

**STANDARD FORM OF AGREEMENT  
BETWEEN  
OWNER AND ENGINEER**

THIS IS AN AGREEMENT made as of **12/2220 08** between Nassau County ("OWNER") and Camp Dresser and McKee ("ENGINEER").

OWNER intends to Evaluate Thomas Creek (the "Project").

OWNER and ENGINEER in consideration of their mutual covenants herein agree in respect of the performance or furnishing of services by ENGINEER with respect to the Project and the payment for those services by OWNER as set forth below. Execution of this Agreement by ENGINEER and OWNER constitutes OWNER's written authorization to ENGINEER to proceed on the date first above written with the Services described in Article 1 below. This Agreement will become effective on the date first above written.

**ARTICLE 1 – SCOPE OF SERVICES**

- 1.1 ENGINEER agrees to perform for OWNER services as described in Exhibit A (hereinafter referred to as "Services") in accordance with the requirements outlined in this Agreement.

**ARTICLE 2 – TIMES FOR RENDERING SERVICES**

- 2.1 The specific time period for the performance of ENGINEER's Services are set forth in Exhibit A.
- 2.2 If the specific periods of time for rendering services or specific dates by which services are to be completed are changed through no fault of ENGINEER, the rates and amounts of compensation provided for herein shall be subject to equitable adjustment. If OWNER has requested changes in the scope, extent, or character of the Project, the time of performance and compensation for ENGINEER's services shall be adjusted equitably.
- 2.3 If ENGINEER's services are delayed or suspended in whole or in part by OWNER for more than three months through no fault of ENGINEER, ENGINEER shall be entitled to equitable adjustment of rates and amounts of compensation provided for elsewhere in this Agreement to reflect, among other things, reasonable costs incurred by ENGINEER in connection with such delay or suspension and reactivation and the fact that the time for performance under this Agreement has been revised

**ARTICLE 3 – OWNER'S RESPONSIBILITIES**

OWNER shall do the following in a timely manner so as not to delay the services of ENGINEER and shall bear all costs incident thereto:

- 3.1 Pay the ENGINEER in accordance with the terms of this Agreement.
- 3.2 Designate in writing a person to act as OWNER's representative with respect to the services to be performed or furnished by ENGINEER under this Agreement. Such person will have complete authority to transmit instructions, receive information, interpret, and define OWNER's policies and decisions with respect to ENGINEER's services for the Project.
- 3.3 Provide all criteria and full information as to OWNER's requirements for the Project, including, as applicable to the Services, design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and furnish copies of all design and construction standards

which OWNER will require to be included in the Drawings and Specifications.

- 3.4 Assist ENGINEER by placing at ENGINEER's disposal all available information pertinent to the Project including previous reports and, as applicable to the Services, any other data relative to design or construction of the Project, all of which ENGINEER shall be entitled to rely upon.
- 3.5 Give prompt written notice to ENGINEER whenever OWNER observes or otherwise becomes aware of any development that affects the scope or time of performance or furnishing of ENGINEER's Services or any defect or conformance in ENGINEER's Services or in the work of any Contractor.
- 3.6 Bear all costs incident to compliance with the requirements of this Article 3.

#### ARTICLE 4 – PAYMENTS TO ENGINEER FOR SERVICES

##### 4.1 Methods of Payment for Services of ENGINEER.

- 4.1.1 OWNER shall pay ENGINEER for Services performed or furnished under this Agreement or as described in Exhibit A. The amount of any excise, VAT, or gross receipts tax that may be imposed shall be added to the compensation shown in Exhibit
- 4.1.2 Invoices for Services will be prepared in accordance with ENGINEER's standard invoicing practices and will be submitted to OWNER by ENGINEER at least monthly. Invoices are due ~~and payable on receipt.~~ *45 days after receipt. DEN 12/30/08*
- 4.1.3 ~~IF OWNER fails to make any payment due ENGINEER for services and expenses within thirty days after receipt of ENGINEER's invoice therefor, the amounts due ENGINEER will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day; and, in addition, ENGINEER may, after giving seven days' written notice to OWNER, suspend services under this Agreement until ENGINEER has been paid in full all amounts due for services, expenses and charges. Payments will be credited first to interest and then to principal. In the event of a disputed or contested billing, only that portion so contested may be withheld from payment, and the undisputed portion will be paid.~~

