



EXHIBIT 'A' – SCOPE OF SERVICES

CITY OF EVERMAN FLOOD STUDY

PROJECT UNDERSTANDING

The following scope of work for this project includes the development of a drainage and flood study in the City of Everman, Texas where growth and development have exacerbated flood losses in recent years. The parameters of this study consist of identifying the areas where a high flood risk exists or has the potential to exist within the floodplain of Chambers Creek and its tributaries. To determine design flows, the study area will also include the watershed of the creek and tributaries. The work will be completed in two phases: first, an assessment of the current, or known, flooding hazards within the area will be identified and cataloged; second, an analysis of the floodplain in the creeks for current and future conditions will be completed and utilized to confirm existing flood prone areas and to identify potential areas of concern. Upon compilation of the flood areas and completion of the hydraulic study, a prioritized list of projects will be created that identifies those projects aimed at mitigating, if not eliminating, the flood hazards that will be presented. Additionally, the data collected during this planning project will be included in the next update of the Tarrant County Mitigation Plan.

DETAILED SCOPE OF WORK

1. Project Administration – This task includes management of the team assigned to the project that is responsible for project kick-off, communication between owner and review agencies, QC/QA, reports, invoicing, and project startup & close-out functions.
2. Topographic Survey – It is assumed a horizontal/vertical survey of Chambers Creek and its tributaries will be necessary to complete this work. This survey, to the extent that it may be necessary, will be used to augment the aerial and contour information obtained from the North Central Council of Governments and/or other available sources. It is further understood all survey vertical datum will be referenced to North American Vertical Datum of 1988 (DAVD88). In addition, horizontal datum will conform to NAD83 and be referenced to the State Plane Coordinates. It is also assumed the City of Everman (City) authorizes the surveyor to enter any property necessary to conduct the survey. If the City is not the owner of the property where the survey is being conducted, it is assumed the City will obtain written authorization from the affected property owner and provide it to the surveyor with the written notice to proceed. The following is the work necessary to complete this task:
 - a. Provide Vertical/Horizontal Survey for Cross sections:

Fort Worth ▲ 5237 N. Riverside Drive, Suite 100 ▲ Fort Worth, Texas 76137 ▲ 817.336.5773

Allen ▲ 825 Watters Creek Boulevard, Suite M300 ▲ Allen, Texas 75013 ▲ 214.461.9867  Denton ▲ 3200 S. Interstate 35E, Suite 1129 ▲ Denton, Texas 76210 ▲ 940.383.4177

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For this project, a maximum of forty (40) sections located along Chambers Creek and its tributary as needed to confirm and/or augment the available contour/elevations. Typically, these sections will likely be located near the areas where flooding is known, or likely to exist.

