

AGREEMENT FOR ENGINEERING SERVICES

THE STATE OF TEXAS §
 §
 COUNTY OF HARRIS §

THIS AGREEMENT is made, entered into, and executed by and between the **Harris County Flood Control District**, a body corporate and politic under the laws of the State of Texas, hereinafter called "District" or "HCFCD," and **Neel-Schaffer, Inc.**, a Mississippi corporation, hereinafter called "Engineer."

WITNESSETH, that

WHEREAS, the District desires to identify flooding sources and develop potential flooding solutions in the Kingwood area, hereinafter called the "Project"; and

WHEREAS, the District desires that the Engineer provide Engineering Services for the Project; and

WHEREAS, the Engineer represents that it is capable and qualified to perform the various services that may be required.

NOW THEREFORE, the District and the Engineer, in consideration of the mutual covenants and agreements herein contained, do mutually agree as follows:

SECTION I

CHARACTER AND EXTENT OF SERVICES

From time to time during the course of this Agreement, the Executive Director of the District or his designee (the "Director") may deliver to the Engineer written authorization in accordance with this Section for the performance of certain engineering services with regard to the Project, which services the Engineer shall then perform in accordance with this Agreement. The Director may authorize the Engineer to provide all or any of the engineering services in connection with the study phase of the Project that are listed in Appendix A.

The District shall have no obligation to pay for any services hereunder that have been rendered without the prior written authorization for such services by the Director. The written authorization shall specify the services to be performed, a budget amount for such services, and a required completion date for such services. During the course of any services authorized hereunder, the Engineer shall provide the District with progress reports at such times and in such manner as may be requested by the Director. If it should become evident that the Engineer will not be able to complete any service hereunder by the previously set completion date or within the previously set budget for same, the Engineer shall notify the Director as soon as possible.

SECTION II
TIME OF PERFORMANCE

Upon receipt of a written authorization to perform certain services hereunder, the Engineer shall proceed diligently to complete each service within the limits of time therein specified. The District shall have no obligation to pay for a service performed after the required completion date for same as set forth in its authorization, except to the extent the date for required completion is extended and continuation of such service is approved by further written authorization from the Director.

SECTION III
THE ENGINEER'S COMPENSATION

For and in consideration of services rendered by employees of the Engineer pursuant to this Agreement, the District shall pay the Engineer in accordance with the following maximum hourly rates:

<u>Position</u>	<u>Maximum Hourly Rate</u>
Principal	\$225.00
Senior Technical Advisor	\$215.00
Project Manager.....	\$190.00
Project Engineer.....	\$160.00
Professional Intern / Technician IV	\$110.00
Inspector III	\$100.00
Clerical	\$ 65.00

Adjustments to fixed fee allocations may be made with prior review and written approval by the Director pursuant to Section I of this Agreement.

It is expressly understood that the Engineer shall neither seek reimbursement nor will the District be obligated to pay or reimburse the Engineer for normal business expenses such as overtime, postage, messenger services, delivery charges, mileage within Harris County, parking fees, facsimile (fax) transmissions, computer time on in-house computers and graphic systems, blue-line drawings or photocopies specifically required by Section I, or other costs or expenses, except those for which reimbursement is specifically provided in the following sentence. If approved in writing by the Director prior to their being incurred, the Engineer may be reimbursed the reasonable and necessary cost of the following, to the extent they are incurred in providing services hereunder: services performed by a subcontractor pursuant to authorization for such expense and as permitted by the County Purchasing Act, copies of reports or other documents to be delivered to the District or in accordance with instructions of the District in excess of the number specifically required by Section I, costs of travel outside of Harris County, rental costs of transportation equipment necessary to gain access to the Project site, costs of presentation materials (i.e., charts, slides, transparencies), costs of abstracting, and costs of photographic and video services.

The District shall have no obligation to pay compensation or reimbursement for any service or expense in excess of the amount budgeted for same in its written authorization, except to the extent the budget for such service is increased and continuation of such service is approved by further written authorization from the Director.

At the option of the Director, the Director may also issue work authorization(s) for performance of specified professional services to be compensated on a lump sum basis upon acceptance by Engineer. If a work authorization specifies payment on a lump sum basis for certain services, the hourly rates set out above shall not apply. In addition, where work performed pursuant to a work authorization is to be compensated on a lump sum basis, the budget for same shall not be increased pursuant to Section I or Section III of this Agreement, except to the extent that additional services are assigned to be performed by the Engineer by further written authorization from the Director.

SECTION IV TIME OF PAYMENT

During the performance of the services provided herein, at intervals of not fewer than thirty (30) days each, the Engineer shall submit to the District a statement sworn to by the Engineer or an officer of the Engineer, in a form acceptable to the County Auditor of Harris County and in compliance with Section III, setting forth the services completed and the compensation due for the same that have not been previously billed or paid. All hourly charges shall be itemized on the basis of the hourly rates and shall be certified in writing by the Engineer to be true and correct. The Director and the Harris County Auditor shall approve each statement after review, with such modifications as may be deemed appropriate. The District shall pay each statement approved within thirty (30) days after approval by the Director and the County Auditor, provided that the approval or payment of any such statement shall not be considered to be evidence of performance by the Engineer to the point indicated by such statement, or of the receipt of or acceptance by the District of the work covered by such statement. The Engineer shall in no case submit an invoice for less than \$500.00, except where the invoice is for the final payment.

Time sheets corroborating the information provided in the statement, signed by individuals performing services under this Agreement and their supervisor(s), showing the name of each individual performing services hereunder, the date or dates that he or she performed said services, his or her hourly rate, the total amount billed for each individual, and the total amount billed for all individuals, and including such other details as may be requested by the Harris County Auditor for verification purposes, shall be kept and maintained by the Engineer for a period of five (5) years after the completion of performance hereunder. The Director and/or the County Auditor shall have the right, after giving written notice, to review any and all documents or other data in the custody of the Engineer, in connection with any statement submitted by the Engineer to the District for approval and payment by the District.

