, relating to the non-disclosure of any Trade Secret Materials in response to a records request by a third party.

IF CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF FLORIDA STATUTES CHAPTER 119 TO CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS, NORMA ELLISON, AT (954) 519-1466, nellison@broward.org, 115 S. ANDREWS AVE., SUITE 329H, FORT LAUDERDALE, FLORIDA 33301.

10.4 Audit Rights and Retention of Records. Consultant shall preserve all Contract Records (as defined below) for a minimum period of three (3) years after expiration or termination of this Agreement or until resolution of any audit findings, whichever is longer. Contract Records shall, upon reasonable notice, be open to County inspection and subject to audit and reproduction during normal business hours. County audits and inspections pursuant to this section may be performed by any County representative (including any outside representative engaged by County). County may conduct audits or inspections at any time during the term of this Agreement and for a period of three years after the expiration or termination of this Agreement (or longer if required by law). County may, without limitation, verify information, payroll distribution, and amounts through interviews, written affirmations, and on-site inspection with Consultant's employees, Subconsultants, vendors, or other labor.

Contract Records include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, drawings, receipts, vouchers and memoranda, and any and all other documents that pertain to rights, duties, obligations or performance under this Agreement. Contract Records include hard copy and electronic records, written policies and procedures, time sheets, payroll records and registers, cancelled payroll checks, estimating work sheets, correspondence, invoices and related payment documentation, general ledgers, insurance rebates and dividends, and any other records pertaining to rights, duties, obligations or performance under this Agreement, whether by Consultant or Subconsultants.

County shall have the right to audit, review, examine, inspect, analyze, and make copies of all Contract Records at a location within Broward County. County reserves the right to conduct such audit or review at Consultant's place of business, if deemed appropriate by County, with seventy-two (72) hours' advance notice. Consultant agrees to provide adequate and appropriate work space. Consultant shall provide County with reasonable access to Consultant's facilities, and County shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement.

Consultant shall, by written contract, require its Subconsultants to agree to the requirements and obligations of this section.

Any incomplete or incorrect entry in such books, records, and accounts shall be a basis for County's disallowance and recovery of any payment reliant upon such entry. If an audit or inspection in accordance with this section discloses overpricing or overcharges to County of any nature by Consultant or its Subconsultants in excess of five percent (5%) of the total contract billings reviewed by County, the reasonable actual cost of County's audit shall be reimbursed to County by Consultant in addition to making adjustments for the overcharges. Any adjustments or payments due as a result of such audit or inspection shall be made within thirty (30) days from presentation of County's findings to Consultant.

10.5 Public Entity Crime Act. Consultant represents that it is familiar with the requirements and prohibitions under the Public Entity Crime Act, Section 287.133, Florida Statutes, and represents that its entry into this Agreement will not violate that Act. In addition to the foregoing, Consultant further represents that there has been no determination that it committed a "public entity crime" as defined by Section 287.133, Florida Statutes, and that it has not been formally charged with committing an act defined as a "public entity crime" regardless of the amount of money involved or whether Consultant has been placed on the convicted vendor list. Notwithstanding any provision in this Agreement to the contrary, if any representation stated in this section is false, County shall have the right to immediately terminate this Agreement and recover all sums paid to Consultant under this Agreement

10.6 Subconsultants. Consultant shall utilize the Subconsultants identified in the proposal that were a material part of the selection of Consultant to provide the services for this Project. Consultant shall obtain written approval of Contract Administrator prior to changing or modifying the list of Subconsultants submitted by Consultant. Where Consultant's failure to use Subconsultant results in Consultant's noncompliance with CBE participation goals, such failure shall entitle the affected CBE firm to damages available under local and state law. The list of Subconsultants is provided on Exhibit C-1, Schedule of Subconsultants as attached hereto and made a part hereof. Consultant shall bind in writing each and every approved Subconsultant to the terms stated in this Agreement, provided that this provision shall not, in and of itself, impose the insurance requirements set forth in Article 8 on Consultant's Subconsultants.

10.7 Assignment and Performance. Neither this Agreement nor any interest herein shall be assigned, transferred, or encumbered without the written consent of the other party and Consultant shall not subcontract any portion of the work required by this Agreement except as authorized pursuant to Section 10.6. County shall have the right to terminate this Agreement, effective immediately, if there is an assignment, or attempted assignment, transfer, or encumbrance, of this Agreement or any right or interest herein by Consultant without County's written consent.

Consultant represents that all persons delivering the services required by this Agreement have the knowledge and skills, either by training, experience, education, or a combination thereof, to

adequately and competently perform the duties, obligations, and services set forth in the Scope of Services and to provide and perform such services to County's satisfaction for the agreed compensation.

Consultant shall perform its duties, obligations, and services under this Agreement in a skillful and respectable manner. The quality of Consultant's performance and all interim and final product(s) provided to or on behalf of County shall be comparable to local and national standards.

10.8 Indemnification of County. Consultant shall indemnify and hold harmless County, its officers and employees from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness or intentionally wrongful conduct of Consultant or other persons employed or utilized by Consultant in the performance of this Agreement. The provisions of this section shall survive the expiration or earlier termination of this Agreement. To the extent considered necessary by Contract Administrator and County Attorney, any sums due Consultant under this Agreement may be retained by County until all of County's claims for indemnification pursuant to this Agreement have been settled or otherwise resolved, and any amount withheld shall not be subject to payment of interest by County.

10.9 Representative of County and Consultant. The Parties recognize that questions in the day-to-day conduct of the Project will arise. The Contract Administrator, upon Consultant's request, shall advise Consultant in writing of one (1) or more County employees to whom all communications pertaining to the day-to-day conduct of the Project shall be addressed. Consultant shall inform the Contract Administrator in writing of Consultant's representative to whom matters involving the conduct of the Project shall be addressed.

10.10 All Prior Agreements Superseded. This document incorporates and includes all prior negotiations, correspondence, conversations, agreements or understandings applicable to the matters contained herein; and the Parties agree that there are no commitments, agreements or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, the Parties agree that no deviation from the terms hereof shall be predicated upon any prior representations or agreements whether oral or written.

10.11 Amendments. No modification, amendment or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity herewith.

10.12 Notices. Whenever either party desires to give notice to the other, such notice must be in writing, sent by certified United States Mail, postage prepaid, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or by hand delivery with a request for a written receipt of acknowledgment of delivery, addressed to the party for whom it is intended at the place last specified. The place for giving notice shall remain the same as set

forth herein until changed in writing in the manner provided in this section. For the present, the Parties designate the following as the respective places for giving of notice:

FOR COUNTY:

Broward County Environmental Planning and Community Resilience Division
Attn: Dr. Jennifer Jurado, Director and Chief Resilience Officer
Governmental Center, Room 329H
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Email address: jjurado@broward.org

FOR CONSULTANT:

Geosyntec Consultants, Inc.
Mark W. Ellard, PE, CFM, D.WRE - Senior Principal, Water Resources
1511 East State Road 434, Suite 1005
Winter Springs, FL 32708
Email Address: mellard@geosyntec.com
Phone: (407) 321-7030

10.13 Truth-In-Negotiation Certificate. Consultant's compensation under this Agreement is based upon representations supplied to County by Consultant, and Consultant certifies that the wage rates, factual unit costs, and other information supplied to substantiate Consultant's compensation, including without limitation in the negotiation of this Agreement, are accurate, complete, and current at the time of contracting. County shall be entitled to recover any damages it incurs to the extent any such representation is untrue.

10.14 Interpretation. The language of this Agreement has been agreed to by both Parties to express their mutual intent and no rule of strict construction shall be applied against either party hereto. The headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement. All personal pronouns used in this Agreement shall include the other gender, and the singular shall include the plural, and vice versa, unless the context otherwise requires. Terms such as "herein," "hereof," "hereunder," and "hereinafter" refer to this Agreement as a whole and not to any particular sentence, paragraph, or section where they appear, unless the context otherwise requires. Whenever reference is made to a section or article of this Agreement, such reference is to the section or article as a whole, including all of the subsections of such section, unless the reference is made to a particular subsection or subparagraph of such section or article.

10.15 Consultant's Staff. Consultant will provide the key staff identified in their proposal for Project as long as said key staff are in Consultant's employment. Consultant will obtain prior written approval of Contract Administrator to change key staff. Consultant shall provide Contract Administrator with such information as necessary to determine the suitability of proposed new key staff. Contract Administrator will be reasonable in evaluating key staff qualifications. If Contract Administrator desires to request removal of any of Consultant's staff, Contract

Administrator shall first meet with Consultant and provide reasonable justification for said removal.

10.16 Drug-Free Workplace. It is a requirement of County that it enter into contracts only with firms that certify the establishment of a drug-free work place in accordance with Section 21.31(a) of the Broward County Administrative Code. Execution of this Agreement by Consultant shall also serve as Consultant's required certification that it either has or that it will establish a drug-free work place in accordance with Section 21.31(a) of the Broward County Administrative Code.

10.17 Independent Contractor. Consultant is an independent contractor under this Agreement. Services provided by Consultant shall be subject to the supervision of Consultant. In providing the services, Consultant or its agents shall not be acting and shall not be deemed as acting as officers, employees, or agents of County.

10.18 Third Party Beneficiaries. Neither Consultant nor County intends to directly or substantially benefit a third party by this Agreement. Therefore, the Parties acknowledge that there are no third party beneficiaries to this Agreement and that no third party shall be entitled to assert a right or claim against either of them based upon this Agreement.

10.19 Conflicts. Neither Consultant nor its employees shall have or hold any continuing or frequently recurring employment or contractual relationship that is substantially antagonistic or incompatible with Consultant's loyal and conscientious exercise of judgment and care related to its performance under this Agreement. None of Consultant's officers or employees shall, during the term of this Agreement, serve as an expert witness against County in any legal or administrative proceeding in which he, she, or Consultant is not a party, unless compelled by court process. Further, such persons shall not give sworn testimony or issue a report or writing, as an expression of his or her expert opinion, which is adverse or prejudicial to the interests of County in connection with any such pending or threatened legal or administrative proceeding unless compelled by court process. The limitations of this section shall not preclude Consultant or any persons in any way from representing themselves, including giving expert testimony in support thereof, in any action or in any administrative or legal proceeding. In the event Consultant is permitted pursuant to this Agreement to utilize Subconsultants to perform any services required by this Agreement, Consultant shall require such Subconsultants, by written contract, to comply with the provisions of this section to the same extent as Consultant.