*DAH 1-21-09*  
*DAH 1-21-09*  
*DEN 12/30/08*  
*SEN 1-21-09*

OWNER agrees to pay ENGINEER all costs of collection including but not limited to reasonable attorneys' fees, collection fees and court costs incurred by ENGINEER to collect properly due payments.

#### ARTICLE 5 – GENERAL CONDITIONS

##### 5.1 Standard of Care

The standard of care for all professional engineering and related services performed or furnished by ENGINEER under this Agreement will be the care and skill ordinarily used by members of ENGINEER's profession practicing under similar conditions at the same time and in the same locality.

##### 5.2 Opinions of Probable Construction Cost

ENGINEER's opinions of probable Construction Cost, as applicable to the Services, provided for herein are to be made on the basis of ENGINEER's experience and qualifications and represent ENGINEER's best judgment as an experienced and qualified professional engineer generally familiar with the construction industry. However, since ENGINEER has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, or when the Project will be constructed ENGINEER cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by ENGINEER. If OWNER wishes greater assurance as to probable Construction Cost, OWNER shall employ an independent cost estimator.

### 5.3 Termination

The obligation to provide further services under this Agreement may be terminated by either party upon thirty days' written notice in the event of substantial failure by the other party to perform in accordance with the terms thereof through no fault of the terminating party. In the event of any termination, ENGINEER will be paid for all services rendered and reimbursable expenses incurred to the date of termination and, in addition, all reimbursable expenses directly attributable to termination.

### 5.4 Use of Documents

5.4.1 All Documents are instruments of service in respect to this Project, and ENGINEER shall retain an ownership and property interest therein (including the copyright and the right of reuse at the discretion of the ENGINEER) whether or not the Project is completed.

5.4.2 OWNER may rely upon that data or information set forth on paper (also known as hard copies) that the OWNER receives from the ENGINEER by mail, hand delivery, or facsimile, are the items that the ENGINEER intended to send. Files in electronic media format of text, data, graphics, or other types that are furnished by the ENGINEER to the OWNER are furnished only for convenience, not reliance by the OWNER. Any conclusion or information obtained or derived from such electronic files will be at the OWNER's sole risk. In all cases, the original hard copy of the documents takes precedence over the electronic files.

5.4.3 Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the OWNER agrees that it will perform acceptance tests or procedures within 60 days, after which the OWNER shall be deemed to have accepted the data thus transferred. Any transmittal errors detected within the 60-day acceptance period will be corrected by the ENGINEER.

5.4.4 When transferring documents in electronic media format, the ENGINEER makes no representations as to long-term compatibility, usability, or readability of such documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the ENGINEER.

5.4.5 OWNER may make and retain copies of documents for information and reference in connection with use on the Project by OWNER. ENGINEER grants OWNER a license to use the Documents on the Project, extensions of the Project, and other projects of OWNER, subject to the following limitations: (1) OWNER acknowledges that such Documents are not intended or represented to be suitable for use on the Project unless completed by ENGINEER, or for use or reuse by OWNER or others on extensions of the Project or on any other project without written verification or adaptation by ENGINEER; (2) any such use or reuse, or any modification of the Documents, without written verification, completion, or adaptation by ENGINEER, as appropriate for the specific purpose intended, will be at OWNER's sole risk and without liability or legal exposure to ENGINEER or to ENGINEER's Consultants; (3) OWNER shall indemnify and hold harmless ENGINEER and ENGINEER's Consultants from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from any use, reuse, or modification without written verification, completion, or adaptation by ENGINEER; (4) such limited license to OWNER shall not create any rights in third parties.