SECTION V TERMINATION

The District may terminate this Agreement at any time by notice in writing to the Engineer. Upon receipt of such notice, the Engineer shall discontinue all services in connection with the performance of this Agreement. As soon as practicable after receipt of notice of termination, the Engineer shall submit a statement, showing in detail the services performed under this Agreement to the date of termination. The District shall pay the Engineer the prescribed compensation for the services actually performed under this Agreement, less such payments on account of the charges as have been previously made. Copies of all complete or partially complete designs, plans, specifications, and other documents prepared or obtained under this Agreement shall be delivered to the District when and if the Agreement is terminated.

SECTION VI

ADDRESS OF NOTICES AND COMMUNICATIONS

All notices and communications under this Agreement shall be mailed by certified mail, return receipt requested, or delivered to the Engineer at the following address:

Neel-Schaffer, Inc.
13430 Northwest Freeway, Suite 650
Houston, Texas 77040
Attn: Charles "Sonny" Smoak, P.E.

All notices and communications under this Agreement shall be mailed by certified mail, return receipt requested, or delivered to the District at the following address:

Harris County Flood Control District
9900 Northwest Freeway
Houston, Texas 77092
Attn: Executive Director

SECTION VII

LIMIT OF APPROPRIATION

The Engineer clearly understands and agrees, such understanding and agreement being of the absolute essence to this Agreement, that the District shall have available the total maximum sum of \$700,000.00 specifically allocated to fully discharge any and all liabilities incurred by the District pursuant to the terms of this Agreement, and that the total maximum compensation the Engineer may become entitled to hereunder and the total maximum sum the District shall become liable to pay to the Engineer hereunder shall not under any conditions, circumstances, or interpretations hereof exceed the said total maximum sum provided for in this Section and certified as available therefor by the County Auditor as evidenced by the issuance of a purchase order from the Harris County Purchasing Agent.

SECTION VIII

SUCCESSORS AND ASSIGNS

The District and the Engineer bind themselves and their successors, executors, administrators, and assigns to the other party of this Agreement and to the successors, executors, administrators and assigns of such other party in respect to all covenants of this Agreement. Neither the District nor the Engineer shall assign, sublet, or transfer its or his interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of any public body that may be a party hereto.

SECTION IX

PUBLIC CONTACT

Engineer shall under no circumstances release any material or information developed in the performance of services hereunder, without the prior express written permission of the Director. Contact with the news media, private citizens, or community organizations shall be the sole responsibility of the District. Inquiries concerning this Agreement or any Requested Service shall be referred to the Director.

SECTION X COMPLIANCE AND STANDARDS

The Engineer agrees to perform the work hereunder in accordance with generally accepted standards applicable thereto and shall use that degree of care and skill commensurate with the Engineer's profession to comply with all applicable state, federal, and local laws, ordinances, rules, and regulations relating to the work to be performed hereunder and the Engineer's performance. The Engineer represents that, prior to performing hereunder, it has or shall obtain all necessary licenses, ownership, or permission for use of any and all proprietary information, materials, or trade secrets employed in the performance of work hereunder for the District and agrees that he shall not copy, reproduce, recreate, distribute, or use any such proprietary information, materials, or trade secrets of any third party, except to the extent permitted by such third parties, or as otherwise authorized by law.

In accordance with TEX. GOV'T CODE ANN. § 2270.002, the Engineer warrants and represents that it does not boycott Israel and agrees that it will not boycott Israel during the term of this contract.

The Engineer represents and certifies that, at the time of execution of this Agreement, the Engineer (including, in this provision, any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the same) is not listed by the Texas Comptroller of Public Accounts pursuant to Chapters 2252 or 2270 of the Texas Government Code, nor will the Engineer engage in scrutinized business operations or other business practices that could cause it to be listed during the term of this Agreement.

SECTION XI LICENSE REQUIREMENTS

The Engineer shall have and maintain any licenses or certification required by the State of Texas or recognized professional organization governing the services performed under this Agreement.

SECTION XII CERTIFICATE OF INTERESTED PARTIES

In compliance with Government Code § 2252.908, the Engineer must submit a completed Certificate of Interested Parties Form 1295, including an unsworn declaration and the Certification of Filing, printed after completing the electronic filing requirements on the Texas Ethics Commission website (see www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm), to the District along with this signed Agreement.

SECTION XIII CONFLICT OF INTEREST CERTIFICATION

The Engineer certifies that the Engineer has complied with Chapter 176 of the Texas Local Government Code by completing and filing any required conflict of interest disclosures or questionnaires (see www.ethics.state.tx.us). If this certification is materially incomplete or inaccurate, the Engineer acknowledges that the District shall have the right to terminate this Agreement without prior notice.

SECTION XIV

INDEMNIFICATION

TO THE EXTENT ALLOWED BY LAW, THE ENGINEER AGREES TO INDEMNIFY AND HOLD HARMLESS THE DISTRICT, ITS OFFICERS, EMPLOYEES, AND AGENTS FROM LIABILITY, LOSSES, EXPENSES, DEMANDS, REASONABLE ATTORNEYS' FEES, AND CLAIMS FOR BODILY INJURY (INCLUDING DEATH) AND PROPERTY DAMAGE TO THE EXTENT CAUSED BY THE NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT OF THE ENGINEER (INCLUDING THE ENGINEER'S AGENTS, EMPLOYEES, VOLUNTEERS, AND SUBCONTRACTORS/CONSULTANTS UNDER CONTRACT, OR ANY OTHER ENTITY OVER WHICH ENGINEER EXERCISES CONTROL) IN THE PERFORMANCE OF THE SERVICES DEFINED IN THIS AGREEMENT. THE ENGINEER SHALL ALSO SAVE THE DISTRICT HARMLESS FROM AND AGAINST ANY AND ALL EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES, IN PROPORTION TO THE ENGINEER'S LIABILITY, THAT MIGHT BE INCURRED BY THE DISTRICT, IN LITIGATION OR OTHERWISE RESISTING SUCH CLAIMS OR LIABILITIES.

SECTION XV

INSURANCE REQUIREMENTS

Coverage and Limits. During the Term of this Agreement and any extensions thereto, the Engineer at its sole cost and expense shall provide insurance of such type and with such terms and limits as may be reasonably associated with this Agreement. As a minimum, the Engineer shall provide and maintain the following coverage and limits:

- (a) Workers Compensation, as required by the laws of Texas, and Employers' Liability, as well as All States, United States Longshore & Harbor Workers Compensation Act and other endorsements, if applicable to the project, and in accordance with state law.