- b. **Provide Vertical/Horizontal Survey for Existing Drainage Facilities:**
This physical survey will also include the horizontal/vertical location of drainage structures and/or culverts along Chambers Creek and its tributaries. The data will include the size and location of the culvert, width of the roadway, elevation of the embankment at the roadway culvert, and guardrails (if any) within the proposed study area. For this study, a minimum of nine (9) structures with a maximum of twelve (12) will be surveyed.
3. **Data Acquisition** - This task includes the acquisition of available data necessary to complete the project. The work, to the extent that it may be necessary, includes consulting with appropriate governing agencies which will include, but is not necessarily limited to, the Federal Emergency Management Agency (FEMA), Tarrant County, City of Everman, City of Fort Worth, North Central Council of Governments (NCTCOG), and the USDA National Resource Conservation Service (i.e. the NRCS). The specific tasks necessary to complete this work are as follows:
- a. **Obtain Available Studies and Current Effective Models**
The current effective hydrologic and hydraulic models for Chambers Creek and its tributaries shall be obtained from the County, City of Fort Worth, United States Army Corps of Engineers (USACE) and/or FEMA itself. Additional hydrologic and hydraulic data from the Carter Park East development (private development within the City of Fort Worth), shall be obtained from the City of Fort Worth. It is assumed the available hydrologic model includes the entire drainage area upstream of the eastern city limits of Everman. It should be noted the hydrologic and hydraulic models from FEMA are in the legacy format, e.g. the hydrologic model, will likely be in HEC-1 or NuDallam format while the hydraulic model will likely be in HEC-2 format.
 - b. **Obtain Available GIS Data, e.g. Aerials, Contours, Soils, and Land Use**
This sub-task consists of the work necessary to obtain the available soils data from the NRCS which encompasses the drainage area of the unnamed tributary. This data includes but is not necessarily limited to the soil mapping units, hydrologic groups, and percent sand. In addition, the sub-task includes the acquisition of existing land use data for the study area from available sources which will include the City of Fort Worth, Tarrant County, City of Everman and/or pertinent governing authorities. Other data as required for the establishment of the flows, and/or hydraulic analysis, will be obtained from appropriate governmental and/or private entities. This task will also include the acquisition of rainfall data for those storms where known flooding events occurred as well as any available adjacent gauge data or high-water marks as obtained by others.
 - c. **Obtain Repetitive Loss Data**
For the purposes of this project, a list of repetitive losses for the City of Everman will be compiled from available sources, such as NCTCOG, FEMA, NWS/NOAA, News Publications, Texas Water Development Board, and other governing authorities.
 - d. **Consult with Local Emergency Personnel (i.e. Obtain Historical flooding locations)** The work for this task will include the interviews with city personnel and review of available city records for the purpose of identifying those areas where rescues and/or other emergency measures and/or activities occurred. The data will include recent flooding events occurring over the past three years with emphasis on the storms occurring in the late summer, early fall of 2018.

4. Assessment of Current/Known Flooding Hazards - This study includes assessment of the known flooding hazards and will include an inventory of existing or known flooding areas, summary of property affected, and identification of areas where frequent or significant flooding is known to exist. This work, to the extent that it may be necessary, will include review of appropriate documents and records as well as consulting with the City of Everman Emergency Management personnel. In addition, a compilation of existing data related to repetitive losses within the City of Everman will be completed and reviewed. Upon completion of this work, a list of flood prone areas and repetitive losses will be created, prioritized, and presented to the county. The following tasks will be necessary to complete this work:
- a. **Establish Priorities for Assessment**
The work for this task includes the establishment of the criteria/policy necessary to rank or prioritize the areas where flooding either exists or has the potential to exist. This work will include coordination with the City of Everman and Tarrant County. This task includes a minimum of three working meetings. The work will include, but may not be limited to, the establishment of known risks associated with the creek such as stream bank erosion, improving conveyance in frequent flood prone areas, and to a lesser extent, water quality.
 - b. **Establish Known/Existing Flooding Issues**
The work includes review of available data including, but not limited to, areas where known flooding exists. The work necessary to complete this task includes:
 - i. Survey of and meeting with emergency management personnel.
 - ii. A maximum of two site visits to assess the Creek's current condition. Areas of excessive erosion and/or damage will be cataloged and compared to the information assessed and/or obtained from the personnel.
 - iii. The work associated with this task will include the establishment and/or identification of sources based on repetitive losses.
 - iv. The compilation of the repetitive losses, known sources of flooding, and assessment of the stream bank condition will be presented in the final report and used in conjunction with the calculated water surface elevations to identify potential or existing flooding issues associated with Chambers Creek.
 - c. **Coordinate and Catalog Community Involvement**
This task includes the work required to establish, attend, and catalog results from community public hearings and/or stakeholders' meetings. This task assumes one meeting held within the project area or at the county offices.

5. Hydrologic/Hydraulic Analysis

- a. **Hydrologic Models**
For the purposes of this project, the selected consultant must determine peak flowrates at a minimum of five discharge points. These points include the flow in North and South Chambers Creek at their confluence, the combined flow at the confluence of the two tributaries, directly upstream of the Forest Hill bridge, and the flow at the eastern City Limits of Everman. Additional discharge points may be added as necessary to facilitate the analysis. In addition, comparison will be made between the calculated flows and the current effective flows as published by FEMA in the Federal Insurance Study report. The models will include the establishment of the peak 1, 10, 25, 50, 100 and 500-yr storms, as well as the future flows. The work necessary to complete this analysis is as follows:
 - i. Establish the current Effective Model using the legacy HEC-1 and/or NuDallas

This project assumes the current effective hydrologic model(s) for Chambers Creek and its tributaries upstream of the eastern city limit of Everman is (are) available and encompasses the entire contributing drainage area for the creek. It is assumed the current effective model(s) will be reproduced using its legacy computer program (assumed to be HEC1).

