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INTERLOCAL AGREEMENT
CITY OF BELLAIRE MASTER DRAINAGE CONCEPT PLAN

THE STATE OF TEXAS §
§
COUNTY OF HARRIS §

THIS INTERLOCAL AGREEMENT is made and entered into pursuant to the Interlocal Cooperation Act (TEX. GOV'T CODE ANN., Ch. 791) by and between the **HARRIS COUNTY FLOOD CONTROL DISTRICT**, a body corporate and politic under the laws of the State of Texas ("District") and the **CITY OF BELLAIRE, TEXAS**, a home-rule city of the State of Texas, situated in Harris County, acting by and through its City Council ("the City").

WITNESSETH:

WHEREAS, this Interlocal Agreement is made under the authority granted by V.T.C.A., Government Code, Chapter 791, the Interlocal Cooperation Act; and

WHEREAS, the City and the District wish to enter into an Interlocal Agreement for the purposes of conducting a drainage and flood control study of the Brays Bayou watershed (Harris County Flood Control District Unit D100-00-00) within the City of Bellaire, including the main stem of Brays Bayou, Railroad Ditch, Cypress Ditch, and several storm sewer trunk lines (the "Study," as further identified below); the City has contracted with an engineering firm to conduct the Study; and

WHEREAS, it is mutually beneficial to the City and the District to participate in the Study and the parties are willing to commit the funding for the Study; and

WHEREAS, the City and the District desire to proceed with the Study subject to the terms and conditions herein.

NOW, THEREFORE, for and in consideration of the mutual covenants, agreements and benefits to the parties herein named, the parties agree as follows:

Section 1. DEFINITIONS OF TERMS. Terms and expressions as used in this Agreement, unless the context shows otherwise, shall have the following meanings:

A. *""Study"* means a drainage and flood control study of the Brays Bayou watershed (Harris County Flood Control District Unit D100-00-00) within the City of Bellaire, including the main stem of Brays Bayou, Railroad Ditch, Cypress Ditch, and several storm sewer trunk lines, as described in Exhibit "A," which is attached and incorporated into this Agreement.

B. *"Study Cost"* means the fees earned by the engineering firm hired by the City to complete the Study.

Section 2. ADMINISTRATION OF STUDY.

A. The City shall lead the Study and use the engineering firm ARKK Engineers, LLC, (the "Consultant") with whom the City has contracted for professional engineering services. The District will participate in the Study by reviewing and approving the scope of the study, attending the meetings, providing comments, reviewing and approving reports and technical memorandums, and materials to be used at public meetings.

B. The City shall perform all administrative duties associated with contract administration necessary for the Study.

The Consultant and any other consultant retained for the Study shall be required to conduct the Study as agreed by the City and the District and must assign the copyright to the Study to the City and the District for joint ownership.

Section 3. FISCAL PROVISIONS. The total Study Cost is estimated to be $702,000.00 with percentage shares and estimated contribution amounts established as follows:

City	50.0%	$351,000.00
District	50.0%	$351,000.00

The City shall pay for the direct costs of the Study. The District shall reimburse the City for actual costs of the Study up to but not to exceed $351,000.00 according to the percentage shares in the above table. Upon review and approval of the final Study and final Study Cost by all parties, the City shall send the District an invoice, in a form acceptable to the Harris County Purchasing Agent, assessing the proportionate share to be paid by the District. The District shall forward its share to the City within 45 days of such notice.

The dollar amounts shown in the table above shall not be exceeded unless approved by each party and sufficient funds have been allocated therefor. During the Study, if any additional services or studies are identified and both parties concur, this Agreement shall be amended accordingly and the fee for the additional services or studies shall be shared equally, with the City providing 50% of the cost, and the District providing 50% of the cost.

Under no circumstances or interpretations hereof shall the District's share of expenses exceed 50% of the actual Study Cost.

Section 4. TERM OF AGREEMENT. The Study shall be completed on or before eighteen (18) months from the date of signature of the last party to sign this Agreement. The time to complete the Study may be extended upon the agreement of both parties, but no such extension shall be beyond the contract expiration date of the Consultant.