Employers' Liability		
(i)	Each Accident	\$1,000,000
(ii)	Disease – Each Employee	\$1,000,000
(iii)	Policy Limit	\$1,000,000

- (b) Commercial General Liability, including but not limited to, the coverage indicated below. This policy will provide coverage for personal and bodily injury, including death, and for property damage, and include an endorsement for contractual liability. Coverage shall not exclude or limit the Products/Completed Operations, Contractual Liability, or Cross Liability. Where exposure exists, the District may require coverage for watercraft, blasting, collapse, explosions, blowout, cratering, underground damage, pollution, and other coverage. *The District shall be named Additional Insured on primary/non-contributory basis.*

(i)	Each Occurrence	\$1,000,000
(ii)	Personal and Advertising Injury	\$1,000,000
(iii)	Products/Completed Operations	\$1,000,000
(iv)	General Aggregate (per project)	\$2,000,000

- (c) Professional Liability/Errors and Omissions, in an amount not less than One Million Dollars (\$1,000,000) per claim and in the aggregate.

- (d) Umbrella/Excess Liability in an amount not less than One Million Dollars (\$1,000,000) per occurrence and in the aggregate. *The District shall be named Additional Insured on primary/non-contributory basis.*
- (e) Automobile Liability insurance to include the Engineer's liability for death, bodily injury, and property damage resulting from the Engineer's activities covering use of owned, hired, and non-owned vehicles, with combined single limit of not less than One Million Dollars (\$1,000,000) for each accident. *The District shall be named Additional Insured on primary/non-contributory basis.*
- (f) Any other coverage required of the Engineer pursuant to statute.

Delivery of Policies. Immediately upon execution of this Agreement and before any services are commenced by the Engineer, the Engineer shall provide the District evidence of all of the above coverage on forms and with insurers acceptable to the District. The Engineer must maintain a valid Certificate of Insurance as described herein on file with the District at all times during the term of this Agreement. The Engineer must either (1) mail the Certificate of Insurance to the District at 9900 Northwest Freeway, Houston, TX 77092, Attn: Contract Management or (2) submit it by email to HCFCD_AdminServices@hcfcd.org.

Issuers of Policies. Coverage shall be issued by company(s) licensed by the Texas Department of Insurance to do business in Texas, unless said coverage is not available or economically feasible except through an excess or surplus lines company, in which case the company(s) should be registered to do business in Texas. Companies shall have an A.M. Best rating of at least A-VII.

Certificates of Insurance. The Engineer shall provide unaltered Certificates of Insurance which evidence the required coverage and endorsements and satisfy the following requirements:

- (a) Be less than 12 months old;
- (b) Include all pertinent identification information for the Insurer, including the company name and address, policy number, NAIC number or AMB number, and an authorized signature;
- (c) Include the project name and reference numbers and indicate the name and address of the Project Manager in the Certificate Holder Box; and
- (d) Be appropriately marked to accurately identify:
 - (i) All coverage and limits of the policy;
 - (ii) Effective and expiration dates;
 - (iii) Waivers of subrogation, endorsement of primary insurance and additional insured language, as described herein.

Certified Copies of Policies and Endorsements. Upon request, the Engineer shall furnish certified copies of insurance policies and endorsements to the District.

Renewal Certificates. Renewal certificates are due to the District at least thirty (30) days prior to the expiration of the current policies.

Subcontractors. If any part of the Agreement is sublet, insurance shall be provided by or on behalf of any subcontractor, and shall be sufficient to cover their portion of the Agreement. The Engineer shall furnish evidence of such insurance to the District as well.

Additional Insured. The Engineer shall include the District and its respective officers, directors, agents, and employees as an Additional Insured on the Commercial General Liability, Automobile Liability, and Umbrella/Excess Liability insurance certificates. The Engineer's coverage shall be primary insurance to any similar insurance maintained by the District and

must contain an endorsement stating such. Coverage to the District as an Additional Insured on any of the Engineer's insurance coverage shall not be subject to any deductible.

Deductibles. The Engineer shall be responsible for and pay any claims or losses to the extent of any deductible amounts applicable under all such policies and waives any claim it may have for the same against the District, its officers, directors, agents, or employees.

Claims-made Policies. All insurance policies written on a claims-made basis, including Professional Liability/Errors and Omissions, shall be maintained for a minimum of two (2) years following completion of all services under this Agreement ("Extended Reporting Period"). The Engineer shall obtain or maintain full prior acts coverage at least to the effective date of this Agreement in the event of a carrier or policy change.

Waiver of Subrogation. The Engineer waives any claim or right of subrogation to recover against the District, its officers, directors, agents, and employees ("Waiver of Subrogation"). Each policy required under this Agreement must contain a Waiver of Subrogation endorsement.

Notice of Cancellation, Non-Renewal, or Material Change. The Engineer shall provide the District with thirty (30) days' minimum written notification in the event of cancellation, non-renewal, or material change to any or all of the required coverage.

Remedies for Noncompliance. Failure to comply with any part of this Article is a material breach of this Agreement. The Engineer could immediately, and without notice, have all compensation withheld or suspended, be suspended from providing further services, or be terminated from this Agreement for any lapse in coverage or material change in coverage which causes the Engineer to be in noncompliance with the requirements of this Article.

SECTION XVI

OWNERSHIP OF PLANS, COPYRIGHT

The District shall be the absolute and unqualified owner of any information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, computations, computer input/output information, and other documents or materials prepared pursuant to this Agreement, including source codes therefor, with the same force and effect as if the District prepared the same. The District shall have an exclusive and perpetual copyright in and to any and all materials produced for the District pursuant to this Agreement and the Engineer shall convey and assign, and does hereby convey and assign, to District all right, title, and interest, including but not limited to copyright, the Engineer may have or may acquire in and to such materials. The Engineer agrees that work performed hereunder for the District will be deemed to have been done, to the extent authorized by law, on a "works made for hire" basis. In the event and to the extent such works are determined not to constitute "works made for hire" as that term is understood in copyright law, the Engineer hereby irrevocably assigns and transfers to the District all right, title, and interest in and to such works, including, but not limited to, copyrights. The Engineer agrees to promptly deliver to the District copies, in a form acceptable to the Director, of any and all such information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, documents, materials and/or data, including the source codes therefor, upon request from the District. Copies of all complete or partially complete information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, and other documents and materials, including source codes therefor, prepared