- ii. Establish the duplicate Effective Model using HEC_HMS
Upon establishment of the current effective model, the legacy model(s) will be converted to the most recent versions of HEC-HMS and the flows duplicated within the limits as established in accordance with FEMA's standard procedures. It is understood the reproduction and/or revision to the model will be validated by comparing resulting peak discharges with current FEMA FIS.
- iii. Establish the corrected Effective Models based on current (i.e. Existing) conditions.
The established duplicate effective model(s) will be adjusted, revised, and/or combined into a single model as necessary to enhance the results of the study.

Where possible, the delineation of the existing drainage areas used to generate the effective model(s) will be validated and adopted. Additional discharge points (and associated drainage areas) will be added along the creek as deemed necessary by the engineer, including one at each culvert crossing. The flow rates as prescribed above will be provided within the corrected effective model at the discharge points as determined for the purposes of this project.

b. Hydraulic Models

This task will include the establishment of the base flood elevation, as well as the analysis necessary to identify, evaluate, and/or analyze the known and potential flood prone areas for Chambers Creek and its tributaries. The work will be in three parts: first, the current effective model will be obtained and re-run in its legacy format (i.e. HEC2); second, the legacy HEC2 will be converted to HEC-RAS platform (this truncated model will be revised as necessary to duplicate the output data from the legacy model duplicated); and lastly, the duplicated model will be revised to reflect the current (i.e. existing) conditions with the computed peak flowrates described above. The revised model will be designated as the corrected effective model. The suspected flood prone areas will then be confirmed based upon the results of the corrected model. Additional areas of potential flood risk will also be identified. The following tasks will be necessary to complete this work:

- i. Establish the Current Effective Model using the legacy HEC-2:
This project assumes the current effective hydraulic model(s) for Chambers Creek and its tributaries upstream of the eastern city limit of Everman is (are) available and encompasses the entire creek from the eastern city limit to the west. It is also assumed the current effective model(s) will be reproduced using its legacy computer program (assumed to be HEC2). It is understood this work will consist of the validation of an existing hydraulic model (i.e. current effective model) for the site.
- ii. Duplicate the Effective Hydraulic Model using HEC RAS
Upon establishment of the current effective model, the legacy model(s) will be converted to the most recent versions of HEC-RAS and combined into one model. In addition, the combined model will be truncated, as appropriate within the study area. Adjustments to the model will be made in accordance with the documentation "HEC-RAS Procedures for HEC-2 Modelers" prepared by FEMA in April, 2002 to duplicate the current effective model water surface elevations.
- iii. Establish correct Effective Hydraulic Model based on current (i.e. existing) Conditions
For this task, the duplicated model will be revised to reflect both the contour information and physical survey. In addition, this corrected model will reflect the revised flows located at the prescribed locations as determined above. It is understood the corrected effected model will represent the current (or existing) conditions and will be utilized to identify existing as well as potential flood prone areas.

6. Develop Mitigative Measures – The work necessary to complete this task includes the development of project alternatives and cost for mitigation of the flood prone areas as identified in the previous tasks. A minimum of two alternatives for each flood prone area will be determined. Each alternative will be evaluated as to cost, planned construction dates, and difficulties of the site. It is understood, the best alternative may be the “do nothing alternative” (i.e. leave it as is), channel improvements, infrastructure improvements, a buy-out program, or a combination of these. In addition, a post-project HEC-RAS model will be used as appropriate to compare and/or determine the effectiveness of the alternative. The following will be necessary to complete the work:
- a. Compile list of Flood Prone Areas
This task includes the work necessary to compile a list of flood prone areas as determined in previous tasks. As part of this task the flood prone areas will be rank in accordance with the criteria established in previous tasks.
 - b. Develop alternatives
Upon the completion of compilation and ranking of the flood prone areas, alternative designs and/or proposed projects will be recommended. A minimum of two alternatives will be determined for each flood prone area. Alternatives may include the preservation of open space or consideration of land management opportunities. It should be noted the “do nothing alternative” may be considered.
 - c. Develop conceptual costs
This task will include an opinion of probable design and construction cost (OPC) for each alternative.
 - d. Environmental Considerations
Where deemed appropriate, an onsite environmental preliminary investigation will be conducted. This investigation will be conducted at project sites where waters of the U.S. are known to exist, or suspected. The investigation for each site will include the appropriate site visit by the environmental staff and a report of the need, or lack thereof, of an environmental permit from the governing agencies. This project assumes a total of seven (7) sites.
7. Presentation of Results – The work necessary to prepare and present a report detailing the findings of the assessment and analysis. The work will include a maximum of two meetings with the County. This scope of work assumes one public meeting.