Section 5. NOTICES. All notices or communications provided for herein shall be delivered to the City and the District or, if mailed, shall be sent to the City and the District at their respective addresses. For the purposes of notices, the addresses of the parties, until changed by written notice, shall be as follows:

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

City: City of Bellaire
7008 Rice Avenue
Bellaire, Texas 77401
Attention: City Manager

Section 6. IMMUNITY. It is expressly understood and agreed that in the execution of this Agreement, no party waives nor shall be deemed to waive any immunity or defense that would otherwise be available to it against claims arising in the exercise of governmental powers and functions.

Section 7. MISCELLANEOUS.

A. No party hereto shall make, in whole or in part, any assignment of this Agreement without the written consent of all other parties.

B. The validity of this Agreement and any of its terms or provisions, as well as the rights and duties hereunder, shall be governed by the laws of the State of Texas.

C. Unless otherwise provided herein, this Agreement may be amended only by written instrument duly executed on behalf of the City (by authority of City Council), and the District. The City Manager is only authorized to perform the functions specifically delegated to him or her under this Agreement.

D. This Agreement shall not bestow any rights upon any third party, but rather shall bind and benefit the City and the District only.

IN WITNESS WHEREOF, the parties' action under authority of their respective governing bodies have caused this Agreement to be duly executed in several counterparts, each of which is deemed to be an original.

EXECUTED in triplicate originals

DATE SIGNED BY DISTRICT:

APPROVED AS TO FORM:

VINCE RYAN
HARRIS COUNTY ATTORNEY

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

HARRIS COUNTY FLOOD CONTROL DISTRICT

By: _____
Lina Hidalgo
County Judge

CITY OF BELLAIRE
("CITY")

By: DocuSigned by: Paul A. Hofmann 32762EAFF18C492...
Paul A. Hofmann
City Manager

ATTEST / SEAL:

By: DocuSigned by: Tracy L. Dutton AD0577A473564DD...
Tracy L. Dutton
City Clerk

DATE SIGNED BY CITY:

7/25/2019

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EXHIBIT "A"
SCOPE OF SERVICES

February 8, 2019

Mr. Paul Hofmann
City Manager
City of Bellaire
7008 S. Rice Avenue
Bellaire, Texas 77401

RE: Proposal for Professional Engineering Services for a City of Bellaire Master Drainage Concept Plan

Dear Mr. Hofmann:

ARKK Engineers, LLC (ARKK), in partnership with Costello, Inc. (CI) and Freese and Nichols (F&N) is pleased to submit this proposal for engineering services for the development of a Master Drainage Concept Plan (MDCP). The three team members will have the following responsibilities on the project:

- ARKK will be responsible for the overall Project Management and Coordination including consensus building with appropriate jurisdictions and stakeholders
- CI will oversee the Hydrology and Hydraulics
- F&N will provide expertise in storm water tunnel feasibility and costs

Project Understanding:

The City of Bellaire, Texas (the City) has experienced flooding conditions over the years that have recently become more and more frequent. On many occasions, there has been structural damage to residential property, commercial property and public facilities. This damage has been costly to the citizens of Bellaire and at times, interrupted the City's ability to provide health, safety and welfare services to the residents. In the city limits of Bellaire alone, over 1400 homes flooded during Tropical Storm Allison and over 2000 homes flooded during Hurricane Harvey. Also, many structures flooded during much less severe rain events: the May 2015 storm and the Tax Day storm of 2016.

The scope of services for this project includes the development of a Master Drainage Concept Plan (MDCP) for the City of Bellaire and portions of the City of Houston. The plan will determine feasible improvements to reduce flooding potential within the City of Bellaire and surrounding areas. The City of Bellaire is generally encompassed by Harris County Flood Control District's (HCFCD's) Brays Bayou Subarea D115A, which is approximately 2,400 acres. The drainage systems within D115A extend from US 59 South to the outfall into either Brays Bayou or Cypress Ditch, mostly via underground storm sewers within the major thoroughfares, as shown on Exhibit 1. The local drainage areas include storm drainage from the City, City of Houston

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(COH), TxDOT and HCFCD right-of-way (ROW). The area has a history of drainage issues due to the lack of storm sewer capacity and the widespread Brays Bayou floodplain. Also, there appear to be large drainage areas, outside the D115A local North/South drainage system drainage areas, that contribute overland sheet flow into the individual drainage area systems which overwhelms the local systems.

The City and HCFCD are proposing an interlocal agreement to analyze the capacity of the existing major drainage systems which serve the City, as shown on Exhibit 1, and determine recommended improvements to these systems to prevent structural flooding in storm events, up to and including the 100-year, 24-hour storm event. It is anticipated that TxDOT will participate in funding work associated with the IH 610 ROW.