pursuant to this Agreement, shall also be delivered to the District when and if the Agreement is terminated, or upon completion of performance hereunder, whichever occurs first. The Engineer may retain one (1) set of reproducible copies of such documents and materials, but such copies shall be for the Engineer's use in the preparation of studies or reports for the District only. The Engineer is expressly prohibited from selling, licensing, or otherwise marketing or donating such documents or materials, or using the same in the preparation of work for any other client without the express written permission of the Director. The Engineer does not intend or represent that construction documents or materials will be suitable for reuse. If the District reuses the same, such action shall be at the District's risk and without liability to the Engineer. If the Engineer furnishes partially complete plans, layouts, sketches, specifications, or other documents and materials by virtue of termination under Section VII above, the Engineer shall not be held accountable or responsible for the completeness of any document or material so produced.

SECTION XVII
MODIFICATIONS

This instrument contains the entire Agreement between the parties relating to the rights herein granted and obligations herein assumed. Any oral or written representations or modifications concerning this instrument shall be of no force or effect, excepting a subsequent modification in writing signed by both parties hereto.

EXECUTED in duplicate originals _____.

APPROVED AS TO FORM:

VINCE RYAN
Harris County Attorney

HARRIS COUNTY FLOOD CONTROL
DISTRICT

DocuSigned by:
Mitzi Turner
27D876F21B1047A...
By _____
MITZI TURNER
Assistant County Attorney

By _____
LINA HIDALGO
County Judge

ATTEST:

NEEL-SCHAFFER, INC.

DocuSigned by:
Charles D. Smoak, Jr.
9F36F282E9664C1...

Charles D. Smoak, Jr.

Name

Senior Vice President

Title

DocuSigned by:
Jerry Trumps
9F36F282E9664C1...

Jerry Trumps

Name

Executive Vice President

Title

APPENDIX A

General Description

The intent of the Kingwood Drainage Study is to create a conceptual Watershed Plan to identify strategies for mitigation of existing flooding problems and to address improved drainage infrastructure required to achieve 100-year channel level-of-service within the Kingwood Area study limits. Harris County Flood Control District (HCFCD) has entered into an interlocal agreement with the TIRZ 10 (Kingwood) to perform a drainage study of 5 streams within the Kingwood area to their confluence with the West Fork San Jacinto River (WFSR) and the East Fork San Jacinto River (EFSR). In addition to the interlocal agreement, Harris County Flood Control District will also study all remaining streams within the Kingwood Area. The streams and study limits as part of this scope of services are shown on Figure 1 and identified as:

Streams and Studied Limits for HCFCD Interlocal Agreement with TIRZ 10 (Kingwood) (Length = 12.4 miles):

- G103-33-00 Bens Branch – From Rocky Woods Drive to WFSR (Length = 3.1 miles)
- G103-33-01 – From Northpark Drive to the confluence with Bens Branch (Length = 1.3 miles)
- G103-38-00 (Kingwood Diversion Ditch) – From Harris County Boundary to WFSR (Length = 4.0 miles)
- G103-80-01 (Green Tree Ditch) – From Woodland View Dr to the EFSR (Length = 1.5 miles)
- G103-80-03.1B (Taylor Gully) – From Harris County Boundary to Whiteoak Creek (Length = 2.5 miles)

Streams and Studied Limits for HCFCD (Length = 19.9 miles):

- G103-33-00 Bens Branch – From Harris County Boundary to Rocky Woods Drive (Length = 2.2 miles)
- G103-33-02 – From Northpark Drive to the confluence with Bens Branch (Length = 0.2 miles)
- G103-33-03 – From Hidden Pines Dr. to the confluence with Bens Branch (Length = 0.1 miles)
- G103-33-04 – From W Lake Houston Pkway to the confluence with Bens Branch (Length = 1.2 miles)
- G103-36-00 (Bear Branch) – From Woodland Hills Dr. to WFSR (Length = 2.7 miles)
- G103-36-01 – From Woods Estates Dr. to the confluence with Bear Branch (Length = 0.8 miles)
- G103-36-02 – From Woodland Hills Dr. to the confluence with Bear Branch (Length = 0.9 miles)
- G103-36-02.1 – From Kingwood Dr. to the confluence with Bear Branch (Length = 0.4 miles)
- G103-36-03 – From Royal Circle Dr. to the confluence with Bear Branch (Length = 0.4 miles)
- G103-38-01 – From Laurel Springs Ln. to the confluence with Kingwood Diversion Ditch (Length = 1.3 miles)
- G103-38-01.1 – From Red Oak Terrace Ct. to the confluence with Kingwood Diversion Ditch (Length = 0.4 miles)
- G103-38-02 – From Harris County Line to the confluence with Kingwood Diversion Ditch (Length = 0.7 miles)
- G103-39-00 – From Palmetto Ln. to the WFSR (Length = 1.3 miles)
- G103-41-00 (Sand Branch) – From Sycamore Creek Dr. to the WFSR (Length = 2.0 miles)
- G103-41-01 – From Elk Creek Dr. to the confluence with Sand Branch (Length = 0.8 miles)
- G103-45-00 – From Trail Tree Ln. to the WFSR (Length = 0.4 miles)
- G103-46-00 – From Forest Cove Dr. to the WFSR (Length = 1.0 miles)
- G103-46-01 – From Sweet Gum Ln. to the confluence with G103-46-00 (Length = 0.7 miles)
- G103-80-01.1 – From Autumn Sage Ln. to the confluence with Green Tree Ditch (Length = 0.3 miles)
- G103-80-03.1A (Mills Branch) – From Same Way to Whiteoak Creek (Length = 1.5 miles)
- G103-80-04 (Blackland Gully) – From Maple Knob Ct. to the EFSR (Length = 0.6 miles)

The study will be performed in accordance with the Harris County Flood Control Policy Criteria and Procedure Manual, Harris County Flood Control Hydrology & Hydraulics Guidance Manual, the MAAPnext Program Hydrologic Methodology, Surveying Guidelines, and the HCFCD Drawings and Graphic Standards. The scope of services for basic services is as follows:

Basic Services Work Tasks

1.0 Coordination and Meetings

- 1.1 Project Management.** The Engineer shall perform project management services necessary to complete the project including: submit monthly invoices with progress reports, developing and maintaining a detailed project schedule, and managing and monitoring sub-consultants.
- 1.2 QA/QC.** The Engineer shall perform a documented QA/QC process throughout the study. A quality plan will be developed that identifies designated reviewers with appropriate expertise for their review responsibility. All deliverables will be reviewed prior to submission.
- 1.3 Project Meetings.** The Prime and H&H Subconsultant shall attend the following coordination meetings:
- 1.3.1 Harris County Flood Control District – Attend project kickoff and monthly status meetings (6 meetings) to present work activities and results of the study and discuss project issues. The Engineer will prepare agendas for each meeting and will distribute meeting minutes within 5 days of each meeting.
 - 1.3.2 HCFCD Technical Workshop – The Engineer and H&H Subconsultant will attend a workshop to review and discuss improvement alternatives at the beginning of the Improvement Options Analysis task.
 - 1.3.3 Technical Stakeholder Meetings – It is anticipated that the Engineer and H&H Subconsultant will attend four (4) meetings with varying stakeholders (TIRZ 10, HOA's, etc.) throughout the course of the project to present study results and receive stakeholder input to be incorporated into the proposed improvements. This effort includes preparing for the stakeholder meetings with appropriate materials such as basic exhibits or 4-7 count presentation slide decks, as well as attending and documenting the meetings.
- 1.4 Adjacent Project Coordination.** The Engineer will coordinate with the 2 adjacent studies for the San Jacinto River. This effort will include reviewing their material, understanding their project challenges and their planned improvements. This effort is for one (1) coordination meeting.
- 1.5 Public Engagement.**
- 1.5.1 Community Engagement Meetings.** The Engineer shall prepare and lead presentations for up to two (2) community engagement meetings to increase public awareness and understanding of the magnitude of the watershed problems and complexities and cost of solutions. The Engineer will develop written and illustrative materials (printed maps, slideshow, etc.) to inform the public about the projects. Information to be presented at these meetings will be coordinated with HCFCD. The Engineer will document the meetings and community input received. This effort includes two (2) coordination meetings prior to each community engagement meeting to walk through a dry run of the presentation with HCFCD. The Engineer and Subconsultant will also provide five (5) staff members at the community meetings.

1.5.2 Community Engagement Response. The Engineer shall provide a memorandum with submitted public comments and responses for up to 500 comments.

1.5.3 Public Outreach and Communication Services. Effort for subconsultant to support HCFCD with two (2) community engagement events.

2.0 Data Collection

2.1 Project Initiation. The Engineer shall collect all available information and data including, but not limited to, record construction plans, previous drainage studies, HCFCD historical flooding data, High Water Marks, Watershed Masterplan data, FEMA Repetitive Loss properties, flooding reports, LiDAR DEM data, aerial maps, HCFCD watershed maps, hydrologic and hydraulic models, City of Houston GIMS data and any other pertinent technical data in the development of this scope of services.

2.2 Research and Review Available Data. The Engineer shall review and evaluate all available information and data including on-going and planned projects in the Study Area.

2.3 Field Reconnaissance. The Engineer shall conduct field reconnaissance to identify the existing drainage systems, outfalls, and drainage patterns for the project area. The Engineer will also perform field measurement of 27 bridge crossings, 32 culvert crossings, 16 pedestrian bridge crossings and 6 drop structures to be incorporated in the development of hydraulic models. Photographs, notes and sketches will be made to document the reconnaissance and aid in model development.

2.4 Evaluate 2018 LiDAR. Within the Study Area, the Engineer shall compare the 2018 LiDAR with the 2008 LiDAR, 2001 LiDAR, and site collected data. Available benchmark data will be taken into account with this analysis. Production shall include a difference between the surfaces, comparison of channel cross section using the different LiDAR sources, available survey, and site collected data.

2.5 Initial Base Map Information Production. The Engineer will develop a series of base maps that summarize the data and information collected as part of the data collection process. Maps will include information such as reported structural flooding, floodplains and cross sections, constraint maps identifying areas where land acquisition would not be feasible (such as cemeteries), LiDAR topography, studied and unstudied channels, and other key information.

3.0 Existing Level of Service Analysis.

The Engineer will identify and quantify the existing flood risk and channel level-of-service based on Atlas 14 rainfall data. The Engineer will utilize FEMA's effective hydrologic and hydraulic models as a base condition where available. The existing level of service analysis will be performed for both the existing conveyance conditions and assuming full conveyance of flows within the sub-basin. Figure 1 presents the project stream segments for which this Scope of Work includes.

3.1 Hydrologic Analysis.

3.1.1 The Engineer will delineate/revise the stream watershed boundaries based on LiDAR data and GIS datasets depicting storm sewer drainage

systems. All revisions will be reviewed in detail with HCFCD. The review of the watershed boundaries will extend into Montgomery County where necessary.

- 3.1.2 Stream segments will be identified to allow for a more granular level of assessment detail when compared to the CAP stream file. Segments will be divided at all confluences, channel slope changes, major thoroughfares, notable changes in floodplain width or profile (studied channels), and land use changes. The segments are anticipated to serve approximately a 200-acre drainage area.
- 3.1.3 For minor tributaries, sub-watersheds will be sub-divided into areas approximately 200- to 400-acres in size to facilitate peak flow development for project stream segments.
- 3.1.4 The Engineer will calculate the Basin Development Factor (BDF) to be used in the calculation of the "Tc" and "R" coefficients for the Clark Unit Hydrograph Method. The BDF will be calculated for the existing conveyance and full conveyance assuming future improvements to the existing drainage structures in the sub-basins.
- 3.1.5 Upper watershed contributing flow outside of Harris County will be quantified at the county boundary and incorporated into the detailed analysis within Harris County.
- 3.1.6 The Engineer will develop a HEC-HMS model to determine the 50% (2-year), 10% (10-year), 4% (25-year), 2% (50-year) and 1% (100-year) exceedance probability peak discharges in accordance with HCFCD methodologies. Development of the HEC-HMS model will include an iterative procedure for the calculation of volumes to use in storage routing reaches utilizing developed HEC-RAS models.
- 3.1.7 The Engineer will calculate the peak flow distribution based on the TSARP white paper approach which interpolates peak flows based on stream stationing and HEC-HMS peak flows.