5.4.6 If ENGINEER at OWNER's request verifies or adapts the Documents for extensions of the Project or for any other project, then OWNER shall compensate ENGINEER at rates or in an amount to be agreed upon by OWNER and ENGINEER.

### 5.5 Controlling Law

This Agreement is to be governed by the law of the principal place of business of ENGINEER.

5.6 Mutual Waiver of Consequential Damages

Notwithstanding any other provision of this Agreement to the contrary, neither party including their officers, agents, servants and employees shall be liable to the other for lost profits or any special, indirect, incidental, or consequential damages in any way arising out of this Agreement however caused under a claim of any type or nature based on any theory of liability (including, but not limited to: contract, tort, or warranty) even if the possibility of such damages has been communicated.

5.7 Limitation of Liability

In no event shall ENGINEER's total liability to OWNER and/or any of the OWNER's officers, employees, agents, contractors or subcontractors for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in any way related to this agreement from cause or causes, including, but not limited to, ENGINEER's wrongful act, omission, negligence, errors, strict liability, breach of contract, breach of warranty, express or implied, exceed the total amount of fee paid to ENGINEER under this agreement or \$50,000, whichever is greater.

5.8 Successors and Assigns

5.8.1. OWNER and ENGINEER each is hereby bound and the partners, successors, executors, administrators and legal representatives of OWNER and ENGINEER (and to the extent permitted by paragraph 5.8.2 the assigns of OWNER and ENGINEER) are hereby bound to the other party to this Agreement and to the partners, successors, executors, administrators and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements and obligations of this Agreement.

5.8.2. Neither OWNER nor ENGINEER may assign, sublet or transfer any rights under or interest (including, but without limitation, moneys that may become due or moneys that are due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting or transfer is mandated by law or the effect of this limitation may be restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

5.8.3. Unless expressly provided otherwise in this Agreement:

5.8.3.1. Nothing in this Agreement shall be construed to create, impose or give rise to any duty owed by ENGINEER to any Contractor, Subcontractor, Supplier, other person or entity, or to any surety for or employee of any of them, or give any rights in or benefits under this Agreement to anyone other than OWNER and ENGINEER.

5.8.3.2. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of OWNER and ENGINEER and not for the benefit of any other party.

5.9 Notices

Any notice required under this Agreement will be in writing, addressed to the appropriate party at the address which appears on the signature page to this Agreement (as modified in writing from time to time by such party) and given personally, by registered or certified mail, return receipt requested, by facsimile, or by a nationally recognized overnight courier service. All notices shall be effective upon the date of receipt.

5.10 Severability

Any provision or part of the Agreement held to be void or unenforceable under any law or regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and ENGINEER, who agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

5.11 Changed Conditions

If concealed or unknown conditions that affect the performance of the Services are encountered, which conditions are not ordinarily found to exist or which differ materially from those generally recognized as inherent in the Services of the character provided for under this Agreement or which could not have reasonably been anticipated, notice by the observing party shall be given promptly to the other party and, if possible, before conditions are disturbed. Upon claim by the ENGINEER, the payment and schedule shall be equitably adjusted for such concealed or unknown condition by change order or amendment to reflect additions that result from such concealed, changed, or unknown conditions.

5.12 Environmental Site Conditions

It is acknowledged by both parties that ENGINEER's scope of services does not include any services related to Constituents of Concern, as defined in Article 6. If ENGINEER or any other party encounters an undisclosed Constituent of Concern, or if investigative or remedial action, or other professional services, are necessary with respect to disclosed or undisclosed Constituents of Concern as defined in Article 6, then ENGINEER may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until OWNER: (1) retains appropriate specialist consultant(s) or contractor(s) to identify and, as appropriate, abate, remediate, or remove the Constituents of Concern, and (2) warrants that the Site is in full compliance with applicable Laws and Regulations.

If the presence at the Site of undisclosed Constituents of Concern adversely affects the performance of ENGINEER's services under this Agreement, then the ENGINEER shall have the option of (1) accepting an equitable adjustment in its compensation or in the time of completion, or both; or (2) terminating this Agreement for cause on 30 days' notice.