This analysis will simulate the existing drainage conditions of the major drainage systems that impact the City and nearby COH: Brays Bayou, Cypress Ditch, Kilmarnock Ditch, Newcastle Storm Sewer, IH 610 storm sewer system, the South Rice Avenue storm sewer system, and the Chimney Rock storm sewer system. Pertinent lateral storm sewer systems, which outfall into the main trunk systems, will be evaluated, as necessary, to identify major overland sheet flow patterns. Additionally, areas outside of the normal delineated drainage area boundaries will be evaluated to determine potential sheet flow impacts within the city limits. These analyses will include possible overflow from the Buffalo Bayou watershed in the vicinity of Westpark Drive.

The result of the study will be a comprehensive drainage plan that the City, HCFCD, TxDOT, and the COH can use to improve the major North/South drainage arterials. The improvements proposed will provide storm drainage relief to the watershed. The results will include the benefits and costs of all drainage solutions presented and a recommended plan for implementation.

The plan will include an evaluation of the existing storm drainage network and evaluate conceptual improvement recommendations to improve the system. Each system's level of service capacity (2-, 5-, 10-, 25-, 50-, 100-, 250- and 500-year, 24-hour storm events) will be determined and proposed improvement scenarios will be developed to lower peak water surface elevations and protect structures within the city. Detention basin locations will be determined to reduce impacts from proposed improvements so as to eliminate any impact on flooding conditions along Cypress Ditch, Brays Bayou, and surrounding properties.

This proposal presents the scope of work and fee estimate required to prepare a Master Drainage Concept Plan (MDCP) for the City of Bellaire to determine potential improvements to reduce flooding potential within the City of Bellaire.

The itemized lists below present the proposed scope of work and fee estimate required to prepare a Master Drainage Concept Plan (MDCP) for the City of Bellaire.

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Proposed Scope and Budget

1. The services to be performed under this proposal relate to the following project: City of Bellaire Master Drainage Concept Plan, Brays Bayou Watershed, City of Bellaire, Texas.
2. The following project specifications and assumptions will be utilized for this study:
   - Terrain information will be based off the HGAC 2008 LiDAR dataset. Depending on the availability of the 2018 HGAC LiDAR dataset, this newer dataset will be incorporated into the modeling. Subsurface Utility Engineering (SUE) is not included in this scope but can be included as an additional service.
   - Existing drainage conditions will be based off the information provided in the City of Houston GIMS, the City of Bellaire, and supplemented with available plan data and site visits.
   - The MDCP will be prepared in accordance with the Harris County Flood Control District's (HCFCD) Policy and Procedures Manual dated October 2018.
   - For the TxDOT owned systems, the current Hydraulic Design Manual will be utilized to determine the design level of service for the I-610 storm sewer system.
   - Atlas 14 rainfall data may become available during the study. Engineer will actively monitor potential changes and incorporate minor changes as appropriate, but significant changes may require reanalysis which will require a change in scope and budget. Engineer will coordinate with the City as it learns of potential changes that would affect the analysis.
   - The analysis will be performed with XP-STORM unsteady modeling package, with both the 1-dimensional (channels and storm sewers) and 2-dimensional (overland sheet flow) analysis.
   - The effective HEC-HMS and HEC-RAS model of Brays Bayou will be utilized to develop the XP-SWMM model. Subarea hydrographs, upstream boundary conditions, and rainfall distributions will be taken from the effective HEC-HMS model and input into the XP-SWMM hydrologic mode. The XP-SWMM base geometric data will be taken from the effective HEC-RAS model cross sections and bridge routines.
3. The Basic Services to be performed under this proposal, are as follows:
   a. **Project Management and Coordination**
      - Identify appropriate stakeholder groups.
      - Gather contact information and assist in contacting stakeholders.
      - Develop Website Copy to inform the public about the project.