10.20 Contingency Fee. Consultant warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement and that it has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this Agreement. For a breach or violation of this provision, Board shall have the right to terminate this Agreement without liability at its discretion, or to deduct from this Agreement price or otherwise recover the full amount of such fee, commission, percentage, gift or consideration.

10.21 Materiality and Waiver of Breach. County and Consultant agree that each requirement, duty, and obligation set forth herein was bargained for at arms-length and is agreed to by the Parties in exchange for quid pro quo, that each is substantial and important to the formation of this Agreement and that each is, therefore, a material term hereof. County's failure to enforce any provision of this Agreement shall not be deemed a waiver of such provision or modification of this Agreement. A waiver of any breach of a provision of this Agreement shall not be deemed a waiver of any subsequent breach and shall not be construed to be a modification of the terms of this Agreement.

10.22 Compliance with Laws. Consultant shall comply with all federal, state, and local laws, codes, ordinances, rules, and regulations in performing its duties, responsibilities, and obligations related to this Agreement.

10.23 Severability. In the event any part of this Agreement is found to be unenforceable by any court of competent jurisdiction, that part shall be deemed severed from this Agreement and the balance of this Agreement shall remain in full force and effect.

10.24 Joint Preparation. This Agreement has been jointly prepared by the Parties hereto, and shall not be construed more strictly against either Party.

10.25 Priority of Provisions. If there is a conflict or inconsistency between any term, statement, requirement, or provision of any exhibit attached hereto, any document or events referred to herein, or any document incorporated into this Agreement by reference and a term, statement, requirement, or provision of this Agreement, the term, statement, requirement, or provision contained in Articles 1 through 10 of this Agreement shall prevail and be given effect.

10.26 Law, Jurisdiction, Venue, Waiver of Jury Trial. This Agreement shall be interpreted and construed in accordance with and governed by the laws of the state of Florida. All Parties acknowledge and accept that jurisdiction of any controversies or legal problems arising out of this Agreement, and any action involving the enforcement or interpretation of any rights hereunder, shall be exclusively in the state courts of the Seventeenth Judicial Circuit in Broward County, Florida, and venue for litigation arising out of this Agreement shall be exclusively in such state courts, forsaking any other jurisdiction which either party may claim by virtue of its residency or other jurisdictional device. **BY ENTERING INTO THIS AGREEMENT, CONSULTANT AND COUNTY HEREBY EXPRESSLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY OF ANY CIVIL LITIGATION RELATED TO THIS AGREEMENT. IF A PARTY FAILS TO WITHDRAW A REQUEST FOR A JURY TRIAL IN A LAWSUIT ARISING OUT OF THIS AGREEMENT AFTER WRITTEN NOTICE BY THE OTHER PARTY OF VIOLATION OF THIS SECTION, THE PARTY MAKING THE REQUEST FOR JURY TRIAL SHALL BE LIABLE FOR THE REASONABLE ATTORNEYS' FEES AND COSTS OF THE OTHER PARTY IN CONTESTING THE REQUEST FOR JURY TRIAL, AND SUCH AMOUNTS SHALL BE AWARDED BY THE COURT IN ADJUDICATING THE MOTION.**

10.27 Incorporation by Reference. Any and all Recital clauses stated above are true and correct and are incorporated herein by reference. The attached Exhibits are incorporated into and made a part of this Agreement.

10.28 Re-Use of Project. County may, at its option, re-use (in whole or in part) the resulting end-product or deliverables resulting from Consultant's professional services (including, but not limited to, drawings, specifications, other documents, and services as described herein and in Exhibit A, Scope of Services); and Consultant agrees to such re-use in accordance with this provision.

10.29 Payable Interest

10.29.1. Payment of Interest. County shall not be liable to pay any interest to Consultant for any reason, whether as prejudgment interest or for any other purpose, and in furtherance thereof Consultant waives, rejects, disclaims and surrenders any and all entitlement it has or may have to receive interest in connection with a dispute or claim arising from, related to, or in connection with this Agreement. This subsection shall not apply to any claim for interest, including for post-judgment interest, if such application would be contrary to applicable law.

10.29.2. Rate of Interest. If the preceding subsection is inapplicable or is determined to be invalid or unenforceable by a court of competent jurisdiction, the annual rate of interest payable by County under this Agreement, whether as prejudgment interest or for any other purpose, shall be, to the full extent permissible under applicable law, 0.25% (one quarter of one percent) simple interest (uncompounded).

10.30 Representation of Authority. Each individual executing this Agreement on behalf of a party hereto hereby represents and warrants that he or she is, on the date he or she signs this Agreement, duly authorized by all necessary and appropriate action to execute this Agreement on behalf of such party and does so with full and legal authority.

10.31 Counterparts and Multiple Originals. This Agreement may be executed in multiple originals, and may be executed in counterparts, each of which shall be deemed to be an original, but all of which, taken together, shall constitute one and the same agreement.

10.32 Domestic Partnership Requirement. Consultant certifies and represents that it will comply with County's Domestic Partnership Act (Section 16½-157 of the Broward County Code of Ordinances, as amended) during the entire term of this Agreement. The failure of Consultant to comply shall be a material breach of this Agreement, entitling County to pursue any and all remedies provided under applicable law including, but not limited to (1) retaining all monies due or to become due Consultant until Consultant complies; (2) termination of this Agreement; and (3) suspension or debarment of Consultant from doing business with County.

IN WITNESS WHEREOF, the Parties hereto have made and executed this Agreement: BROWARD COUNTY, through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice-Mayor, authorized to execute same by Board action on the _____ day of _____, 20____, and Geosyntec Consultants, Inc., signing by and through its _____, duly authorized to execute same.

County

ATTEST:

BROWARD COUNTY, by and through its Board of County Commissioners

Broward County Administrator, as Ex-officio Clerk of the Broward County Board of County Commissioners

By _____
Mayor
____ day of _____, 20____

Insurance requirements approved by Broward County Risk Management Division

Approved as to form by Andrew J. Meyers
Broward County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By _____
Signature (Date)

Print Name and Title above

By _____
Michael C. Owens (Date)
Senior Assistant County Attorney

MCO/gmb
Geosyntec 100 Year Flood Mapping R2114367P1.docx
04/24/2018
#17-057.01

AGREEMENT BETWEEN BROWARD COUNTY AND GEOSYNTEC CONSULTANTS, INC., FOR
CONSULTANT SERVICES FOR 100-YEAR FLOOD ELEVATION MAP AND ASSOCIATED MODELING
(RFP #R2114367P1)

FOR CORPORATION:

Consultant

Geosyntec Consultants, Inc.

ATTEST:

Secretary

By _____
President/Vice President

(Typed Name of Secretary)

(Typed Name and Title)

CORPORATE SEAL

___ day of _____, 20___

INDEX TO EXHIBITS:

Exhibit A	Scope of Work
Exhibit B	Maximum Billing Rates
Exhibit B-1	Reimbursables for Direct Non-Salary Expenses
Exhibit C	Letters of Intent
Exhibit C-1	Schedule of Subconsultants
Exhibit D	Minimum Insurance Requirements
Exhibit E	Work Authorization Form

EXHIBIT A - SCOPE OF WORK

Broward County 100-year Flood Elevation Map and Associated Modeling

Project Request

The objective of this project is to update the Broward County 100-year Flood Elevation Map with incorporation of future climatic conditions, including sea level rise, through the refinement and application of the latest Broward County-wide Integrated MIKE SHE/MIKE 11 Hydrologic-Hydraulic Model (referred below as "BCModel"), and in accordance with stakeholder input.

Background

In 1977, the Broward County Board of County Commissioners (Board) adopted a 100-year flood elevation map in order to mitigate flood risk in developed areas through regulation of minimum infrastructure design criteria, including base flood elevation. The map was based on estimated runoff across existing development at the time, the anticipated expansion of the urban area to its final bounds, historic extreme rainfall-driven flooding events and historic groundwater and sea levels. Although some Federal Emergency Management Agency (FEMA) flood insurance studies and flood insurance rate maps (FIRMs) had been completed for certain municipalities by 1977, county-wide information on flood depths or appropriate design criteria was not available until the adoption of the County map.

Since 1977, three county-wide FEMA flood insurance studies have been completed for Broward County. Each study released, updated, and typically increased base flood elevation requirements for buildings. County policy has required the most conservative design criteria shown on the FEMA FIRMs, the County map, or as derived by basin-specific modeling to be applied in the construction design of new development. In areas where the County map was more conservative and was thus applied, property owners often realized subsequent cost savings in avoided flooding or flood insurance premiums as FEMA base flood elevations were adjusted in later years. In its most recent update, in 2014, FEMA revised flood hazard areas in Broward County utilizing the BCModel. The revised flood map revealed significant changes in base flood elevations and delineation of flood area boundaries in certain parts of the County, a combined result of increased development and changes in hydrologic conditions since the previous update, nearly 20-years prior. This study also revealed a substantial convergence in the flood elevations derived from the two map-based approaches, with the County's flood elevation map no longer predictably providing the higher, or more protective, standard. With substantial build-out already having taken place, changes in hydrologic processes resulting from development patterns have already been realized. As such, sea

level rise and its influence on the groundwater table, regional storage, and the discharge capacity of stormwater systems not only constitutes the most significant influence on future flood elevations, but is expected to substantially increase flood elevations in coastal and inland portions of the county in the coming decades. Additionally, downscaled climate models have predicted scenarios of future rainfall and extreme events. In order to mitigate for the increased potential for flooding with time, the County desires to update the 100-year Flood Elevation Map to account for flood conditions predicted with changes in climate and rising sea level to support planning, infrastructure investments, and development requirements.