OWNER acknowledges that ENGINEER is performing professional services for OWNER and that ENGINEER is not and shall not be required to become an "arranger," "operator," "generator," or "transporter" of hazardous substances, so defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, which are or may be encountered at or near the Site in connection with ENGINEER's activities under this Agreement.

5.13 Insurance

ENGINEER shall procure and maintain insurance for protection from claims under workers' compensation acts, claims for damages because of bodily injury including personal injury, sickness or disease or death of any and all employees or of any person other than such employees, and from claims or damages because of injury to or destruction of property.

5.14 Discovery

ENGINEER shall be entitled to compensation on a time and materials basis when responding to all requests for discovery relating to this Project and to extent that ENGINEER is not a party to the lawsuit.

5.15 Nondiscrimination and Affirmative Action

In connection with its performance under this Agreement, ENGINEER shall not discriminate against any employee or applicant for employment because of race, color, creed, religion, age, sex, marital status, sexual orientation or affectional preference, national origin, ancestry, citizenship, physical or mental handicap or because he or she is a disabled veteran or veteran of the Vietnam era. ENGINEER shall take

affirmative action to ensure that qualified applicants are employed and that employees are treated during employment without regard to their race, color, creed, religion, age, sex, marital status, sexual orientation or affectional preference, national origin, ancestry, citizenship, physical or mental handicap or because he or she is a disabled veteran or veteran of the Vietnam era. Such actions shall include recruiting and hiring, selection for training, promotion, fixing rates or other compensation, benefits, transfers and layoff or termination.

5.16 Force Majeure

Any delays in or failure of performance by ENGINEER shall not constitute a default under this Agreement if such delays or failures of performance are caused by occurrences beyond the reasonable control of ENGINEER including but not limited to: acts of God or the public enemy; expropriation or confiscation; compliance with any order of any governmental authority; changes in law; act of war, rebellion, terrorism or sabotage or damage resulting therefrom; fires, floods, explosions, accidents, riots; strikes or other concerted acts of workmen, whether direct or indirect; delays in permitting; OWNER's failure to provide data in OWNER's possession or provide necessary comments in connection with any required reports prepared by ENGINEER, or any other causes which are beyond the reasonable control of ENGINEER. ENGINEER's scheduled completion date shall be adjusted to account for any force majeure delay and ENGINEER shall be reimbursed by OWNER for all costs incurred in connection with or arising from a force majeure event, including but not limited to those costs incurred in the exercise of reasonable diligence to avoid or mitigate a force majeure event.

5.17 Waiver

Non-enforcement of any provision by either party shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

5.18 Headings

The headings used in this Agreement are for general reference only and do not have special significance.

5.19 Subcontractors

ENGINEER may utilize such ENGINEER's Subcontractors as ENGINEER deems necessary to assist in the performance of its Services.

5.20 Coordination with Other Documents

It is the intention of the parties that if the ENGINEER's Services include design then the Standard General Conditions will be used as the General Conditions for the Project and that all amendments thereof and supplements thereto will be generally consistent therewith. Except as otherwise defined herein, the terms which have an initial capital letter in this Agreement and are defined in the Standard General Conditions will be used in this Agreement as defined in the Standard General Conditions. The term "*defective*" will be used in this Agreement as defined in the Standard General Conditions.

5.21 Purchase Order

Notwithstanding anything to the contrary contained in any purchase order or in this Agreement, any purchase order issued by OWNER to ENGINEER shall be only for accounting purposes for OWNER and the pre-printed terms and conditions contained on any such purchase order are not incorporated herein, shall not apply to this Agreement, and shall be void for the purposes of the Services performed by ENGINEER under this Agreement.