3.2 Hydraulic Analysis.

- 3.2.1 Preliminary Analysis of the minor streams within the Kingwood Study Area will be performed utilizing steady state HEC-RAS. Cross sections will be cut using LiDAR data and supplemented with available data including site visit data, record drawings, and field measurement data. Culvert/bridge crossings located along minor streams will be documented with field visits and evaluated within the HEC-RAS simulation. The following streams are anticipated to be minor streams:

Stream	Length	Hydraulic Structures			
	(mi)	Roadway	Pedestrian	Culvert	Drop
G103-33-01	1.3	1	1	0	2
G103-33-02	0.2	0	0	0	0
G103-33-03	0.1	0	0	0	0
G103-33-04	1.2	0	0	2	0
G103-36-00 (Bear Branch)	2.7	0	3	4	0
G103-36-01	0.8	0	1	2	0
G103-36-02	0.9	0	0	0	0
G103-36-02.1	0.4	0	0	2	0
G103-36-03	0.4	0	1	3	0
G103-38-00 (Kingwood Diversion Ditch)	4.0	7	1	0	0
G103-38-01	1.3	0	0	3	0
G103-38-01.1	0.4	0	0	0	0
G103-38-02	0.7	1	0	0	0
G103-39-00	1.3	0	0	2	0
G103-41-00 (Sand Branch)	2.0	0	1	3	2
G103-41-01	0.8	0	1	1	0
G103-45-00	0.4	0	0	1	0
G103-46-00	1.0	0	0	2	0
G103-46-01	0.7	0	0	5	0
G103-80-01 (Green Tree Ditch)	1.5	2	3	0	2
G103-80-01.1	0.3	0	0	0	0
G103-80-04 (Blackland Gully)	0.6	2	0	0	0

- 3.2.2 The Engineer will revise/update the effective steady-state HEC-RAS models and perform a preliminary hydraulic analysis incorporating the peak flows determined during the hydrologic analysis and converting the models to an unsteady simulation. Effective HEC-RAS models exist for the following streams:

Stream	Length	Hydraulic Structures			
	(mi)	Roadway	Pedestrian	Culvert	Drop
G103-33-00 (Bens Branch)	5.2	7	3	1	0
G103-80-03.1A (Mills Branch)	1.5	4	0	0	0
G103-80-03.1B (Taylor Gully)	2.5	4	2	1	1

It is anticipated that the cross sections for all effective models will be revised based on LiDAR data for the overbank and available HCFCD construction drawings. Additionally, roadway crossings will be added to the G103-80-03.1A (Mills Branch) model.

- 3.2.3 The Engineer will perform a final hydraulic analysis by revising the preliminary steady state HEC-RAS and unsteady HEC-RAS models incorporating the obtained survey data and revisions based on the results of the preliminary analysis.
- 3.2.4 The Engineer will utilize the Harris County Structure Inventory Tool to determine the number of potential flooded structures for the 1% (100-year) exceedance probability storm event utilizing the results from the HEC-RAS models. The structure inventory will be combined with HCFCD flooding data and be utilized to quantify the benefits associated with improving the level of service to the 1% (100-year) exceedance probability storm event and the development of project prioritization. Flood damage estimates will not be calculated.

- 3.3 Floodplain Delineation.** The Engineer shall utilize the HEC-RAS model results to delineate the existing preliminary 100-year floodplain for all streams within this Scope of Work.
- 3.4 Level of Service.** The stream performance and capacity will be analyzed for each stream segment and a Level-of-Service documented. Level-of-Service Exhibits will be developed to communicate the information to the county/TIRZ and the community.
- 3.5 Matrix Data Development.** The Engineer shall develop a matrix to summarize the data and results of the Existing Level of Service Analysis to provide a metric of comparison of flooding issues within the Kingwood area and communicate the information to the county/TIRZ and the community.

4.0 Improvement Options Analysis

- 4.1 Hydraulic Analysis.** The Engineer will determine structural and non-structural improvement alternatives to bring all streams to the 100-year level-of-service. The analysis will be performed utilizing the full conveyance peak flows. Two

alternatives will be developed for the streams that are part of the HCFCD and TIRZ 10 (Kingwood) inter-local agreement and a single alternative will be developed for all other streams. No improvement option alternatives will be developed for G103-36-00 and its associated tributaries from Kingwood Drive to the confluence with the San Jacinto River. The Engineer will identify the major constraints that affect the available solutions for each stream. Structural alternatives and non-structural alternatives to be considered will include but are not limited to:

4.1.1 Structural Alternatives

- Improved drainage channels including widening, deepening, and/or lining for increased conveyance capacity.
- Watershed diversions using enclosed conduits (following existing roadway alignments or other public ROW).
- New regional or sub-regional detention basins and modification of existing detention basins including inlet and/or outlet structures.
- Enhanced conveyance using selectective clearing and re-shaping of natural channels.
- Enhanced flood storage in natural and park areas using small-scale berms and grading.

4.1.2 Non-Structural Alternatives

- Property buy-outs.
- Coordinated ROW dedications for future improved channels and regional detention basins.
- Regional detention fees for new development.

4.2 Floodplain Delineation. The Engineer shall utilize the HEC-RAS model results to delineate the proposed preliminary 100-year floodplain for all streams within this Scope of Work. The acreage reduction of inundation will be calculated and provided as a metric for project evaluation.

4.3 Impact and Mitigation Analysis. The Engineer will calculate the impacts associated with the increased runoff to the receiving systems for the following streams:

- G103-36-00
- G103-38-00 (Kingwood Diversion Ditch)
- G103-39-00
- G103-45-00
- G103-46-00
- G103-80-03.1A (Mills Branch)
- G103-80-03.1B (Taylor Gully)
- G103-80-01 (Green Tree Ditch)
- G103-80-04

The impacts will be measured by performing a volume comparison between the existing and proposed outflow hydrographs for the full conveyance conditions

from the HEC-HMS and unsteady HEC-RAS models. Alternatives to mitigate any adverse impact such as regional detention ponds will be developed and included as part of the proposed project. This effort includes identifying detention volume requirements, identifying locations for detention ponds and developing schematic layouts of the detention ponds. The hydraulic operation of the detention ponds will not be analyzed as part of this study.