In 2016, the Board adopted the updated Unified Sea Level Rise Projection for Southeast Florida (Compact, 2015) and directed staff to apply this projection as the basis for regional sea level rise adaptation planning. This action reflected the recognized vulnerability of both coastal and inland areas to the impacts of rising seas, including increased coastal flooding, changes in groundwater levels, and reduced capacity of gravity-dependent stormwater systems.

In February 2017, the Board approved a motion to Direct the Environmental Protection and Growth Management Department (EPGMD) to create and maintain a future conditions map series to include average wet season groundwater elevations and 100-year flood elevations to account for predicted changes in groundwater levels due to sea level rise and ensure the resiliency of current and future infrastructure investments.

Similar to the strategy employed in 1977, the County has again identified the need for progressive building requirements that will deliver flood protection for the duration of the investment, including under future climate conditions and changes in sea level. While the FEMA FIRMs will continue to reflect flood risk under current conditions, it is expected that as these maps are updated in ensuing years, the flood elevations will again begin to approximate those of the more forward-looking community flood map. As such, it is fully anticipated that the Broward County 100-year Flood Elevation Map may undergo future adjustments as trends in sea level and flood condition warrant.

This scope of work defines the data analysis, modeling and development of deliverables necessary to update the Broward County 100-year Flood Elevation Map to account for future climatic conditions.

County Contributions

The County will provide the future conditions average wet season groundwater elevations in a grid format, 500x500ft, with centroids representing the NAVD88 groundwater elevation of

discrete cells. The County will also provide the original updated version of the existing BCModel as delivered by FEMA in August 2015.

The County will schedule three stakeholder meetings to introduce the community to this project and gather information to refine the existing BCModel. Meetings will be held in the geographic areas associated with the north, central, and south portions of the County and may include residents, media, private sector, elected officials, subject matter experts, and other interested stakeholders. If substantial contentious issues are identified in any of the initial open houses, a follow up meeting would be scheduled to address revisions to initial assumptions of process.

List of Detailed Tasks and Proposed Schedule

Task 1 - Project Kick off and Schedule Development

This task will include a general project team introduction, establish communication protocols, define quality assurance / quality control (QA/QC) procedures, and upfront planning to move forward with the technical scope of work and stakeholder involvement.

Task 1.1 - Project Management Plan

Consultant will develop a generalized management plan for the project which addresses issues of project management, communication (internal and client), and quality assurance / quality control (QA/QC).

Task 1.2 - Develop MS Project Gantt Diagram

Consultant will develop a project schedule that outlines the tasks for completion. Included will be key milestones for deliverables, and identify contingent paths and tasks predecessors.

Task 1.3 - Attend Kick off Meeting

Consultant will coordinate with County staff to conduct a kick-off meeting with Consultant personnel. The meeting will be an opportunity to discuss the scope in detail, answer scope clarification questions, schedule constraints, and scope challenges. Initial data collection needs will be discussed as well as preliminary stakeholder coordination strategies.

Task 1.4 - Prepare Kick off Meeting Minutes and Update Schedule

Consultant shall prepare a meeting summary to capture the salient points of the kick-off meeting. This will include action items required of Consultant and/or County. County input will be solicited, and a revised version issued if necessary.

Task 2 - Initial Data Collection and Review

This task will include efforts to gather all relevant, readily available data from various entities that will be required for the model updates and establishing future conditions.

Task 2.1 - Collect & Compile Broward County Model Files

Consultant will coordinate with County to obtain latest Broward County Model (BCModel) files and associated backup materials. This will include the latest version of the MIKE SHE / MIKE 11 model used during the County-wide FEMA Flood Mapping update (or more recent revisions if available). This also includes MODFLOW based groundwater input files (including future 2060 and 2100) that will be used as initial conditions for the MIKE SHE model.

Task 2.2 - Collect & Compile LiDAR data

Consultant will obtain the latest topographical data for County in LiDAR format from available sources. It is assumed that the LiDAR based topography will be available in both native LAS format as well as a derived digital elevation model (DEM) raster surface in a minimum 5'x5' grid cell size.

Task 2.3 - Collect & Compile Jurisdictional Data

Consultant will make requests to obtain the latest data from the various municipalities, water districts and major utilities that have relevance to surface water drainage and conveyance. This will include drainage feature inventories, map atlas data, hydrological & hydraulic reports, and modeling files. This will also include information on flood prone areas and flood complaint areas.

Task 2.4 - Collect & Compile Soils / Hydrogeology / Aquifer Characteristics

Consultant will obtain the latest available information from various government sources that describe subsurface conditions in Broward County. This includes the most recent shallow soils data from the USDA-NRCS soils web service, and hydrogeologic data representing deeper hydrogeological formations from County, SFWMD, and other relevant water district and municipal agencies.

Task 2.5 - Collect & Compile Current Land Use / Future Land Use

Consultant will obtain the latest GIS based existing land use data from County and the SFWMD in Florida Land Use Cover and Forms Classification Systems (FLUCFCS) format. Consultant will coordinate with County to obtain future land use coverages from planning based on comprehensive plans or other planning projections.

Task 2.6 - Collect & Compile FEMA Coastal Modeling

Consultant will obtain the latest costal modeling and associated data (when available) from the ongoing FEMA coastal modeling efforts.

Task 2.7 - Collect & Compile Gauge and Tidal Data

Consultant will obtain the latest available relevant flow and stage data sets from the SFWMD, County, water districts, municipalities (Including Pompano Beach and Ft. Lauderdale), and other agencies as appropriate. Particular focus will be getting data representing Hurricane Irma to be used for model validation purposes.

Task 2.8 - Collect & Compile Rainfall and Calibration Storm

Consultant will obtain the latest available relevant rainfall data sets from the SFWMD, NOAA, and other agencies as appropriate. This will include rain gauge data and available

radar based (NEXRAD) data. Particular focus will be getting data representing Hurricane Irma to be used for model validation purposes.

Task 2.9 - Collect & Compile Reference Climate Documentation

Consultant will obtain the latest relevant documentation from identified and other relevant sources. This will include relevant documentation associated with the Southeast Florida Regional Compact on Climate Change, NOAA Atlas 14 precipitation frequency estimates, Localized Constructed Analogs (LOCA) processes for statistical downscaling, Statistical Downscaled Center for Ocean-Atmospheric Prediction Studies (COAPS), and the Coordinated Regional Climate Downscaling Experiment (CORDEX). Also, specifically the following:

- *Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact). October 2015. Unified Sea Level Rise Projection for Southeast Florida. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee. 35 p.*
- *South Florida Water Management District. Determination of Future Intensity-Duration-Frequency Curves for Level of Service Planning Projects – Extreme Rainfall Analysis in Climate Model Outputs to Determine Temporal Changes in Intensity-Duration-Frequency Curves. November 2016.*
- *Salas, J.; Obeysekera, J. (2014) Revisiting the Concepts of Return Period and Risk for Nonstationary Hydrologic Extreme Events. Journal of Hydrologic Engineering 19: 554-568p. ASCE.*

Additional reference documentation may be compiled as appropriate.

Task 2.10 - Collect & Compile Sedimentation Data

Consultant will obtain the latest available relevant sedimentation data sets from the SFWMD, County, water districts, municipalities, and other agencies as appropriate. Particular focus will be getting current data for existing conditions model validation purposes.

Task 2.11 - Conduct Data Gap Analysis

Based on the foregoing data items, Consultant will identify and significant data gaps that will need to be addressed as part of the existing model update process. An assessment of the degree of impact will be made.

Task 2.12 - Initial Model Data Needs Identification

Based on the foregoing data items and data gap analysis, Consultant will identify significant data needs that will need to be addressed as part of the existing model update process. A plan of action for obtaining the data will be developed, with identification of key stakeholders which may assist.

Task 2.13 - Task Summary Memorandum

A Task Summary Memorandum will be developed summarizing the above subtasks and provide the basis for addressing data gaps and model data needs. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 3 - Community Stakeholder Meeting Support

This task includes planning and involvement in the stakeholder communication process.

Task 3.1 - Stakeholder Planning / Strategy Meeting with County

Consultant will coordinate with County to schedule a planning meeting to strategize on the best approach for stakeholder involvements. This will include initial discussion of appropriate stakeholders to be involved and sources of relevant input.

Task 3.2 - Key Stakeholder Identification

Consultant will work with County to develop listing of key stakeholders on which to focus primary communication efforts with during initial meetings.

Task 3.3 - Other Stakeholder Identification

Consultant will work with County to develop listing of other relevant stakeholders that may warrant secondary communication efforts with outside of initial meetings. This may include peripheral agencies or public interest entities which may have some information useful to the technical aspects of the project. A plan of action for contact with identified parties will be developed.

Task 3.4 - Develop Stakeholder Tracking Process

Consultant will develop a tracking process for effectively tracking stakeholder input, including consideration for tracking initial and follow up communications, data requests, and data transfers. This is expected to be a traditional database system with possible integration of geographic data if warranted.

Task 3.5 - Develop Notifications - emails, mailers, social media, websites, etc.

Consultant will support the communication efforts of County prior to the Stakeholder Meetings by preparing as appropriate email blasts, mailers, social media posts, website content, etc. as necessary to effectively communicate the logistics and intent of the meetings. It is assumed that the content will be prepared and transmitted to County for use by County's Public Information Office for dissemination.

Task 3.6 - Prepare agendas, informational handouts, comment forms, etc.

Consultant will support the communication efforts of County during the Stakeholder Meetings by preparing as appropriate agendas, informational handouts, comment forms, etc. as necessary to effectively communicate the purpose and intent of the meetings, and effectively solicit input from the stakeholders. It is assumed that the content will be prepared and transmitted to County for production prior to the meetings.

Task 3.7 - Attend North Stakeholder Meeting

Consultant will prepare for and attend the North Stakeholder Meeting, including assistance with presentations as appropriate.

Task 3.8 - Attend Central Stakeholder Meeting

Consultant will prepare for and attend the Central Stakeholder Meeting, including assistance with presentations as appropriate.