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- Develop a project-specific presentation.
- Develop exhibits, maps, and roll plots as needed to support community outreach efforts.
- With the multiple stakeholders involved in the study (HCFCD, TxDOT, City of Houston) Engineer has budgeted for six (6) meetings with the various stakeholders to discuss assumptions, methodologies, and initial results. An additional five (5) meetings has been budgeted for direct coordination with the City of Bellaire and the Engineering team.
- Document meetings:
    - Date of meeting
    - Invitation list
    - Meeting agenda
    - Handouts
    - Sign in sheet and contact information
    - General themes and topic
- Conduct QA/QC on models, parameters, and the report
- Identify and contact potential alternative funding sources for future project phases.
- Public Involvement & Education
    - Manage public expectations by educating public on improvement alternatives such as tunneling, storm sewer systems, pump systems, open ditch drainage systems and detention systems.
    - Educate public on improvement alternatives and expectations
    - Identify other stakeholders and begin relations/outreach campaign
    - 3 public meetings to be held at the City of Bellaire to solicit input from citizens and to present final results of the study. A presentation along with applicable exhibits will be developed for each meeting. Sign in sheets along with a record of all public comments will be provided to stakeholders 1 week after meeting date.
        - Meeting 1 – Initial public meeting to discuss overall project and goals with citizens. Solicit input via survey and questions submitted by the public.

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- Meeting 2 – Status meeting at end of Concept Development phase to solicit input from citizens on proposed improvements alternatives.
- Meeting 3 – Final Presentation of project results along with plan to move forward.

- Alternative Funding Sources
  - HCFCD, TxDOT, City of Bellaire, City of Houston, TWDB, FEMA, Grants, other state and Federal sources
  - Identify and contact potential alternative funding sources for future project phases.
- Risk Identification & Mitigation
  - Risk identification and mitigation strategy developed in concert with the City of Bellaire, City of Houston, TxDOT & HCFCD

b. Concept Development

A preliminary review of the overall drainage conditions within subarea D115A will be performed based on a "desk top" review of available information and basic spreadsheet based peak flow and hydraulic capacity calculations of the major drainage systems within D115A. This will allow for high level guidance to better focus the modeling efforts and direction of the improvement alternatives.

- Preliminary Hydrologic and Hydraulic Evaluation
  - Document the current overall drainage area boundaries within D115A for each major system to include Cypress Ditch, Chimney Rock, South Rice, IH610, Newcastle, and Kilmarnock Ditch. Initial drainage area boundaries will be taken from effective HCFCD HEC-HMS subareas, TxDOT drainage area maps for I610, and City of Bellaire drainage plans for local street systems.
  - Compute peak flow rates for the 10- and 100-year, 24-hour storm events utilizing the HCFCD site runoff curve methodology.
  - H&H Sheet Flow Analysis
    - Review existing studies and reports to estimate potential sheetflow flow rates entering the study area.
    - Analyze the LiDAR data to determine preliminary sheetflow patterns from offsite drainage areas.
    - Estimate flow rates to be captured and identify where it can be best captured by conveyance. This will be based on the 100-year,

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24-hour rainfall amounts. Other storm events will be considered based on the information provided in the previous analyses.

- Develop basic spreadsheet calculations to estimate the existing capacity of the major storm sewer systems. Perform basic channel capacity calculations of Cypress Ditch and Kilmarnock ditch to determine level of service.

- Develop preliminary sizing of proposed conceptual improvements.
  - Project Concept Development Utilizing Preliminary Analysis Information - Develop up to 6 overall project concepts including potential open ditch, box culvert, detention and tunneled conveyance and combinations thereof
  - Alternatives shall all be sized to convey the same flow rate required from H&H analysis based on spreadsheet hydraulics
  - Concepts will consider hydraulic capture potential, constructability, community impact, environmental impact, ability to permit, right-of-way requirements, cost, and potential to reduce structural flooding.
- Initial Concept Screening Workshop
  - Vet initial alternatives with Bellaire/HCFCD/COH/TxDOT to attempt to refine list to 3 alternatives to be carried forward
- Conceptual Basis of Design Memorandum
  - Refine alignments of 3 Alternatives to prepare for technical report
  - Prepare Concept Memo for Bellaire for concurrence

c. Data Collection and Field Assessment

- Obtain and review previous studies and reports for Brays Bayou along with applicable hydrologic and hydraulic models. Collect relevant county and FEMA GIS shapefiles information, topographic LiDAR data, floodplain delineations, and coordinate with HCFCD, TxDOT, and City of Houston on current studies, to be reviewed as part of the analysis. The primary data sources will be provided by the City of Houston and the City of Bellaire. Additional data to be provided by the Cities may include as-built plans, utility locations, and drainage complaint data. The Engineer requests as much of the following data from the Cities as possible:
  - Land se shapefiles
  - Planimetric data including building footprints, edges of pavement, etc.
  - Available Technical Drainage Reports