5.22 Dispute Resolution

In the event of any dispute between the parties arising out of or in connection with the contract or the services or work contemplated herein; the parties agree to first make a good faith effort to resolve the dispute informally. Negotiations shall take place between the designated principals of each party. If the parties are unable to resolve the dispute through negotiation within 45 days, then either party may

give written notice within 10 days thereafter that it elects to proceed with non-binding mediation pursuant to the commercial mediation rules of the American Arbitration Association. In the event that mediation is not invoked by the parties or that the mediation is unsuccessful in resolving the dispute, then either party may submit the controversy to a court of competent jurisdiction. The foregoing is a condition precedent to the filing of any action other than an action for injunctive relief or if a Statute of Limitations may expire.

Each party shall be responsible for its own costs and expenses including attorneys' fees and court costs incurred in the course of any dispute, mediation, or legal proceeding. The fees of the mediator and any filing fees shall be shared equally by the parties.

## ARTICLE 6 – DEFINITIONS

6.1 Whenever used in this Agreement the following terms have the meanings indicated which are applicable to both the singular and the plural.

6.1.1 Services

The services to be performed for or furnished to OWNER by ENGINEER described in this Agreement.

6.1.2 Agreement

This Agreement between OWNER and ENGINEER for Professional Services including those exhibits listed in Article 7.

6.1.3 Constituent of Concern

Any substance, product, waste, or other material of any nature whatsoever (including, but not limited to, Asbestos, Petroleum, Radioactive Material, and PCBs) which is or becomes listed, regulated, or addressed pursuant to [a] the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); [b] the Hazardous Materials Transportation Act, 49 U.S.C. §§1801 et seq.; [c] the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); [d] the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; [e] the Clean Water Act, 33 U.S.C. §1251 et seq.; [f] the Clean Air Act, 42 U.S.C. §§7401 et seq.; and [g] any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

6.1.4 Construction Cost – ♦

The total cost to OWNER of those portions of the entire Project designed or specified by ENGINEER. Construction Cost does not include ENGINEER's compensation and expenses, the cost of land, rights-of-way, or compensation for or damages to properties, or OWNER's legal, accounting, insurance counseling or auditing services, or interest and financing charges incurred in connection with the Project or the cost of other services to be provided by others to OWNER pursuant to Article 3. Construction Cost is one of the items comprising Total Project Costs.

6.1.5 Documents

As applicable to the Services, the data, reports, drawings, specifications, record drawings and other deliverables, whether in printed or electronic media format, provided or furnished by

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♦ This provision is applicable for projects where ENGINEER provides Design, Bidding and/or Construction Phase Services.

ENGINEER to OWNER pursuant to the terms of this Agreement.

6.1.6 Contractor - ♦

The person or entity with whom OWNER enters into a written agreement covering construction work to be performed or furnished with respect to the Project.

6.1.7 ENGINEER's Subcontractor.

A person or entity having a contract with ENGINEER to perform or furnish Services as ENGINEER's independent professional subcontractor engaged directly on the Project.

6.1.8 Reimbursable Expenses.

The expenses incurred directly in connection with the performance or furnishing of Services for the Project for which OWNER shall pay ENGINEER as indicated in Exhibit

6.1.9 Resident Project Representative - ♦

The authorized representative of ENGINEER who will be assigned to assist ENGINEER at the site during the Construction Phase. The Resident Project Representative will be ENGINEER's agent or employee and under ENGINEER's supervision. As used herein, the term Resident Project Representative includes any assistants of Resident Project Representative agreed to by OWNER. The duties and responsibilities of the Resident Project Representative are set forth in Exhibit B, "Duties, Responsibilities and Limitations of Authority of Resident Project Representative" ("Exhibit B").

6.1.10 Standard General Conditions - ♦

The Standard General Conditions of the Construction Contract (No. ) of the Engineers Joint Contract Documents Committee.

6.1.11 Total Project Costs - ♦

The sum of the Construction Cost, allowances for contingencies, the total costs of design professional and related services provided by ENGINEER and (on the basis of information furnished by OWNER) allowances for such other items as charges of all other professionals and consultants, for the cost of land and rights-of-way, for compensation for or damages to properties, for interest and financing charges and for other services to be provided by others to OWNER under Article 3.