The following will be necessary to complete the work:

- a. Report Preparation/Presentation
This task will include the preparation of the report narrative, appropriate tables and graphs, exhibits, and appendices. The report will represent a compilation of the data obtained and/or produced as described in this project and will be presented to the County as well as the City of Everman for review and comments. Upon receipt of comments, the report will be revised, and the final report issued. For this project a total of two review cycles is assumed.
- b. Comment Review and Response/Final Report model(s)
Upon receipt of comments, the report will be revised, and the final report issued. For this project a total of two review cycles is assumed.
- c. Public Meeting Support
As may be requested by Tarrant County staff, this task will include support for the public meeting, including the presentation of report findings, the provision of large-format maps and exhibits and documentation of the public meeting proceedings.

Assumption/Exceptions

- This project assumes the availability of hydrologic/hydraulic models for Chambers Creek and its tributaries upstream of the eastern city limits of Everman. Should the model(s) be deemed unacceptable, additional services will be required to establish the flows necessitating an amendment to this scope of work and additional fees.
- For this project, it is anticipated that the consultant will conduct two review cycles with the client relative to the report and two with FEMA for the LOMR. The submittal to FEMA will be made using the FEMA's online Letter of Map Change tool. This tool will allow electronic upload of all forms and documents for the LOMR including payment fees. The FEMA review and processing fee will be paid by the consultant.
- Two hard copies each of the report and its appendices will be presented to the county and City of Everman for their review and comment.

An electronic copy of the hydrologic and hydraulic models provided to the county and City of Everman.

COMPENSATION

- A. The Engineer shall be compensated on an hourly basis at engineer's standard rates effective at the time services are rendered for a maximum amount of \$237,590. This maximum amount may only be exceeded with a contract amendment with the agreement of both the COUNTY and ENGINEER. See Exhibit "A" for Engineer's current standard hourly rates for various staff members. These rates will not be modified more often than once per calendar year. See Exhibit "B" for Level of Effort Summary.
- B. A fee equal to 3% of labor billings shall be included on each monthly invoice for prints, plots, photocopies, plan or documents on CD, DVD or memory device, and mileage. No individual or separate accounting of these items will be performed by TNP.

- C. For work done by others (subconsultants to TNP), compensation will be at the actual cost to the Engineer of such subconsultant services plus 10%. Any subconsultants to TNP must be approved by Tarrant County prior to any agreements with subconsultants or work performed.
- D. Partial payments will be billed monthly for work performed to date.
- E. The ENGINEER may submit invoices for services rendered no more frequently than monthly, accompanied by an explanation of the services provided and any necessary supporting documentation.

Attachment A
Teague Nall and Perkins, Inc.
2022 Standard Hourly Rates *(vers 040422)*
Effective January 1, 2022 to December 31, 2022

Hourly

Engineering/Landscape Architecture/ROW	Billing Rate
Principal or Director	270.00
Team Leader	260.00
Senior Project Manager	250.00
Project Manager	200.00
Senior Engineer	260.00
Project Engineer	170.00
Engineer III/IV	140.00
Engineer I/II	130.00
Senior Landscape Architect/Planner	200.00
Landscape Architect / Planner	180.00
Landscape Designer	125.00
Senior Designer	165.00
Designer	150.00
Senior CAD Technician	135.00
CAD Technician	120.00
IT Technician	180.00
Clerical	85.00
ROW Manager	220.00
Senior ROW Agent	175.00
ROW Agent	135.00
Relocation Agent	170.00
ROW Admin	90.00
Intern	80.00