- 4.4 Proposed ROW Acquisition.** The Engineer will identify the proposed ROW acquisition necessary to implement the improvement and mitigation options. ROW acquisition exhibits will developed to communicate the information to the county/TIRZ and the community.
- 4.5 Preliminary Cost Estimate.** The Engineer will develop preliminary engineering cost estimates with right-of-way acquisition costs and construction management costs included.
- 4.6 Project Priority and Implementation Plan.** The Engineer will develop a matrix to evaluate and prioritize the improvement projects. Evaluation will include results from the structure inventory tool, historical flooding data, preliminary cost estimates and project constraints such as ROW acquisition. Estimated flood damages will not be utilized in development of the matrix.
- 4.7 Overland Flow Analysis.** City of Houston overland flow paths and ponding data is shown on Figure 2, which represents a simplified approach to identify areas with overland flow obstructions and is not reflective of actual ponding or flow paths that may be experienced during a frequency flood event. The data shows that portions of the Kingwood study area have potential for significant offsite flows from Montgomery County as well as ponding locations due to inadequate overland flow conveyance. To better define areas within the Kingwood area with inadequate overland flow conveyance, the Engineer will develop a 2D HEC-RAS model to analyze the flow patterns and ponding associated with the 100-year storm event. The HEC-RAS model will utilize LiDAR data with stream crossings removed and rainfall applied on grid. The analysis will be performed in accordance with the HCFCD Two-Dimensional Modeling Guidelines, dated July 2018. Exhibits will be prepared to provide the results of the overland flow analysis. The intent of this analysis and exhibits will be to define areas that need further, more detailed studies of overland flow.

5.0 Study Report.

- 5.1 Draft Study Report.** A drainage study report will be prepared to provide quantification of the hydrologic and hydraulic analysis results with a detailed narrative and supporting tables, exhibits and appendices. The study report will be prepared and submitted at the completion of the level of service analysis phase of the project for comment from HCFCD. At the completion of the improvement options analysis phase of the project, the study report will be updated and submitted to HCFCD for comment and review. The study report will also include information and comments received at the public meetings. The draft drainage study report shall be signed and sealed with an interim stamp by a Licensed Professional Engineer in the state of Texas. Three (3) bounded original copies of the study report shall be provided to HCFCD. The draft drainage study report shall also be provided in electronic PDF format as required by HCFCD for review and approval.

- 5.2 Final Study Report.** The draft drainage study report will be revised based on comments received from HCFCD at the completion of the level of service analysis and improvement options analysis phase of the project. The drainage study report shall be signed and sealed by a Licensed Professional Engineer. Three (3) bounded original copies of the study report shall be provided to HCFCD. The study report shall also be provided in electronic PDF format as required by HCFCD for review and approval.

Additional Services Work Tasks

- 6.0 Project Meetings.** The Prime and H&H Subconsultant shall attend the following coordination meetings:
- 6.1** Harris County Flood Control District – Attend project kickoff and monthly status meetings (2 meetings) to present work activities and results of the study and discuss project issues. The Engineer will prepare agendas for each meeting and will distribute meeting minutes within 5 days of each meeting.
- 6.2** Technical Stakeholder Meetings – It is anticipated that the Engineer and H&H Subconsultant will attend five (5) meetings with varying stakeholders (TIRZ 10, HOA's, etc.) throughout the course of the project to present study results and receive stakeholder input to be incorporated into the proposed improvements. This effort includes preparing for the stakeholder meetings with appropriate materials such as basic exhibits or 4-7 count presentation slide decks, as well as attending and documenting the meetings.
- 6.3 Adjacent Project Coordination.** The Engineer will coordinate with the 2 adjacent studies for the San Jacinto River. This effort will include reviewing their material, understanding their project challenges and their planned improvements. This effort is for one (1) coordination meeting.
- 7.0 Additional Hydrologic and Hydraulic Detailed Analysis.** The intent of this task is to capture potential changes to the listed Scope of Work. Streams listed as Minor in Section 3.2.1 may be selected for more detailed study. Furthermore, 2D modeling may be recommended as a result of study results.
- 8.0 Additional Level of Service Improvement Option.** The Engineer will determine an additional structural and non-structural improvement alternative for a level-of-service less than the 100-year frequency storm event. The analysis will be performed utilizing the full conveyance peak flows. The Engineer will identify the major constraints that affect the available solutions for each stream.
- 9.0 Survey.** Effort for survey subconsultant to perform a topographic survey to obtain the following data:
- Cross culvert and bridge information including dimensions such as but not limited to length, width, low-chord, pier locations, flowline, roadway profile, and other elevations at upstream and downstream faces of the structures.
 - Channel cross section data containing a minimum of 7 points at each of the following locations: left natural ground, top of left bank, toe of slope, flowline of channel, toe of slope, right top of bank, and right natural ground. Cross section locations will be determined by the Engineer.
 - Finished floor elevations of homes provided by the Engineer.

The topographic survey will be performed in accordance with the HCFCD Surveying Guidelines. The topographic survey data will be established and tied to the Texas State Plane Coordinate System, South Central Zone NAD 83 and datum NAVD 88.

Proposal Assumptions

1. This proposal does not include preparation of Construction Plans, Specifications & Estimates (PS&E).
2. This proposal does not include the development of bridge layouts or culvert crossing layouts.
3. This proposal does not include design, modeling and calculations for City of Houston or Harris County drainage systems such as storm sewers or roadside ditches.
4. This proposal does not include preparation and submittal of FEMA application forms (MT-1, MT-2), floodplain and floodway mapping, and associated fees to request a FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR).

10.0 Revisions

The Engineer shall make requested revisions to documents and materials prepared under this Agreement. The Engineer also shall provide such engineering services necessary for such revision, when they are not necessitated by any fault of the Engineer and such revisions are inconsistent with approvals or instructions previously given by the District, or are made necessary by the enactment or revision of codes, laws, or regulations issued subsequent to the preparation of such documents.