Task 3.9 - Attend South Stakeholder Meeting

Consultant will prepare for and attend the South Stakeholder Meeting, including assistance with presentations as appropriate.

Task 3.10 - Meeting Summaries

Consultant will compile information from each of the three Stakeholder Meetings and prepare a meeting summary. This will include attendance, capture of relevant comments, and data contact.

Task 3.11 - Model Data Needs Identification

Based on the meeting summaries, input relevant to updating the existing conditions modeling will be compiled and a prioritized listing of possible modifications developed. It is recognized that not all stakeholder requested model updates may be feasible or able to be addressed under the current scope of work. As such, the prioritization will distinguish between updates recommended to be covered by the current scope, a future scope, or that may not be appropriate given the overall goal of the model. It is also recognized that the model is regional in nature focused on primary and secondary infrastructures and conveyances, and requested updates related to tertiary infrastructure or local level issues will likely not be appropriate.

Task 3.12 - Follow Up Meetings with Selected Stakeholders

Consultant will communicate with County to identify any stakeholders that may warrant individualized meetings. This may either be “other” stakeholders identified in Task 3.3 or primary stakeholders identified through the three meetings as warranting follow up. For the purposes of the scope of work, it is assumed that up to four such meetings will be included.

Task 3.13 - Task Summary Memorandum

A Task Summary Memorandum will be developed summarizing the above subtasks and provide the basis for addressing supplemental data collection and completing acquisition of information for model updates. County’s comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 4 - Supplemental Data Collection Based on Stakeholder Meetings

This task includes efforts to follow up and obtain various relevant data based on contacts with stakeholders in the previous task.

Task 4.1 - Municipality Stormwater Plan and Model Acquisition

Consultant will coordinate with identified municipalities and water control districts to obtain relevant stormwater plan and model information which may be warranted for model update purposes.

Task 4.2 - Planned Major Infrastructure Projects

Consultant will coordinate with local water control districts and identified municipalities to obtain relevant plans for major water resource infrastructure projects which may be warranted for model update purposes.

Task 4.3 - SFWMD ERPs, As-built plans, etc.

Consultant will coordinate with SFWMD and identified municipalities as needed to obtain relevant stormwater plan and as-built plans information relevant to drainage infrastructure that warrants inclusion in the updated model.

Task 4.4 - SFWMD Future Water Control Projects

Consultant will coordinate with the SFWMD to identify significant future water control projects which may warrant inclusion in the future conditions model.

Task 4.5 - Field Reconnaissance

Consultant will make field visits to identified drainage infrastructure and projects to confirm conditions for model inclusion. For the purposes of the scope, this effort will be limited to up to 3 days of staff time.

Task 4.6 - Field Survey - Structures, Cross-sections, Sediments

Consultant will coordinate with surveying Subconsultant to collect field survey data of features identified for inclusion in the model and/or for confirmation of current conditions of features already represented in the model as warranted. For the purpose of the scope of work, an allowance for surveying services is assumed as specific locations are not yet identified. The surveying may address the following types of features:

- Measure cross-section and profiles of major and secondary canals.
- Measure and collect as-built data of major water control structures associated with canals or primary piping systems.
- Measure and collect as-built details of bridges (span, deck, low chord, piers, opening cross-sections, channel cross-section upstream and downstream, etc.).
- Measure and collect as-built details of major storm water ponds and outfall structures.
- Measure and collect as-built detail of major pipe conveyance systems including culverts and drainage inlets.
- Measure sediment with probe depth surveys in major canals.
- Measure high water marks of water bodies and/or at bridges and significant culvert crossings.
- Provide verification of elevation data collected by previous LIDAR efforts.
- Prepare maps, cross-sections and reports as needed to accurately depict the features being surveyed.

All field survey work will be performed in accordance with the following:

- All survey work will be prepared in accordance with the Standards of Practice for surveying established by The Board of Professional Surveyors and Mappers within the State of Florida.
- Data to be collected by conventional survey measurements, GPS measurements, echo sounding and laser scanning.
- Project Horizontal control will be based on the Florida State Plane Coordinate System, East Zone, NAD 83.
- Project Vertical control will be based on NAVD 88 Vertical Datum.
- Establish vertical control networks (benchruns) as needed to support accurate vertical data for each site to be surveyed.
- Drawings will be delivered in AutoCAD (.dwg) file format. Raw data will be delivered in ASCII file format. Scan data will be delivered in RCP file format

Task 4.7 - Task Summary Memorandum

A Task Summary Memorandum will be developed summarizing the above subtasks and the supplemental data collected for model updates. County's comments in the Task

Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 5 - Develop ArcGIS Tool - MODFLOW Groundwater Output to MIKE-SHE Boundary Conditions

This task includes effort to develop a utility tool to translate groundwater MODFLOW model output into a MIKE SHE model compatible input format.

Task 5.1 - Coordinate example datasets with County

Consultant will coordinate with County to obtain the appropriate MODFLOW model output datasets to be used for the project.

Task 5.2 - Utility Development

Consultant will develop a utility tool to translate grid based MODFLOW model output data into a MIKE-SHE model compatible input format. The tool will be developed as an ArcGIS toolbox compatible with County GIS systems. For the purposes of the project it is assumed the tool will be developed at the ArcGIS 10.5 version level.

Task 5.3 - Utility Delivery and Troubleshooting

The tool will be tested by Consultant with project data and then used for project model input purposes. The tool will also be tested on County's system to ensure compatibility.

Task 5.4 – Task Summary Memorandum

Consultant will prepare a Task Summary Memorandum documenting the tool development process and providing instructional information for use of the tool in the future by County. Also, will include electronic delivery of ArcGIS tool. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 6 – Update Current Conditions MIKE SHE / MIKE-11 Model

Consultant will update the most recent version of the BCMModel from the 2014 FEMA flood insurance study to generate flood depths for selected storm scenarios. The updates will be identified through the outcomes of previous tasks including the Task 2 - Initial Data Collection and Review, Task 3 - Community Stakeholder Meetings, and Task 4 - Supplemental Data Collection including Field Survey. These may include updates to drainage systems, control structures, additional major conveyances, and channel cross sections to account for sedimentation. The updates to the model will be validated against a historical storm event (Hurricane Irma or other recent). The use of the model to predict flood depths shall be in general accordance with FEMA Guidelines and Specifications (FEMA, 2017). A description/justification of the selected model structure that will address the modeling objectives, will be agreed to among parties before model runs/all updates.

It is noted that this task will be accomplished using the current 2017 version of MIKE SHE / MIKE 11 and does not include updating the MIKE 11 model to its successor 1-D modeling package, MIKE Hydro River. MIKE Hydro River was introduced as part of the 2016 release of MIKE

SHE. While the 2016 and 2017 releases of MIKE SHE contains both MIKE 11 and MIKE Hydro River, the 2017 version is reportedly the last major release in which MIKE 11 is included as a product. MIKE Hydro River contains several computational method changes and other framework differences which would not facilitate a direct import. If desired for future compatibility, the existing MIKE 11 modeling data can be ported to MIKE Hydro River under a separate future scope of work.

Task 6.1 – Add Hydraulic Detail Based on Stakeholder Input

At the commencement of this Task, Consultant will coordinate with County to prioritize the updates identified in the initial model data needs identification, as well as updates requested by the stakeholders. Starting with the highest priority updates and working down the list of updates in order of decreasing priority, Consultant will incorporate the additional detail subject to the not-to-exceed budget for this task.

Task 6.2 –Reduce Model Grid Size

The current MIKE SHE model grid spacing in the BCModel is 500 feet x 500 feet. Because this spacing does not effectively capture fine details of topography and impervious coverage in urban areas, significant improvements in the accuracy of the 2-D overland flow component could be realized by reducing the grid spacing. Increasing the grid resolution will, however, increase run times. It is expected that grid spacing smaller than 250 feet x 250 feet may result in acceptable run times, while greatly improving the model's representation of runoff, storage, and overland flow. This task includes an initial test run with the finer grid resolution to determine the impact on model run times. If the test run results in acceptable run times, all components of the 2-D overland flow module will be re-parameterized using the source LiDAR data and detailed land use/land cover mapping. Because the objective of this task is to improve the overland flow representation, the groundwater and unsaturated zone parameters used for the 500-foot grid will be duplicated when adapting to the 250-foot or smaller grid.

Task 6.3 – Land Use Refinement

The current SFWMD FLUCFCS based land use and most recently available aerial photography will be compared with the land use in the current BCModel. Areas of recent development and other land use changes will be identified. Aerial mapping and construction drawings (where available from ERPs, etc.) will be used to update the land use in the MIKE SHE model. Additionally, overland flow roughness coefficients will be varied by land use throughout the model gridded area, as the current BCModel uses a single value for this parameter throughout the domain. Note the resolution and detail of this effort will be respective to the overall grid size of the model (i.e., localized changes in land use coverage significantly less than the grid resolution will not be addressed).

Task 6.4 – Storage Representation

The 2017 version of MIKE SHE includes a new ponded drainage routine that will be used in conjunction with land use dependent detention storage values to improve the representation of storage detention and routing in portions of the model domain where small (sub-grid scale) stormwater detention ponds or other significant storage features are not explicitly represented in the current BCModel. This task includes development

and implementation of this routine, model-wide. Storage representation will rely solely on the LiDAR based DEM, take-offs from plans or other source material will not be included. Focus will be applied to flood prone areas identified by County and municipalities as appropriate.

Task 6.5 – Hydrologic Parameterization Updates

Consultant will review the remaining MIKE SHE parameterization, including saturated zone drain levels and time constants, paved area roughness coefficients, soils parameters (specifically, the soil moisture retention curves), and hydraulic conductivities of the surficial aquifer, and update as necessary. The current model values will be retained unless sufficient justification is found for revision.

Task 6.6 – Groundwater Initial Conditions

Consultant will compare the initial groundwater elevations from the 2014 BCMModel with groundwater well data (measurements) for the time period preceding the model validation event (i.e., Hurricane Irma). The initial groundwater elevations will be adjusted if necessary in preparation for the validation simulation.