## ARTICLE 7 – EXHIBITS AND SPECIAL PROVISIONS

7.1 This Agreement is subject to the provisions of the following Exhibits which are attached to and made a part of the Agreement:

Exhibit A - Engineer's Services, Owner's Responsibilities, Time for Performance, Method of Payment, and Special Provisions.

Exhibit B - Duties, Responsibilities and Limitations of Authority of the Resident Project Representative. (Use when RPR Services are provided.)

This Agreement (consisting of Pages 1 to 9 inclusive), and the Exhibits identified above constitute the entire agreement between OWNER and ENGINEER and supersede all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly

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♦ This provision is applicable for projects where ENGINEER provides Design, Bidding and/or Construction Phase Services.

executed written instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement to be effective as of the date first above written.

OWNER:

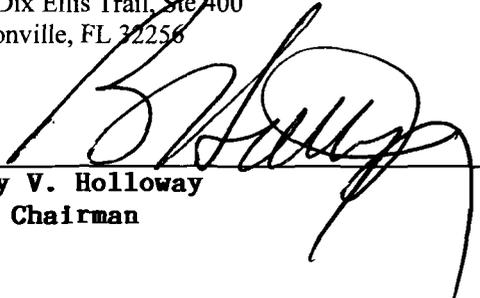
By:  
Title:  
Date:

ENGINEER:

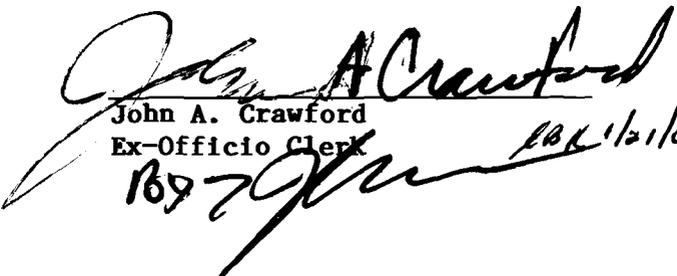
  
By: Donald E. Maurer, P.E., BCEE  
Title: Vice President  
Date: 12/30/08

Address for giving notices:

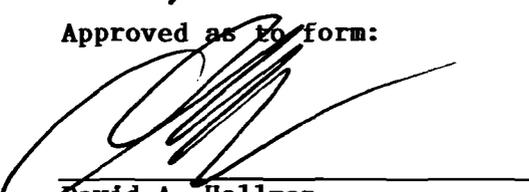
Address for giving notices:  
8381 Dix Ellis Trail, Ste 400  
Jacksonville, FL 32256

  
Barry V. Holloway  
Its: Chairman

Attest to Chairman Signature:

  
John A. Crawford  
Ex-Officio Clerk

Approved as to form:

  
David A. Hallman  
County Attorney

# Exhibit "A"

## Nassau County, Florida Thomas Creek Flooding Evaluation October 14, 2008 Scope of Services

### I. Background

From August 21 through August 23, 2008 Tropical Storm (TS) Fay went through Northeast Florida, and over 20 inches of rainfall fell in some part with as much as 16 inches in a 24-hour span in the Nassau River tributary (**Figure 1**). Combined with high tides caused by the storm, the significant amount of rainfall caused flooding of roads and homes through the entire county with the worst flooding occurring in the Nassau River watershed. In trying to better understand the cause of the flooding, CDM has been asked by the County to model the Thomas Creek sub-basin to pinpoint the location of hydraulics restrictions, and provide preliminary recommendations to help alleviate the occurrence and duration of flooding.

The following represents a scope of services for evaluating the hydrologic and hydraulic conditions within the Thomas Creek sub-basin. The existing SWMM 5.0 hydrologic model that was developed for the Duval side of Thomas Creek, and the HEC-HMS/RAS models developed for the Upper and Middle Thomas Creek system will be expanded and used for this evaluation. The evaluation will include the assessment of two distinct storms:

1. the recent TS Fay rainfall event, and a
2. 25-year design storm event.