Surveying	Hourly Billing Rate
Survey Manager	245.00
Registered Professional Land Surveyor (RPLS)	210.00
Field Coordinator	145.00
S.I.T. or Senior Survey Technician	145.00
Survey Technician	120.00
1-Person Field Crew w/Equipment**	155.00
2-Person Field Crew w/Equipment**	185.00
3-Person Field Crew w/Equipment**	210.00
4-Person Field Crew w/Equipment**	230.00
Flagger	55.00
Abstractor (Property Deed Research)	95.00
Small Unmanned Aerial Systems (sUAS) Equipment & Crew	420.00

Terrestrial Scanning Equipment & Crew	265.00
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Utility Management, Utility Coordination, and SUE	Hourly Billing Rate
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Senior Utility Coordinator 175.00	Utility Coordinator 160.00
Sr. Utility Location Specialist	165.00
SUE Project Manager	\$200.00
SUE Engineer	\$170.00
Utility Location Specialist	100.00
1-Person Designator Crew w/Equipment***	155.00
2-Person Designator Crew w/Equipment***	180.00
2-Person Vac Excavator Crew w/Equip (Exposing Utility Only)	300.00 (4 hr. min.)
Core Drill (equipment only)	790.00 per day
SUE QL-A Test Hole (0 < 8 ft)****	2,200.00 each
SUE QL-A Test Hole (> 8 < 15 ft)****	2,700.00 each

Construction Management, Construction Engineering and Inspection (CEI)	Billing Rate	Hourly
Construction Inspector I/II	110.00	
Construction Inspector III	120.00	
Senior Construction Inspector	140.00	
Construction Superintendent	185.00	
Senior Project Manager	250.00	
Construction Manager	200.00	
Senior Construction Manager	250.00	
Construction Records Keeper	120.00	

Direct Cost Reimbursables

A fee equal to 3% of labor billings shall be included on each monthly invoice for prints, plots, photocopies, plans or documents on CD, DVD or memory devices, and mileage. No individual or separate accounting of these items will be performed by TNP or provided on the invoice.

Any permit fees, filing fees, or other fees related to the project and paid on behalf of the client by TNP to other entities shall be invoiced at 1.10 times actual cost.

Notes:

All subcontracted and outsourced services shall be billed at rates comparable to TNP's billing rates above or cost times a multiplier of 1.10.

* Rates shown are for 2022 and are subject to change in subsequent years.

** Survey equipment may include truck, ATV, Robotic Total Station, GPS Units and Digital Level.

*** Includes crew labor, vehicle costs, and field supplies.

PROVISIONS

1. AUTHORIZATION TO PROCEED

Signing this agreement or issuing a signed project-specific purchase order shall be construed as authorization by CLIENT for TNP, Inc. to proceed with the work, unless otherwise provided for in this agreement.

2. LABOR COSTS

TNP, Inc.'s Labor Costs shall be the amount of salaries paid TNP, Inc.'s employees for work performed on CLIENT's Project plus a stipulated percentage of such salaries to cover all payroll-related taxes, payments, premiums, and benefits.

3. DIRECT EXPENSES

TNP, Inc.'s Direct Expenses shall be those costs incurred on or directly for the CLIENT's Project, including but not limited to necessary transportation costs including mileage at TNP, Inc.'s current rate when its, or its employee's, automobiles are used, meals and lodging, laboratory tests and analyses, computer services, word processing services, telephone, printing and binding charges. Reimbursement for these expenses shall be on the basis of actual charges when furnished by commercial sources and on the basis of usual commercial charges when furnished by TNP, Inc.

4. OPINION OF PROBABLE COST

In providing opinions of probable cost, the CLIENT understands that TNP, Inc. has no control over costs or the price of labor, equipment, or materials, or over the Contractor's method of pricing, and that the opinions of probable cost provided to CLIENT are to be made on the basis of the design professional's qualifications and experience. TNP, Inc. makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

5. PROFESSIONAL STANDARDS

TNP, Inc. shall be responsible, to the level of competency presently maintained by other practicing professional engineers in the same type of work in the State of Texas, for the professional and technical soundness, accuracy, and adequacy of all design, drawings, specifications, and other work and materials furnished under this Authorization. TNP, Inc. makes no other warranty, expressed or implied.