Task 6.7 – Model Validation

The existing conditions model updates will be validated by simulating a single historic storm event (most likely Hurricane Irma or other recent storm events) and comparing the results with observed stage and flow hydrographs. NEXRAD radar-based rainfall data, with a 15-minute time step (previously collected in Task 2) will be formatted for input into the MIKE SHE model. Observed tidal data, where available, will be input as boundary conditions for the major coastal outfalls. Model inputs will be adjusted, within reasonable ranges, in an effort to achieve best acceptable agreement between simulated and observed flow volumes, peak flows, and peak stages at selected measurement stations. The goodness-of-fit of peak stages and flows will be compared in a spatially varied manner as appropriate to the previous BCMModel calibration (to Hurricane Irene in 1999) to validate the improvements to the model, with the objective of obtaining an overall goodness-of-fit that is equal or better than the previous calibration.

Task 6.8 – Current Conditions Simulations

Current conditions model simulations will be run for the 10-, 25-, 50-, 100-, and 500-year design storm events, with distributions to be based on SWFWMD or NOAA 14. MIKE SHE model outputs, in the form of maximum depths of overland flow, will be compiled, mapped, and reviewed to ensure the results are reasonable and numerically stable. The MIKE 11 peak stage profiles will also be prepared using the MIKE standard post-processing tools and reviewed for reasonableness and stability. Any identified model instabilities will be addressed.

Task 6.9 – Compile Model Input Data into ArcGIS Geodatabase

Consultant will compile the current conditions MIKE SHE model input into an ArcGIS 10.5 geodatabase. The geodatabase will be populated with readily exportable data using the standard MIKE Zero toolbox.

Task 6.10 - Task Summary Memorandum

The approach, parameterization, and results of the current conditions model update will be documented in a Task Summary Memorandum and submitted to County for review.

County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 7 – Develop Future Conditions MIKE SHE / MIKE 11 Model Input

Under this task, the updated BCModel input will be modified to develop a version of the model to represent future conditions. Model inputs will be adjusted to represent projected future sea levels, future rainfall depths, major changes in future land use, and planned major future infrastructure improvements.

Task 7.1 – Develop Future Conditions Rainfall IDF Curves

The Future Conditions Rainfall Intensity Duration-Frequency (IDF) curves will be developed in accordance with the prescribed scope. In general, the process will be that the Future rainfall depths and IDF curves (and associated simulation time steps) will be derived according to NOAA Atlas 14 and based on the results of adjusting the best set of downscaled data among three alternatives to be tested:

- 1) Statistical Downscaled Localized Constructed Analogs (LOCA)
- 2) Dynamically Downscaled Center for Ocean-Atmospheric Prediction Studies (COAPS)
- 3) Dynamically Downscaled World Climate Research Program Coordinated Regional Climate Downscaling Experiment (CORDEX).

If it is determined that the results of the statistical analysis, determined according to the approach suggested by SFWMD, 2016, show large bias, a probabilistic approach to quantify potential changes to the 100-year floodplain, in response to non-stationary rainfall conditions, will be performed in conjunction with the determination of associated risks, for example by Salas & Obeysekera, 2014.

Task 7.2 – Future Sea Level Rise Scenarios

Two future sea level rise scenarios will be evaluated with the updated BCModel based on the unified projections from the Southeast Florida Climate Compact. The basis of the updated Future Conditions 100-year Flood Elevation Map (Task 10) will be model results representing flood elevations under 2060-2069 conditions. Flood elevations will also be evaluated under 2100 future conditions. In this subtask, projected sea level rise information for the year 2100 scenario will be identified, discussed and agreed upon between Consultant and County.

Task 7.3 – Future Groundwater Elevations from MODFLOW

County will provide future groundwater elevations (2060 and 2100) to be used as antecedent conditions for the future conditions MIKE SHE model based on output from recent applications of MODFLOW by the U.S. Geological Survey. This input data will represent groundwater elevations under future sea level conditions (2060-2069) in accordance with the Unified Sea Level Rise Projection for South Florida, and estimated future rainfall average in accordance with the Center for Ocean-Atmospheric Prediction Studies (COAPS) downscaled Community Climate System Model (CCSM) global model. Consultant will import these elevations, using the tool developed in Task 5, into a MIKE SHE grid file for use as initial water table elevations for the surficial aquifer.

Task 7.4 – Future Tidal Boundary Conditions

Surface water boundary conditions for the 1-D hydraulic model, the 2-D overland flow model, and surficial aquifer will be developed in consultation with SFWMD and County. Boundary conditions for projected tide and storm surge will be developed according to the C4/C7 FPLOS studies from the SFWMD. Because the FEMA Coastal Zone A modeling/mapping results will be integrated with the MIKE SHE / MIKE 11 model results, it is anticipated that it will not be necessary or appropriate for the MIKE SHE and MIKE 11 tidal boundary conditions to incorporate the effects of storm surge. Tidal boundary conditions will be based on an astronomical tide cycle (without atmospheric influences) adjusted upward to account for future sea level rise.

Task 7.5 – Future Land Use

Future land use mapping for the 2060 to 2069 scenario will be obtained from Broward County. For the purposes of the scope, up to 20 specific areas (each larger than approximately 100 contiguous acres to be targeted for development or redevelopment) that County and stakeholders will identify can be represented in the future conditions model. The land use categories for these areas will be aggregated into the subset of model-based (hydrologic) land use categories developed for MIKE SHE modeling purposes. The resulting future land use polygons will be used to parameterize the two future conditions MIKE SHE model scenarios. The approach to land-use based model parameterization will be identical to that used to update the current conditions model, and will account for storage and attenuation in the updated areas as appropriate. For the purposes of this study, it is assumed that the year 2100 land use will be unchanged from the 2060 to 2069 land use (e.g., same land use changes reflected in both model scenarios).

Task 7.6 – Future Operating Protocols of Gravity-Driven Structures

In consultation with SFWMD, any expected long-term changes to operating protocols of gravity-driven coastal structures (to adapt to future sea levels) will be incorporated into the 1-D (MIKE 11) model input. For the purposes of this study, it is assumed that the year 2100 operating protocols will be unchanged from those reflected in 2060 to 2069.

Task 7.7 – Planned Infrastructure Improvements

Potential future modifications, including planned surface water management infrastructure projects (e.g., the C-9 and C-11 Impoundments and C-51 reservoir) will be discussed with the SFWMD and incorporated into the future conditions model, as applicable, and in accordance with the approach employed by SFWMD in the Big Cypress Basin Flood Protection Level of Service (FPLOS) Study. Up to five (5) additional major water control/storage/conveyance projects identified by SFWMD and/or water control districts will be incorporated. For the purposes of this study, it is assumed that the year 2100 infrastructure improvements will be unchanged from those reflected in 2060 to 2069.

Task 7.8 – Compile Model Input Data into ArcGIS Geodatabases

Consultant will compile the future conditions MIKE SHE model input into an ArcGIS 10.5 geodatabase. The geodatabase will be populated with readily exportable data using the standard MIKE Zero toolbox.

Task 7.9 – Task Summary Memorandum

The approach and parameterization of the future conditions model scenarios will be documented in a Task Summary Memorandum and submitted to County for review. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 8 – Model Execution and Results Processing

The model inputs developed and modified in the preceding tasks will be used to generate flood elevations for the selected future conditions scenarios. Model simulations will be conducted for the 10-, 25-, 50-, 100-, and 500-year storm events for the following scenarios.

Task 8.1 – Future Conditions Simulations – 2060-2069

Future conditions (2060-2069) model simulations will be run for the 10-, 25-, 50-, 100-, and 500-year design storm events. MIKE SHE model outputs, in the form of maximum depths of overland flow, will be generated and reviewed to ensure the results are reasonable and numerically stable. The MIKE 11 peak stage profiles will also be prepared using the MIKE standard post-processing tools and reviewed for reasonableness and stability. Any identified model instabilities will be addressed.

Task 8.2 – Future Conditions Simulations – 2100

Future conditions (2100) model simulations will be run for the 10-, 25-, 50-, 100-, and 500-year design storm events. MIKE SHE model outputs, in the form of maximum depths of overland flow, will be generated and reviewed to ensure the results are reasonable and numerically stable. The MIKE 11 or MIKE Hydro River peak stage profiles will also be prepared using the MIKE standard post-processing tools and reviewed for reasonableness and stability. Any identified model instabilities will be addressed.

Task 8.3 – Model Results Post-Processing

Using the standard MIKE Zero toolbox, model results from the two future conditions simulations will be exported to ArcGIS grid files and shape files. Map projection files will be created for all feature classes.

- Maximum depth of overland flow (10-, 25-, 50-, 100-, 500-year)
- Maximum groundwater elevations in the Surficial Aquifer (10-, 25-, 50-, 100-, 500-year)

Task 8.4 – Compile Model Output Data into ArcGIS Geodatabases

Consultant will compile the future conditions MIKE SHE model output into an ArcGIS 10.5 geodatabase. In addition to the feature classes generated in the preceding subtask, feature classes will be generated to represent the overland flood elevations by adding the maximum depths over overland flow to the topographic grid elevations.

Task 8.5 – Task Summary Memorandum

The results of the future conditions model scenarios will be documented in a Task Summary Memorandum and submitted to County for review. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 9 – Develop ArcGIS Tool – Coastal Zone A Model Results Integration with MIKE SHE

The development of flood hazards in Broward County incorporates upland (riverine, surficial) and coastal sources (storm surge including wave action). In its flood risk studies, Broward County assumes that flooding from upland and coastal sources is statistically independent. This task seeks to calculate the total or actual frequency flood curve at any desired point by statistically adding flood elevations from all sources, a calculation called combined rate of return (CRR).

Task 9.1 – Extract Results from Current Coastal Storm Scenarios

Consultant will develop a tool that will read model results, perform iterative calculation of a given flood frequency, and produce an output. Time allocated to Task 9.1 includes preparation of MIKE-SHE and coastal datasets to meet the needs of the CRR Tool. For example, we will convert datasets to a different format (e.g., raster, ESRI terrain, or shapefile), clip to County's boundary, or create necessary geodatabase fields.