THE STATE OF TEXAS §
 §
COUNTY OF HARRIS §

The Commissioners Court of Harris County, Texas, convened at a meeting of said Court at the Harris County Administration Building in the City of Houston, Texas, on _____, with the following members present, to-wit:

Lina Hidalgo	County Judge
Rodney Ellis	Commissioner, Precinct No. 1
Adrian Garcia	Commissioner, Precinct No. 2
Steve Radack	Commissioner, Precinct No. 3
R. Jack Cagle	Commissioner, Precinct No. 4

and the following members absent, to-wit: _____, constituting a quorum, when among other business, the following was transacted:

ORDER AUTHORIZING EXECUTION OF AN AGREEMENT FOR ENGINEERING SERVICES BETWEEN THE HARRIS COUNTY FLOOD CONTROL DISTRICT AND NEEL-SCHAFFER, INC.

Commissioner _____ introduced an order and made a motion that the same be adopted. Commissioner _____ seconded the motion for adoption of the order. The motion, carrying with it the adoption of the order, prevailed by the following vote:

		Yes	No	Abstain
AYES:	Judge Lina Hidalgo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NAYS:	Comm. Rodney Ellis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ABSTENTIONS:	Comm. Adrian Garcia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Comm. Steve Radack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Comm. R. Jack Cagle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The County Judge thereupon announced that the motion had duly and lawfully carried and that the order had been duly and lawfully adopted. The order thus adopted follows:

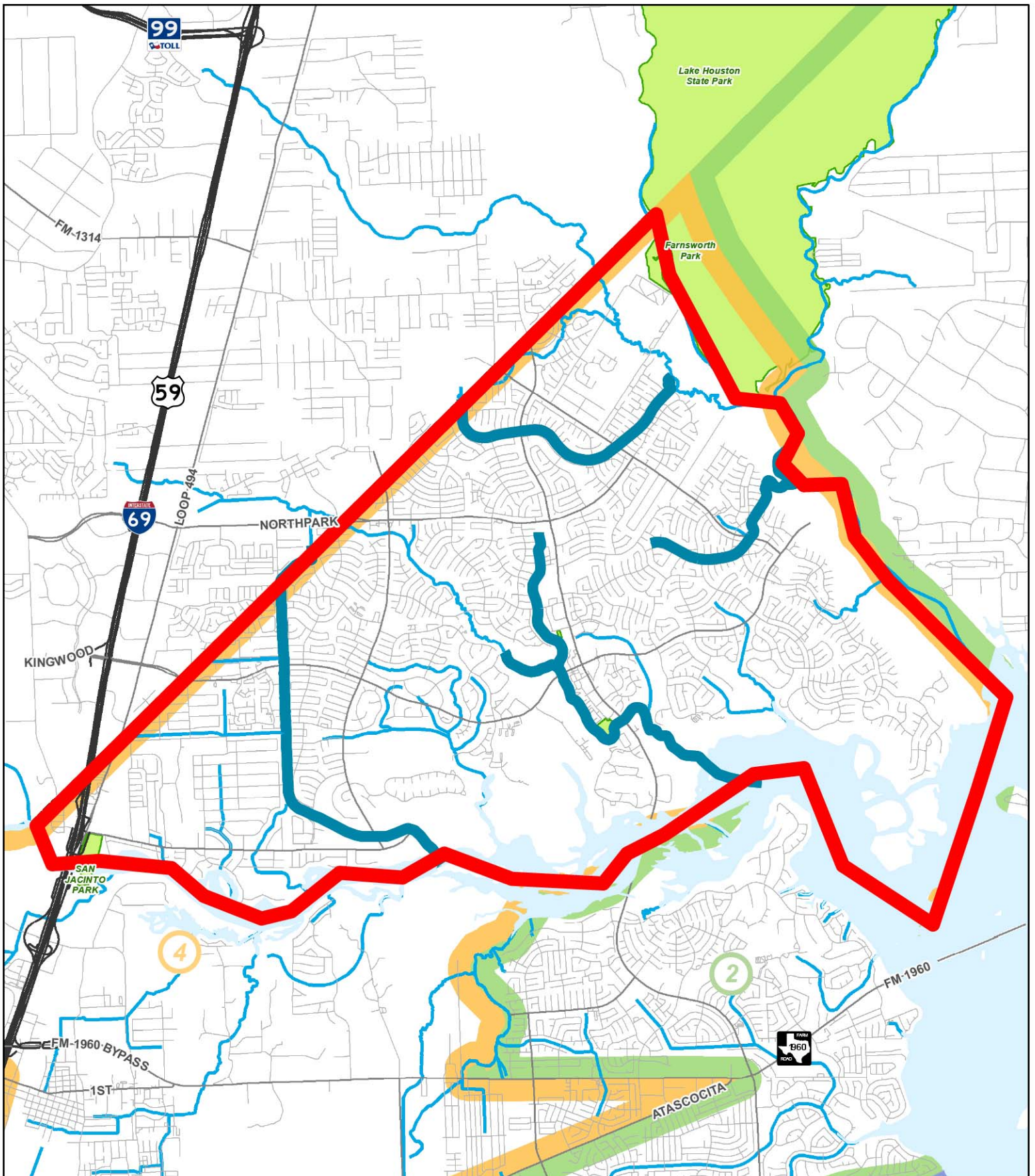
WHEREAS, the District desires to identify flooding sources and develop potential flooding solutions in the Kingwood area, hereinafter called the "Project"; and

WHEREAS, the District desires that the Engineer provide Engineering Services for the Project; and

WHEREAS, the Engineer represents that it is capable and qualified to perform the various services that may be required.

NOW, THEREFORE, BE IT ORDERED BY THE COMMISSIONERS COURT OF HARRIS COUNTY, TEXAS THAT:

- Section 1: The recitals set forth in this order are true and correct.
- Section 2: Exemption from the County Purchasing Act under Texas Local Government Code § 262.024(a)(4) is hereby granted.
- Section 3: County Judge Lina Hidalgo is hereby authorized to execute for and on behalf of the Harris County Flood Control District, an Agreement by and between the Harris County Flood Control District and Neel-Schaffer, Inc., for a fee to be paid by the District of \$700,000.00, said Agreement being incorporated herein by reference for all purposes as though fully set forth verbatim herein.



Project ID: Z100-00-00-P027
Watershed: San Jacinto River
Precinct: 4

Pct No

- 1
- 2
- 3
- 4