6. TERMINATION

Either CLIENT or TNP, Inc. may terminate this authorization by giving 10 days written notice to the other party. In such event CLIENT shall forthwith pay TNP, Inc. in full for all work previously authorized and performed prior to effective date of termination. If no notice of termination is given, relationships and obligations created by this Authorization shall be terminated upon completion of all applicable requirements of this Authorization.

7. MEDIATION

In an effort to resolve any conflicts that arise during the design or construction of the project or following the completion of the project, the CLIENT and TNP, Inc. agree that all disputes between them arising out of or relating to this Agreement shall be submitted to nonbonding mediation unless the parties mutually agree otherwise.

The CLIENT and TNP, Inc. further agree to include a similar mediation provision in all agreements with independent contractors and consultants retained for the project and to require all independent contractors and consultants retained also to include a similar mediation provision in all agreements with subcontractors, subconsultants, suppliers or fabricators so retained, thereby providing for mediation as the primary method for dispute resolution between the parties to those agreements.

8. LEGAL EXPENSES

In the event legal action is brought by CLIENT or TNP, Inc. against the other to enforce any of the obligations hereunder or arising out of any dispute concerning the terms and conditions hereby created, the losing party shall pay the prevailing party such reasonable amounts for fees, costs and expenses as may be set by the court.

9. PAYMENT TO TNP, INC.

Monthly invoices will be issued by TNP, Inc. for all work performed under the terms of this agreement. Invoices are due and payable on receipt. If payment is not received within 30 days of invoice date, all work on CLIENT's project shall cease and all work products and documents shall be withheld until payment is received by TNP. Time shall be added to the project schedule for any work stoppages resulting from CLIENT's failure to render payment within 30 days of invoice date.

10. LIMITATION OF LIABILITY

TNP, Inc.'s liability to the CLIENT for any cause or combination of causes is in the aggregate, limited to an amount no greater than the fee earned under this agreement.

11. ADDITIONAL SERVICES

Services not specified as Basic Services in Scope and Attachment 'A' will be provided by TNP, Inc. as Additional Services when required. The CLIENT agrees upon execution of this contract that no additional authorization is required. Additional services will be paid for by CLIENT as indicated in Article II, Compensation.

12. SALES TAX

In accordance with the State Sales Tax Codes, certain surveying services are taxable. Applicable sales tax is not included in the fee set forth and will be added on and collected when required by state law. Sales tax at the applicable rate will be indicated on invoice statements.

13. SURVEYING SERVICES

In accordance with the Professional Land Surveying Practices Act of 1989, the CLIENT is informed that any complaints about surveying services may be forwarded to the Texas Board of Professional Land Surveying, 12100 Park 35 Circle, Building A, Suite 156, MC-230, Austin, Texas 78753, (512) 239-5263.

14. INVALIDITY CLAUSE

In case any one or more of the provisions contained in this Agreement shall be held illegal, the enforceability of the remaining provisions contained herein shall not be impaired thereby.

15. PROJECT SITE SAFETY

TNP, Inc. has no duty or responsibility for project site safety.

16. DRAINAGE CLAUSE

The parties to this Agreement recognize that the development of real property has the potential to increase water runoff on downstream properties, and that such increase in runoff increases the possibility of water damage to downstream properties. The CLIENT agrees to indemnify and hold the ENGINEER harmless from any and all claims and damages arising, directly or indirectly, from water or drainage damage to downstream properties resulting from the development and construction of the Project. CLIENT shall not be required to reimburse ENGINEER for any claims or expenses arising out of the Project if it is determined by a court of competent jurisdiction that ENGINEER was negligent in the performance of its duties and obligations, and that ENGINEER's negligence was the direct cause of damage to a property downstream of the Project.

17. CONSTRUCTION MEANS AND METHODS AND JOBSITE SAFETY

Means and methods of construction and jobsite safety are the sole responsibility of the contractor