- Utility shapefiles
    - Storm sewers including pipes, fixtures, and outfalls
    - Sanitary sewers including pipes and fixtures
    - Water lines including pipes and fixtures
- Record Drawing plan sets
- Drainage complaint records
- Field Assessment – The site visits will include visual confirmation of available drainage condition report data that was provided.
- Engineer will conduct two (2) site visits to observe the existing conditions
- Engineer will conduct two (2) site visits to review potential alternatives
- Engineer will document initial site visits with field observation reports and organized photos. Information collected from initial site visits will be organized into a standardized format with descriptions and appropriately organized photos.
- Existing Model Review – Review any existing models provided by the HCFCD, City of Houston or the City of Bellaire to include with the existing or proposed conditions analysis.

d. Topographic Surveying:

- Perform a hydraulic survey of the existing Cypress Ditch from Brays Bayou to just east of Chimney Rock, approximately 9,500-feet. This will include cross sections of the channel every 500 feet and then detailed surveys at bridge and culvert crossings. Field topography will be performed as needed to confirm major trunk line flowline elevations and sizes. Once proposed alternatives are developed, additional surveys may be required to confirm outfall elevations or site conditions, to aid in modeling and conceptual design. Property owner research will be done, as needed, to determine ownership and potential encumbrances to proposed improvement alternatives.
- Engineer will provide measure downs for up to 50 manholes throughout the project area to determine the invert elevations and sizes of the drainage infrastructure. The manhole locations will be determined during Task C - "Data Collection and Field Assessment". The top of manhole for the measure downs will be obtained from the LiDAR. Sketches for each manhole will be provided.

e. Existing Conditions Analysis:

- An existing conditions analysis will be performed that establishes the direction, height, and magnitude of the flooding within the city limits, from both local

flooding occurring due to rain within the city and from flooding due to Cypress Ditch and Brays Bayou. The major systems to be included in the analysis include:

- Brays Bayou, from approximately Chimney Rock to Buffalo Speedway, the bayou will be simulated in 1D to allow for boundary conditions along the area of interest within D115A and to determine potential impacts associated with improvements within the study area. The left overbanks of the effective HEC-RAS cross sections will be removed to allow for simulation of the overbanks in the 2D grid.
- Cypress Ditch: The channel will be simulated from the headwaters, approximately at Chimney Rock, to its confluence with Brays Bayou. The Cypress Ditch will be simulated with 1D geometry to define the channel, culvert crossing under IH610, and existing bridge crossings. The overbanks of the floodplain will be connected to a 2D grid to simulate the interaction of Brays Bayou flows from the south and the floodplain within D115A to the north.
- Kilmarnock Ditch: This ditch, which generally parallels the existing railroad tracks, will be simulated from Bellaire Boulevard to Cypress Ditch using 1D elements with the overbanks connected to the 2D grid.
- Newcastle, South Rice, and IH 610 Storm Sewer Systems: The main trunk storm sewers will be simulated utilizing 1D pipe elements within XP and connected to the 2D grid with multi-links representing the inlet locations. Roadway conveyance will be simulated within the overlying 2D grid.
- Chimney Rock: The main trunk storm sewer will be simulated with 1D pipe links and connected to the 2D grid to allow for better definition of the potential overflows that occur from the Chimney Rock system and enter the D115A subarea.
- Minor Storm Sewer Laterals: As the modeling progresses, storm sewer laterals or other drainage features may be added to the XP model as needed to better define the dynamics of the overall drainage system.

- Initial drainage area delineations will be taken from the current City of Bellaire Master Drainage Plan and confirmed utilizing the HGAC LiDAR dataset. The City of Houston's 2008 Overland Sheet Flow analysis will be reviewed to determine potential overflow locations from other watersheds that could be contributing to the runoff within the City of Bellaire. Clark's Unit hydrographs will be developed for each drainage area for a range of storm events (2-, 5-, 10-, 25-, 50-, 100-, 250- and 500-year) in accordance with the HCFCD PCPM methodologies. The XP hydrologic engine will be utilized for runoff hydrograph computations.