Task 9.2 – Develop Toolbox

Consultant will develop a tool that will read model results, perform an iterative calculation to estimate a given frequency within the range of the flood frequency curve, and produce geospatial output for mapping.

We envision the CRR Tool operation as follows.

1. Using a template geodatabase, the CRR Tool will read coastal and upland flood elevations at user-specified point locations. These locations may include the center of a grid element, a cross section, or any other location specified by the user. The CRR Tool will populate the geodatabase with the specified frequency levels.
2. The CRR Tool will allow manual edits in case the user would like to edit flood elevations. For example, the user may want to include the effects of waves, not included in FEMA's stillwater elevation surfaces.
3. The CRR Tool will iteratively solve the combined rate of return equation.
4. The CRR Tool will store results in the same geodatabase.

The CRR tool will be delivered as an ArcGIS toolbox. Some tool functionality may change during its development to improve efficiency and accommodate Broward County's interests. Major changes to the design of the CRR Tool proposed in this scope of work, may require an additional fee.

Task 9.3 – Integrate Coastal Zone Results with Future MIKE SHE Model Results

Consultant will compute flood frequency results using the tool developed in Task 9.2. We will create a point shapefile with locations of interest in obtaining combined rate of return. Typically, these points will extend upstream along tidally-influenced canals. Staff will review results and recalculate combined rates, if necessary. The task includes the development of a geodatabase or shapefile with combined elevations that mappers can use to delineate flood risks.

Task 9.4 – Task Summary Memorandum

Consultant will prepare Task Summary Memorandum documenting the tool development process and providing instructional information for use of the tool in the future by County, including documentation that will guide the user on how to operate the tool and describe input and output products for future reference. Also, will include electronic delivery of ArcGIS tool. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 10 - Develop ArcGIS Tool - Generate Future 100-year Flood Contour Map

This task will produce a utility tool that will convert MIKE SHE output flood stages into contours suitable for County flood mapping purposes.

Task 10.1 - Develop Toolbox

Consultant will develop a work flow process to generate 100-year flood contours from GIS based model output data. This work flow will rely on standard ArcGIS based processes which will be compiled into an ArcGIS toolbox for delivery to County. The tool box will be troubleshooted using project model output datasets to generate desired results. The generalized process will be to use rasterized flood stage results processed from the model output and DEM, then further process using contouring tools to produce desired results in vector format. Resulting contour elevation features will be attributed with results in both NGVD 1929 and NAVD 1988 vertical datums.

Task 10.2 - Generate Future 2060-2069 100-year Flood Contour Map

An ArcGIS map template (mxd) will generated in to facilitate depiction of the resulting 100-year flood contours in a format similar to the previous 1977 100-year flood map used by County.

Task 10.3 - Task Summary Memorandum

Consultant will prepare a Task Summary Memorandum providing details on the construction of the tool and providing instructions on usage, data format requirements, etc. Also, will include electronic delivery of ArcGIS tool and map template. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 11 - CRS Evaluation and Recommendations

This task will evaluate current Community Rating System (CRS) credits for Broward County and applicable municipalities, and recommend categories for improvement in the rating system based on this study. Consideration of FEMA Guidelines and Specifications shall be made when using the results of the flood modeling as a basis to evaluate CRS improvement measures.

Task 11.1 - Develop CRS Credit Information for Initial Stakeholder Meetings

Consultant will compile CRS data relevant to Broward County and its municipalities from reference sources and preliminarily identify applicable sections that may be influenced by the results of this project. This will be used to develop information to be shared with relevant stakeholders at the initial project coordination meetings.

Task 11.2 - Compile Current CRS Rating Data from County and Municipalities

Based on input from stakeholders, compile and summarize current CRS program data from participating municipalities. Comparison of current rating credit will be performed.

Task 11.3 - Evaluate Credit Opportunities Relevant to Flood Mapping Effort

Based on compiled data and evaluation, evaluate potential areas for additional credit opportunity for County and applicable municipalities based on the results of this 100-year flood map project. This will be evaluated in general County-wide and individually specific to applicable municipalities.

Task 11.4 - Prepare Potential CRS Credit Recommendations

Based on the results of the previous tasks, generate a matrix of specific potential CRS credit recommendations. It is noted that this will focus on recommendation for County and applicable municipalities (municipalities which are specifically identified during the initial stakeholder process as expressing interest in receiving recommendation and that actively engaged in a dialog regarding CRS under this effort).

Task 11.5 - Task Summary Memorandum

The results of the above referenced task will be provided in a Task Summary Memorandum for County's review and comment. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 12 - Presentation of Results to County and Stakeholders

This task includes effort to coordinate, attend, and disseminate information to identified stakeholders during the course of the project.

Task 12.1 - Meetings at Milestones (assume 2)

Consultant shall coordinate with County to prepare for and attend meetings at key project milestones to disseminate project results to interested stakeholders. For the purposes of the scope of work, it is assumed that up to two meetings will be included. It is assumed that Consultant shall prepare presentation materials to assist the County with the meeting.

Task 12.2 - Meetings During Map Adoption Process (assume 2)

Consultant shall coordinate with County to prepare for and attend meetings during the map adoption process to relevant stakeholders. For the purposes of the scope of work, it is assumed that up to two meetings will be included. It is assumed that Consultant shall prepare presentation materials to assist County with the meeting.

Task 12.3 - Task Summary Memorandum

A Task Summary Memorandum will be prepared capturing the results of the milestone and map adoption meetings and documenting any relevant decisions and supporting information. County's comments in the Task Summary Memorandum, if any, will be addressed in the draft Project Summary Report (Task 13).

Task 13 - Prepare and Submit Draft Summary Report

This task includes efforts to develop a comprehensive draft report of project activities for County review.

Task 13.1 - Prepare draft report narrative and supporting figures, tables, etc.

It is anticipated this will incorporate information from the various task summary memos into a combined report. In general, the organization will include an introduction, narrative sections corresponding to scope tasks, and supporting appendices. Relevant figures and table of data will be provided. The appendices will be focused on immediately supportive material to the report narrative. Volume reference information and model related data will be referenced but provided as part of the electronic deliverable (cataloged for future reference purposes).

Task 13.2 - Report QA/QC

The report will have senior review conducted by the project manager and a peer review by a qualified individual not directly associated with the project for QA/QC purposes.

Task 13.3 - Publish report

The draft report will be published in PDF format for delivery to County. Native files will be provided along with back up reference and model materials in a set of electronic deliverables.

Task 14 - Prepare and Submit Final Summary Report

Task 14.1 - Prepare final report

Based on County comments and those of other applicable stakeholders, Consultant will revise and finalize the report.

Task 14.2 - Report QA/QC

The report will have senior review conducted by the project manager and a peer review by a qualified individual not directly associated with the project for QA/QC purposes.

Task 14.3 - Publish report

The final report will be published in PDF format for delivery to County. Native files will be provided along with back up reference and model materials in a set of electronic deliverables. It is understood that the information developed during the project will be used to support technical publications and /or presentation to organizations.

Task 15 - Project Management

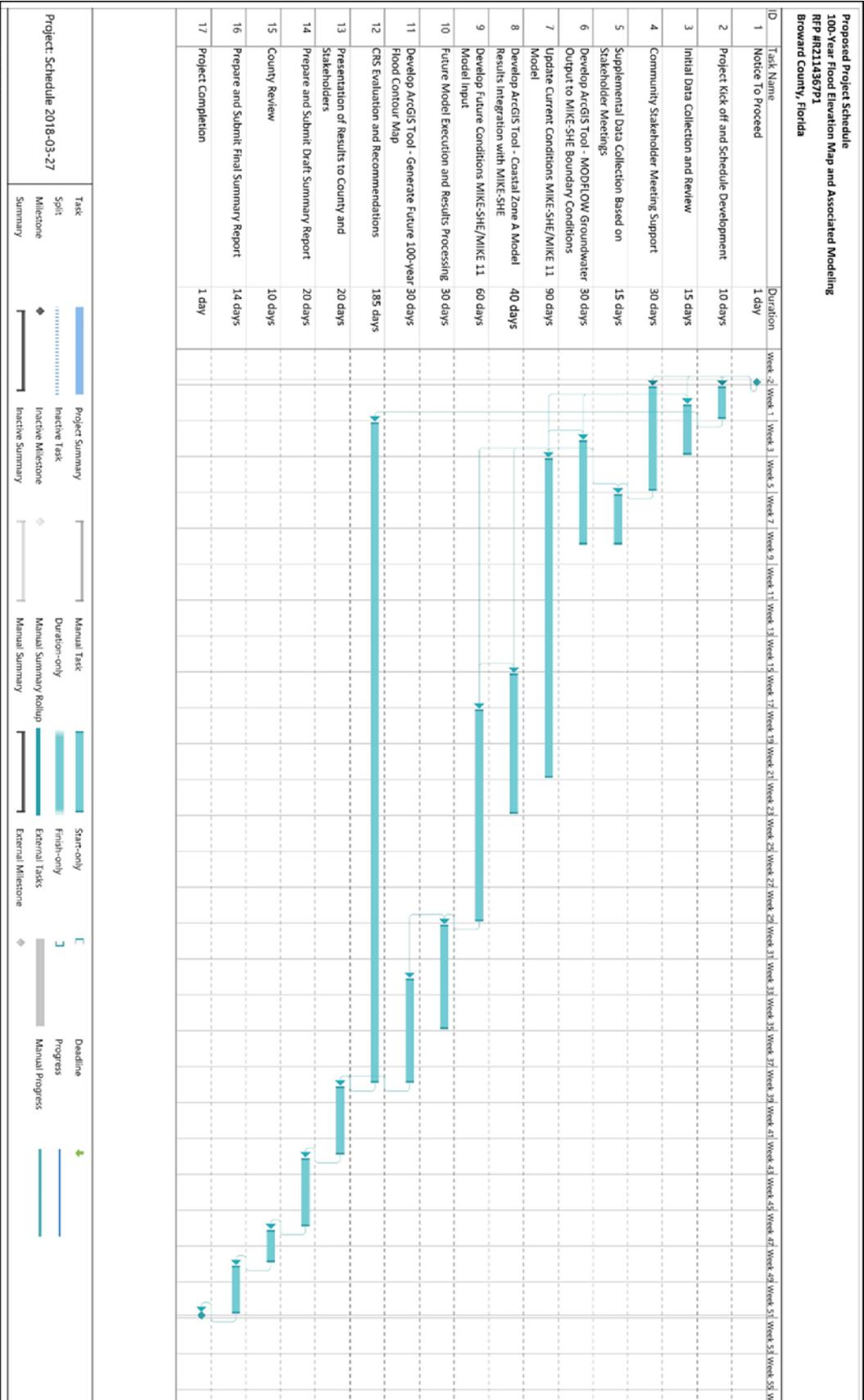
This task includes various administrative efforts necessary for execution of the project work.