### II. Scope

#### **Task 1: Acquire rainfall data and enter data in hydrologic model**

CDM will acquire the measured rainfall data associated with TS Fay at 15 minutes increment. These data will be converted to SWMM 5.0 and HEC Data System Storage (DSS). For the 25 year 24-hour distribution, the current St Johns River Water Management District distribution and depth will be used to generate a design storm time series in SWMM5 and DSS formats.

#### **Task 2: Acquire tidal elevation data and enter data in hydraulic model**



- MAJOR ROADS**
- INTERSTATE
  - STATE
  - US
  - INTRASTATE
  - SURFACE WATER
- PLANNING WATERSHEDS**
- Lower St. Johns River (LJ)
  - Middle St. Johns River (MJ)
  - Upper St. Johns River (UJ)
  - Little Manatee River (LM)
  - St. Johns River (SJ)
- COUNTY BOUNDARY**
- NASSAU



**Nassau County, Florida**

Figure 1

CDM

CDM will acquire the measured tidal elevation associated with the TS Fay event, and these data will be entered in the DSS format that will be used by the existing HEC-RAS model which includes the main stem of Nassau River to the mouth, as well as all of Thomas Creek and its tributaries. The existing HEC-RAS model includes a constant downstream boundary water elevation at the mouth of the Nassau River for the 25-year design storm.

**Task 3: Modification and Run the SWMM 5.0 hydrologic model with the TS Fay rainfall data.**

CDM will modify the existing SWMM 5.0 Thomas Creek hydrologic runoff model and run the existing model with the TS Fay data acquired in Task 1. Up to 25 hydrologic basins will be created to expand the existing model. Land use and soils for the newly created hydrologic units will be processed and the appropriate parameters specific to North East Florida for the hydrologic model will be generated. The existing hydrologic model used for the upper and middle Thomas Creek will also be utilized to generate flow for that area of the model.

The new created files will be use to generated outflow hydrographs from the SWMM 5.0 simulation that will then be stored in DSS format for subsequent input to the HEC-RAS hydraulic simulation for TS Fay (Task 4). The 25-year design storm will also be run using the existing SWMM 5.0 model, and will be stored in DSS format for subsequent input to the HEC-RAS hydraulic simulation for the 25-year rainfall quantity.

**Task 4: Run the existing HEC-RAS hydraulic model with results from modified hydrologic model**

If additional data is available, CDM will extend the existing hydraulic model and add 25 cross-sections to the existing HEC-RAS model. CDM will then run the modified HEC-RAS model with the TS Fay tidal boundary water elevation data acquired in Task 2, and the HEC-HMS model results generated in Task 3. The 25-year design storm will be re-run with the 25-year design storm for both the existing and expanded hydrologic boundaries.

**Task 5: Compare hydraulic model results with observed stages/high water marks/known flood areas**

CDM will compare the peak water elevation results generated in Task 4 for the TS Fay simulation with available observed stages, high water marks, or known flooding areas. CDM will also compare the peak water elevations for the TS Fay event compared to the 25-year design storm.

#### **Task 6: Prepare a letter report of the flooding analysis and meeting**

CDM will prepare a letter report documenting the input data and model results associated with the flooding analysis. The report will document any assumption made in the modeling and recommendations (if any) for refinement of the hydrologic and hydraulic models.

After County staff has reviewed the letter report, CDM will meet with County staff to discuss the findings of the analysis.

### **III. Deliverables**

The CONSULTANT will provide the COUNTY with the following deliverables as part of this Work Authorization:

- 1) One (1) DRAFT and one (1) FINAL Technical Memorandum in PDF format;
- 2) One final CD including the HEC-HMS, HEC-RAS and SWMM5 input files.

### **IV. Schedules**

Within one week after the Notice to Proceed, CDM shall provide a project schedule. The total time for completing the CDM's technical memorandum required under this Work Order is six weeks from the date of the Notice to Proceed.

### **V. Cost**

The associated fees for completion of the Consulting Engineering Services will be a "Lump Sum" of \$23,498.