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- An XP-STORM 1-dimensional/2-dimensional (XP) unsteady hydraulic model will be developed of the drainage systems described above. This model will include simulating Brays Bayou with 1D elements from the HCFCD HEC-RAS model and developing a 1D model of the existing Cypress Ditch based on the field survey data. The main trunks will be simulated within XP as 1D links with the overland areas simulated in 2D grid developed from the HGAC 2008 LiDAR dataset. Hydraulic features for systems outside of the Cypress Ditch watershed that may contribute runoff will be simulated within the model to aid in identifying direction and quantity of sheet flow impacting the city. The XP model will utilize both upstream and downstream boundary conditions for Brays Bayou from the effective HEC-HMS and HEC-RAS models. A flow hydrograph will be utilized for the upstream hydrograph and a flow-stage rating curve from the HEC-RAS model will be utilized for the downstream boundary condition. A comparison of the XP results to the Brays Bayou effective model will be made to demonstrate any differences that may occur due to the differing modeling approaches.
- The models will be executed for the range of storm events (2-, 5-, 10-, 25-, 50-, 100-, 250- and 500-year, 24-hour storm events) to determine the magnitude of flooding during varying rainfall conditions.
- A level of service for each system will be established based on the range of storm events and potential for structural flooding. Structures' slab elevations will be estimated based the 2018 LiDAR dataset and available city records. A point shapefile of all structures, along with the estimated slab elevations, will be compiled and compared to the hydraulic modeling results. The flowing metrics will be determined for each system:
    - Estimate of acreage of land inundation for each storm event
    - Number of structures in the floodplain
    - Number of structures flooded (parsed by range of ponding depth)
    - Estimate of miles of inundated roadway based on GIS processing of roadway centerlines from LiDAR dataset to hydraulic model results.

f. Improvement Alternatives:

- Once the existing flooding conditions are established, various improvement alternatives will be simulated within the hydraulic models to determine potential flood reductions that can be achieved.
- Improvement alternatives will be focused on Cypress Ditch, Kilmarnock Ditch Newcastle, South Rice, and IH 610 Storm Sewer Systems. Other drainage ways within the study area may be improved if there appears to be a potential benefit to the overall flood reduction goals.

- Each alternative will be evaluated with the metrics described above to allow for determination of flood reduction benefits offered by each alternative.
- Potential alternatives to be developed include:
    - Enlarging main storm sewer systems to improve conveyance capacity
    - Potential flood tunnels, to move floodwaters to Brays Bayou, and associated siphons and pump stations
    - Intermittent detention ponds to collect and reduce flows to the existing storm sewer system
    - Flood control channels to capture sheet flow and convey it to Cypress Ditch and Brays Bayou
    - Relief structures through IH 610 and the railroad track to better utilize Kilmarnock Ditch
    - Oversized storm sewers, with supplemental pump stations, to increase conveyance and reduce peak water surface elevations by providing inline detention within the drainage system.
- For each alternative, mitigation actions will need to be developed so that no adverse impacts occur to either Cypress Ditch or Brays Bayou as a result of the alternative. This mitigation would include regional detention along Cypress Ditch to capture and reduce improved flow rates, regional detention along Brays Bayou, buy-outs of impacted areas, and in-line detention volume within the improvements to reduce peak flows to existing rates.

g. Schematic Layout, Cost Estimates, and Project Benefit Metrics:

- Schematic plan layouts will be developed for each alternative and utilized to compute estimated construction costs. Each alternative will be compared based on the proposed flood reduction benefit metrics identified above, financial impact to the city, constructability, and potential risk. Based on this analysis, a preferred alternative will be selected and presented for further study and design as part of a separate Preliminary Engineering Report (PER).

h. Technical Report:

- A technical report, along with applicable exhibits and tables, will be developed and submitted to the City of Bellaire, City of Houston, HCFCD, and TXDOT for their review and approval. This report will provide a description of the methodologies, assumptions, GIS shapefiles, all hydrologic and hydraulic models, technical analysis, analysis results, preliminary cost estimates, and supporting calculations and documentation.