Task 15.1 - Project setup & administration

Task 15.2 - Management of subconsultant efforts and QA/QC

Task 15.3 - Management of technical staff efforts and general project QA/QC

Task 15.4 - Project tracking, schedule updates, weekly status reports, etc.



Project Team & Roles

Geosyntec Consultants – Prime Consultant for Contract Management, stakeholder coordination, model data collection and development, utility tool development, CRS consulting, and report production.

Taylor Engineering – Subconsultant for model development, utility tool development, and report production support.

Adept Public Relations – Subconsultant for stakeholder coordination support.

Strowd Engineering – Special subconsultant for coordination with stakeholder data sources, and model peer review support.

Stoner and Associates – Subconsultant for field survey data collection to support model development.

Communication and Reports

The Consultant shall communicate the current project status and share pertinent information through a status report delivered upon 50% and 100% completion of each activity, and organize bi-weekly meetings to present updated project status and discuss technical approach.

For major milestones of the project and major assumptions needed for project execution, the consulting team needs to obtain formal approval from County's Project Manager to proceed. If significant changes to the original approved plan occurs, County's Project Manager will need to be fully involved, and re-approval obtained, if necessary.

References

Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact). October 2015. Unified Sea Level Rise Projection for Southeast Florida. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee. 35 p.

Federal Emergency Management Agency. August 18, 2014. Federal Insurance Study Broward County, Florida and incorporated Areas. Flood Insurance Study Number 12011CV000A. 60 p.

Federal Emergency Management Agency. FEMA's Guidelines and Standards for Flood Risk Analysis and Mapping. Available at: <https://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping> Access on April, 2017.

South Florida Water Management District. Determination of Future Intensity-Duration-Frequency Curves for Level of Service Planning Projects – Extreme Rainfall Analysis in Climate Model Outputs to Determine Temporal Changes in Intensity-Duration-Frequency Curves. November 2016.

Salas, J.; Obeysekera, J. (2014) Revisiting the Concepts of Return Period and Risk for Nonstationary Hydrologic Extreme Events. Journal of Hydrologic Engineering 19: 554-568p. ASCE.

NAD_1983_HARN_StatePlane_Florida_East_FIPS_0901_Feet
WKID: 2881 Authority: EPSG

Projection: Transverse_Mercator
False_Easting: 656166.6666666665
False_Northing: 0.0
Central_Meridian: -81.0
Scale_Factor: 0.9999411764705882
Latitude_Of_Origin: 24.33333333333333
Linear Unit: Foot_US (0.3048006096012192)

Geographic Coordinate System: GCS_North_American_1983_HARN
Angular Unit: Degree (0.0174532925199433)
Prime Meridian: Greenwich (0.0)
Datum: D_North_American_1983_HARN
Spheroid: GRS_1980
Semimajor Axis: 6378137.0
Semiminor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

Figure 2. Recommended GIS Coordinate System and Datum

Estimated Not to Exceed Fees

Based on the foregoing scope of work, the estimated fees for performing the work is provided below. It is anticipated that these fees will be billed to County based on percent complete by task, subject to the not to exceed task amounts and overall cost summarized below.

Task	Task Description	Geosyntec	Taylor	Adept	Strowd	Stoner	Total
1	Project Kick off and Schedule Development	\$10,508	\$4,120	\$0	\$0	\$0	\$14,628
2	Initial Data Collection and Review	\$34,680	\$10,444	\$0	\$0	\$0	\$45,124
3	Community Stakeholder Meeting Support	\$20,944	\$1,522	\$19,365	\$5,925	\$0	\$47,756
4	Supplemental Data Collection Based on Stakeholder Meetings	\$16,316	\$11,216	\$0	\$1,500	\$74,980	\$104,012
5	Develop ArcGIS Tool - MODFLOW Groundwater Output to MIKE-SHE Boundary Conditions	\$16,856	\$672	\$0	\$0	\$0	\$17,528
6	Update Current Conditions MIKE-SHE/MIKE 11 Model	\$24,316	\$159,948	\$0	\$0	\$0	\$184,264
7	Develop Future Conditions MIKE-SHE/MIKE 11 Model Input	\$35,872	\$43,850	\$0	\$0	\$0	\$79,722
8	Future Model Execution and Results Processing	\$23,992	\$30,844	\$0	\$2,700	\$0	\$57,536
9	Develop ArcGIS Tool - Coastal Zone A Model Results Integration with MIKE-SHE	\$8,024	\$39,132	\$0	\$0	\$0	\$47,156
10	Develop ArcGIS Tool - Generate Future 100-year Flood Contour Map	\$28,548	\$2,604	\$0	\$1,800	\$0	\$32,952
11	CRS Evaluation and Recommendations	\$19,308	\$0	\$0	\$0	\$0	\$19,308
12	Presentation of Results to County and Stakeholders	\$11,344	\$0	\$5,852	\$0	\$0	\$17,196
13	Prepare and Submit Draft Summary Report	\$13,984	\$6,416	\$0	\$0	\$0	\$20,400
14	Prepare and Submit Final Summary Report	\$8,808	\$2,472	\$0	\$0	\$0	\$11,280
15	Project Management	\$11,440	\$6,592	\$0	\$0	\$0	\$18,032
	Miscellaneous Reimbursables Allowance*	\$1,000	\$0	\$0	\$0	\$0	\$1,000
Totals:		\$285,940	\$319,832	\$25,217	\$11,925	\$74,980	\$717,894
% of Total		39.8%	44.6%	3.5%	1.7%	10.4%	100.0%

* Allowance to account for miscellaneous expense related to communications, production, field, travel, etc.

**EXHIBIT B
MAXIMUM BILLING RATES**

**EXHIBIT B
MAXIMUM BILLING RATES**

Project No: RFP #R2114367P1
 Project Title: 100-YEAR FLOOD ELEVATION MAP AND ASSOCIATED MODELING
 Consultant/
 Subconsultant Name: GEOSYNTEC CONSULTANTS, INC.

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
			3.0		
Staff Professional	33.65				100.95
Sr. Staff Professional	36.54				109.62
Professional	45.83				137.49
Project Professional	50.24				150.72
Sr. Professional	74.52				223.56
Principal	78.85				236.55
Sr. Principal	79.33				237.99
Engineering Tech I	22.25				66.75
Engineering Tech II	19.00				57.00
Sr. Engineering Tech I	24.00				72.00
Sr. Engineering Tech II	37.00				111.00
Site Manager I	31.54				94.62
Site Manager II	44.40				133.20
Construction Mgr. II	33.89				101.67
Designer	48.80				146.40
Sr. Drafter/CADD Op.	30.75				92.25
Drafter/CADD Op/Artist	27.25				81.75
Project Administrator	40.14				120.42
Clerical	36.54				109.62

Multiplier of X.XX is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (X.XX)% - 1.849

FRINGE = HOURLY RATE X FRINGE (X.XX) % - 0.744

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (X.XX)%
 (1.00 + 2.593) X 10% = 0.359

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE (1.00 + 2.593+0.359) = 3.952*

* Note: bill rate multiplier capped at 3.0 at direction of Broward County

January 30, 2018

**EXHIBIT B
MAXIMUM BILLING RATES**

Project No: RFP #R2114367P1
 Project Title: 100-Year Flood Elevation Map and Associated Modeling
 Consultant/ Taylor Engineering, Inc.
 Subconsultant Name:

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
President	\$99.95		2.31		\$230.88
Principal Engineer	\$69.35		2.31		\$160.20
Senior Advisor	\$73.20		2.31		\$169.09
Project Manager/ Director	\$62.85		2.31		\$145.18
Senior Professional	\$59.30		2.31		\$136.98
Project Professional	\$43.60		2.31		\$100.72
Staff Professional	\$35.35		2.31		\$81.66
Senior GIS/CAD	\$47.00		2.31		\$108.57
Staff GIS/CAD	\$34.45		2.31		\$79.58
Administrative	\$21.70		2.31		\$50.13
Intern	\$16.00		2.31		\$34.65

Multiplier of 2.31 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (110)% - safe harbor rate

FRINGE = HOURLY RATE X FRINGE (0) %

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10.00)%

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE

2.31

**EXHIBIT B
MAXIMUM BILLING RATES**

Project No: **RPF # R2114367P1**

Project Title: **100-YEAR FLOOD ELEVATION MAP AND ASSOCIATED MODELING**

Consultant/ **STROWD Engineering, LLC**

Sub-Consultant Name: **Tommy B. Strowd, P.E.**

FILL IN POSITIONS AS APPLICABLE

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE
			2.31		(\$/HR)
Public/Stakeholder Outreach	64.93		2.31	=	150.00
				=	

Multiplier of 2.31 is calculated as follows (Safe Harbor Rate Elected):

SAFE HARBOR = HOURLY RATE X COMBINED FRINGE & OVERHEAD (110.00%)

OPERATING MARGIN = (HOURLY RATE + SAFE HARBOR) X OPERATING MARGIN (10.00%)

MULTIPLIER = (HOURLY RATE + SAFE HARBOR + OPERATING MARGIN) / HOURLY RATE

MULTIPLIER = (HOURLY RATE + SAFE HARBOR + OPERATING MARGIN) / HOURLY RATE

**EXHIBIT B
MAXIMUM BILLING RATES**

Project No: RFP No. R2114367P1
 Project Title: 100-Year Flood Elevation Map and Associated Modeling
 Consultant/ Stoner & Associates, Inc.
 Subconsultant Name:

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE
			2.51		(\$/HR)
Principal	\$48.08		2.51		\$120.45
Sr. Professional Land Surveyor	\$39.90		2.51		\$99.96
Professional Land Surveyor	\$37.98		2.51		\$95.15
Field Crew Supervisor	\$27.88		2.51		\$69.84
Survey/CAD Technician	\$23.00		2.51		\$57.62
Survey Crew (2 Person)	\$44.75		2.51		\$112.11
Survey Crew (3 Person)	\$58.25		2.51		\$145.92
Administrative Assistant	\$28.37		2.51		\$71.07

Multiplier of 2.51 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (97.56)%

FRINGE = HOURLY RATE X FRINGE (30.18) %

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10.00)%

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE 2.51

**EXHIBIT B
MAXIMUM BILLING RATES**

Project No: **RPF # R2114367P1**
 Project Title: **100-YEAR FLOOD ELEVATION MAP AND ASSOCIATED MODELING**
 Consultant/
 Sub-Consultant Name: **Geosyntec Consultants, Inc.
 Adept Public Relations, LLC**

FILL IN POSITIONS AS APPLICABLE

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE
			2.31		(\$/HR)
Public/Stakeholder Outreach	83.33		2.31	=	192.49
Public/Stakeholder Outreach	75.00		2.31	=	173.25

Multiplier of 2.31 is calculated as follows (Safe Harbor Rate Elected):

SAFE HARBOR = HOURLY RATE X COMBINED FRINGE & OVERHEAD (110.00%)

OPERATING MARGIN = (HOURLY RATE + SAFE HARBOR) X OPERATING MARGIN (10.00%)

MULTIPLIER = (HOURLY RATE + SAFE HARBOR + OPERATING MARGIN) / HOURLY RATE

MULTIPLIER = (HOURLY RATE + SAFE HARBOR + OPERATING MARGIN) / HOURLY RATE

**EXHIBIT B-1
REIMBURSABLES FOR DIRECT NON-SALARY EXPENSES**

Reimbursable	Maximum Reimbursable
Copies / Plots	
B/W Copies – 8½"x11"	\$0.05 EA
B/W Copies – 11"x17"	\$0.10 EA
Color Copies – 8½" x 11"	\$1.00 EA
Color Copies – 11" x 17"	\$2.00 EA
24"x36" Color Plot	\$20.00 EA
36"x48" Color Plot	\$30.00 EA
Mounting & Laminating (Presentation Materials)	
Gator Board (3/16") Mounting with Gloss/Matte Finish	\$15.00 per SF
Digital Archiving (include copying/burning and labeling)	
USB FlashDrive / CD / DVD Data Burn	\$15.00 EA
Courier / Express Delivery Service	
Broward County	\$20.00 EA
Specialized Computer Software	\$15 Per HR
Travel Related Expenses	
Mileage	\$0.445 Per Mile
Tolls / Parking	At Cost
Lodging / Meals	At Cost
Total Maximum Reimbursables:	\$1,000

**EXHIBIT C
LETTERS OF INTENT**

Consultant represents that the CBE participants referenced in the attached Letters of Intent have agreed by written subcontract to perform the percentage of work amounts set forth and that the following information regarding participating Subconsultants is true and correct to the best of his/her knowledge.

Solicitation Number: R2114367P1 Project Title: 100-Year Flood Elevation Map and Associated Modeling

Bidder/Offoror Name:

Address: **City:** **State:** **Zip:**

Authorized Representative: **Phone:**

CBE Subcontractor/Supplier Name:

Address: **City:** **State:** **Zip:**

Authorized Representative: **Phone:**

- A. This is a letter of intent between the bidder/offoror on this project and a CBE firm for the CBE to perform subcontracting work on this project.
- B. By signing below, the bidder/offoror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offoror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm			
Description	NAICS [†]	CBE Contract Amount [†]	CBE Percentage of Total Project Value
Surveying Services	541370		10%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Subcontractor/Supplier Authorized Representative

(Signature) (Title) (Date)

Bidder/Offoror Authorized Representative

(Signature) (Title) (Date)

* Visit <http://www.census.gov/eos/www/naics/> to search. Match type of work with NAICS code as closely as possible.
 † To be provided only when the solicitation requires that bidder/offor include a dollar amount in its bid-offer.

In the event the bidder/offoror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

**APPLICATION FOR EVALUATION OF GOOD FAITH EFFORT
PURSUANT TO BUSINESS OPPORTUNITY ACT OF 2012, Sec. 1-81.5(e)**

If applicable, this form and supporting documentation should be returned with the Vendor's submittal. If not provided with solicitation submittal, the Vendor must supply information within three business days of County's request. Vendor should scan and upload the supporting documentation in BidSync.

SOLCITATION NO.: R2114367P1 PROJECT NAME: 100-Year Flood Elevation Map and Associated Modeling

Solicitation Number: R2114367P1

Project Title: 100-Year Flood Elevation Map and Associated Modeling

Bidder/Offeror Name:

Address: City: State: Zip:

Authorized Representative: Phone:

CBE Subcontractor/Supplier Name:

Address: City: State: Zip:

Authorized Representative: Phone:

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform subcontracting work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm			
Description	NAICS*	CBE Contract Amount†	CBE Percentage of Total Project Value
Public Relations/Community Stakeholder Meetings	541820		3%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Subcontractor/Supplier Authorized Representative

Digitally signed by Dana Pollitt
 DN: cn=Dana Pollitt, o=AdeptST
 Managing Partner
 6/22/17
 (Signature) (Title) (Date)
Date: 2017.06.22 14:31:38 -04'00'

Bidder/Offeror Authorized Representative

Senior Principal
 June 28, 2017
 (Signature) (Title) (Date)

* Visit <http://www.census.gov/eos/www/naics/> to search. Match type of work with NAICS code as closely as possible.
 † To be provided only when the solicitation requires that bidder/offer include a dollar amount in its bid-offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

**APPLICATION FOR EVALUATION OF GOOD FAITH EFFORT
PURSUANT TO BUSINESS OPPORTUNITY ACT OF 2012, Sec. 1-81.5(e)**

If applicable, this form and supporting documentation should be returned with the Vendor's submittal. If not provided with solicitation submittal, the Vendor must supply information within three business days of County's request. Vendor should scan and upload the supporting documentation in BidSync.

SOLCITATION NO.: R2114367P1 PROJECT NAME: 100-Year Flood Elevation Map and Associated Modeling

EXHIBIT C-1
SCHEDULE OF SUBCONSULTANTS

Project No: R2114367P1
 Project Title: Broward County 100-Year Flood Elevation Map and Associated Modeling
 Facility Name: N/A (Services are County-wide Mapping and Modeling)

No.	Firm Name	Discipline
1.	Taylor Engineering, Inc.	Coastal and Hydraulic Modeling
2	Adept Strategy and Public Relations, LLC	Public Outreach and Stakeholder Coordination
3	Stoner & Associates, Inc.	Survey and Data Collection
4	Strowd Engineering, LLC	Regional and Local Water Resources Management Technical Expertise
5.		
6.		
7		
8		
9.		
10.		

EXHIBIT D
MINIMUM INSURANCE REQUIREMENTS

TYPE OF INSURANCE	MINIMUM LIABILITY LIMITS		
		Each Occurrence	Aggregate
COMMERCIAL GENERAL LIABILITY Broad form or equivalent <i>With no exclusions or limitations for:</i> <input checked="" type="checkbox"/> Premises–Operations <input type="checkbox"/> Explosion, Collapse, Underground Hazards <input checked="" type="checkbox"/> Products/Completed Operations Hazard <input checked="" type="checkbox"/> Contractual Insurance <input checked="" type="checkbox"/> Independent Contractors <input checked="" type="checkbox"/> Personal Injury <input type="checkbox"/> Other:	Bodily Injury		
	Property Damage		
	Combined single limit Bodily Injury & Property Damage	\$ 1 mil	\$ 2 mil
	Personal Injury		
BUSINESS AUTO LIABILITY* COMPREHENSIVE FORM <input checked="" type="checkbox"/> Owned *May be waived <input checked="" type="checkbox"/> Hired if no driving will be <input checked="" type="checkbox"/> Non-owned done in performance <input checked="" type="checkbox"/> Scheduled of services. <input checked="" type="checkbox"/> Any Auto	Bodily Injury (each person)		
	Bodily Injury (each accident)		
	Property Damage		
	Combined single limit Bodily Injury & Property Damage	1 mil	
EXCESS/UMBRELLA LIABILITY <i>May be used to supplement minimum liability coverage requirements.</i>	Follow form basis or Add'l insd endorse- ment is required		
<input checked="" type="checkbox"/> WORKERS' COMPENSATION <input checked="" type="checkbox"/> EMPLOYERS' LIABILITY	Chapter 440 FS (each accident)	STATUTORY \$ 1 mil	U.S. Longshoremen & Harbor Workers' Act & Jones Act is required for any activities on or about navigable water
<input checked="" type="checkbox"/> PROFESSIONAL LIABILITY ~	(each accident)	\$ 1 mil	
	Extended reporting period	2 years	
<small>DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES</small> Broward County is listed as an additional insured on the general liability and business automobile liability policies. Waiver of subrogation in favor of Certificate Holder applies to general liability, automobile liability, and workers compensation. INDICATE BID #, RLI, RFP, AND PROJECT MANAGER ON COL. REFERENCE: 100 Year Flood Mapping			
CERTIFICATE HOLDER: Broward County 115 South Andrews Ave Suite 329-H Fort Lauderdale, FL 33301 Attention: Ana Carolina Maran		 <small>Digitally signed by TIMOTHY CROWLEY DN: dc=city, dc=broward, dc=fl, ou=Organization, ou=BCC, ou=RM, ou=Users, cn=TIMOTHY CROWLEY Date: 2017.04.11 17:08:07 -0400</small> Risk Management Division	

Revised 2015