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4. The following deliverables will be developed as part of this Phase 1 scope:
    - CAD file of topographic survey
    - Hydraulic models of both existing and proposed conditions
    - GIS shapefile data of pertinent hydrologic and hydraulic data in electronic format
    - Final Technical Report with all supporting calculations and documentation
5. The following items are NOT part of this scope but can be included as an amendment to this agreement:
    - Construction plans or plan and profile sheets of the system. This will be addressed in a subsequent PER.
    - Design topographic survey
    - FEMA permitting (Conditional Letter of Map Revision nor Letter of Map Revision, LOMR-F)
    - Coordination or approval from regulatory agencies or community groups not specified above
    - Environmental or geotechnical services
    - Applicable City and Drainage District review fees
    - Geotechnical Desktop Study
    - Permitting & Agency Coordination
    - Environmental Desktop Study
    - Cultural/Archaeological Evaluation
    - Construction Methodology and Considerations
    - Subsurface Utility Engineering
    - Cost/Benefit Analysis
    - Phase I and II Environmental Site Assessments
    - Easement/ROW/Property Requirements
    - Project Phasing, Constructability and Public Disturbance
    - Plan/Profile Sheet Development
    - Any item not expressly stated in the above scope of work

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6. The fee to be paid to the Consultant for the Basic Services is as follows:

   In exchange for the Consultant's performance of the Basic Services, the Owner agrees to pay the Consultant and Consultant will accept as payment in full the following **Time and Materials Not to Exceed** for development of the study. These below fees are valid for one year from the date of this proposal. If services have not begun within that time period, the Consultant will review the fees and will adjust them accordingly. Payment of the Fees will be billed monthly in accordance with the terms of the Basic Services completed. Agency review fees will be billed on a time and materials basis in accordance with the rate schedule.

   A project budget summary is provided below. A detailed man hour estimate is attached to this proposal:

a. Project Management	$	44,000
b. Concept Development	$	58,000
c. Data Collection and Field Collection	$	50,000
d. Topographic Surveying	$	70,000
e. Existing Condition Analysis	$	230,000
f. Improvement Alternatives	$	134,000
g. Schematic Layout and Cost Estimates	$	40,000
h. Technical Report	$	40,000
i. Stakeholder Coordination	$	36,000
Total Fee	**$**	**702,000**

7. Engineer will begin work upon receipt of an executed proposal. We anticipate that a draft report can be provided in 10 months from the date of execution of the contract.

8. This proposal will be executed in accordance with the General Services Agreement signed between ARKK Engineers, LLC and the City of Bellaire.

If you have any questions or need any additional information, please contact me at 713-400-ARKK or by email at james.andrews@arkkengineers.com

Sincerely,

ARKK Engineers, LLC

James B. Andrews II, P.E.
City Engineer
City of Bellaire, Texas

Agreed and Accepted By:

City of Bellaire

By: _____
Signature

_____
Printed Name

Date: _____

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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 INTERLOCAL AGREEMENT BETWEEN THE HARRIS COUNTY FLOOD CONTROL DISTRICT AND THE CITY OF BELLAIRE, TEXAS

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	☐	☐	☐
NAYS:	Comm. Rodney Ellis	☐	☐	☐
ABSTENTIONS:	Comm. Adrian Garcia	☐	☐	☐
	Comm. Steve Radack	☐	☐	☐
	Comm. R. Jack Cagle	☐	☐	☐

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, this Interlocal Agreement is made under the authority granted by V.T.C.A., Government Code, Chapter 791, the Interlocal Cooperation Act; and

WHEREAS, the City and the District wish to enter into an Interlocal Agreement for the purposes of conducting a drainage and flood control study of the Brays Bayou watershed (Harris County Flood Control District Unit D100-00-00) within the City of Bellaire, including the main stem of Brays Bayou, Railroad Ditch, Cypress Ditch, and several storm sewer trunk lines (the "Study"); the City has contracted with an engineering firm to conduct the Study; and

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WHEREAS, it is mutually beneficial to the City and the District to participate in the Study and the parties are willing to commit the funding for the Study; and

WHEREAS, the City and the District desire to proceed with the Study subject to the terms and conditions as follows:

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: County Judge Lina Hidalgo is hereby authorized to execute for and on behalf of the Harris County Flood Control District, an Interlocal Agreement by and between the Harris County Flood Control District and the City of Bellaire, Texas for the purposes of conducting a drainage and flood control study of the Brays Bayou watershed (Harris County Flood Control District Unit D100-00-00) within the City of Bellaire, including the main stem of Brays Bayou, Railroad Ditch, Cypress Ditch, and several storm sewer trunk lines, as defined in the Agreement, for a fee to be paid by the District of $351,000.00, said Agreement being incorporated herein by reference for all purposes as though fully set forth verbatim herein.