FIFTH AMENDMENT TO AGREEMENT BETWEEN THE

CITY OF LEAGUE CITY AND ARKK ENGINEERING,

INC.

§

§

§

This Fifth Amendment ("Amendment") is entered into between the City of League City ("City") and ARKK Engineering, Inc. ("Professional") on the date set forth below.

RECITALS

WHEREAS the City and Professional entered into an Agreement ("Agreement") on or about May 11, 2022, whereby Professional agreed to provide professional services related to Oaks of Clear Creek Detention Project (DR1902B), new project number is (DR2101B); and the Agreement is incorporated into this Amendment by reference; and

WHEREAS the City and Professional wish to amend the Agreement to add additional services to meet Federal Emergency Management Agency (FEMA) requirements for this project. This amendment includes the preparation of a hydrologic and hydraulic (H&H) analysis and a Benefit Cost Analysis (BCA) for the proposed drainage improvements in the Oaks of Clear Creek subdivision; and

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto hereby agree to the following terms:

TERMS

1. The above listed recitals are true and correct and herby incorporated into this Amendment.
2. The professional services contract is amended to add professional engineering services at a cost not to exceed $117,190, see attached.
3. The below listed chart shows the summary fees for this project.

Summary of Fees:	
Original Agreement:	$423,020
First Amendment:	$9,900
Second Amendment	$0
Third Amendment	$9,750
Fourth Amendment	$0
Fifth Amendment	$117,190
Total Amended Agreement:	**$559,860**

4. Except as expressly provided in this Amendment, all other terms, conditions, and provisions of the Agreement shall continue in full force and effect as provided therein.

ARKK ENGINEERS, LLC

_____

Madhu Kilambi, P.E.

CITY OF LEAGUE CITY

_____

Marcos Garcia, P.E. Senior Project Manager

_____

Cara Davis, Assistant Director, Project Management Office

_____

Ron Bavarian, P.E. Executive Director of Capital Projects

October 24, 2024

Mrs. Cara Davis
Assistant Director
City of League City
300 W. Walker Street
League City, Texas 77573

Re: Contract Amendment to Oaks of Clear Creek Detention Pond Improvements **(DR 2101B)**
City of League City

Dear Mrs. Davis:

As requested, ARKK Engineers, LLC (ARKK) is pleased to submit this contract amendment for engineering services related to the Oaks of Clear Creek Detention Pond Improvements project. This amendment is a result of the direction provided by City staff for performing additional services to meet Federal Emergency Management Agency (FEMA) requirements for this project. This amendment includes the preparation of a hydrologic and hydraulic (H&H) analysis and a Benefit Cost Analysis (BCA) for the proposed drainage improvements in the Oaks of Clear Creek subdivision.

ARKK Engineers will utilize the services of Lockwood, Andrews & Newnam, Inc. (LAN) for the preparation of a hydrologic and hydraulic (H&H) analysis and a Benefit Cost Analysis (BCA). A detailed summary of the scope of work and fee for various tasks is presented in LAN's attached Scope of Services, which is included as an attachment to this letter. The finished floor elevation survey data required to prepare the BCA will be performed by a sub-consultant to ARKK Engineers (Proposal attached).

Fee:

Hydrologic & hydraulic (H&H) & BCA Development (LAN):	$ 87,490.00
Finished Floor Elevation Survey Services:	$ 6,750.00
Project Oversight & Follow-up Meetings (ARKK, lump Sum):	$ 18,750.00
*Miscellaneous Services as approved by City (budget):	$ 5,000.00
Total Not to Exceed Fee	**$117,190.00**

7322 Southwest Fwy Suite 1040 • Houston, TX 77074 • (713) 400-ARKK • www.arkkengineers.com • TX PE Firm No. 13872

Submittal Schedule

The following is a submittal schedule:

- 21 days for Survey (City to notify affected property owners)
- 90 days to submit the Draft H&H Analysis and BCA
- 21 days review by League City
- 45 days to address comments and submit the Final H&H Analysis and BCA

ARKK Engineers, LLC sincerely appreciates this opportunity to submit this proposal and we look forward to continuing our work with the City of League City.

Sincerely,

ARKK ENGINEERS, LLC

Madhu Kilambi, P.E.
Senior Project Manager / Principal

7322 Southwest Fwy Suite 1040 • Houston, TX 77074 • (713) 400-ARKK • www.arkkengineers.com • TX PE Firm No. 13872

Planning

Engineering

Program Management

TEXAS
AUSTIN
COLLEGE STATION
CONROE
CORPUS CHRISTI
DALLAS
FORT WORTH
FRISCO
HOUSTON
SAN ANTONIO
SAN MARCOS
WACO

CALIFORNIA
LOS ANGELES
ORANGE
SAN JOSE

ILLINOIS
CHICAGO

MICHIGAN
OKEMOS

October 24, 2024

Madhu Kilambi, PE
Senior Project Manager/Principal
ARKK Engineers
7322 Southwest Fwy, Suite 1040
Houston, TX 77074

Dear Mr. Kilambi,

Lockwood, Andrews & Newnam, Inc. (LAN) is pleased to provide this letter and the attachments herein as our Proposal for Engineering Services for the City of League City as it relates to the development of drainage improvements to the Oaks of Clear Creek subdivision.

Our proposed fee is based on the scope of services described herein. The following documents are included with this proposal:

- Exhibit A – Scope of Services

LAN agrees to perform this Scope of Services based on a Lump Sum basis of $87,490.00, see the table below for a breakdown by task.

Fee:

1.	Hydrologic & Hydraulic Analysis	$43,810.00
2.	Benefit-Cost Analysis	$32,640.00
3.	Project Management, Coordination, Meetings, Deliverables, Project QA/QC	$11,040.00
	TOTAL	**$87,490.00**

We are prepared to begin this project immediately and look forward to supporting ARKK Engineers and League City on this important project. Please feel free to contact me at 713.266.6900 or by email at dmbarton@lan-inc.com if you have any questions.

Sincerely,
Lockwood, Andrews & Newnam, Inc.

David Barton, PE, CFM
Associate, Senior Project Manager, Stormwater

Lockwood, Andrews
& Newnam, Inc.

3700 W Sam Houston Pkwy S
Suite 400
Houston, TX 77042
713.266.6900

lan-inc.com

Exhibit A

Oaks of Clear Creek (West) Detention Pond Analysis

Scope of Services

This proposal is for professional engineering services consisting of the hydrologic and hydraulic (H&H) analysis for drainage improvements in the western portion of the Oaks of Clear Creek subdivision. The existing storm sewer and roadway cross section within the project area are deemed as inadequately sized. A detention basin and associated storm sewer upgrades, designed by ARKK Engineers, are proposed to be constructed to provide drainage relief to the Oaks of Clear Creek area. The details of the proposed improvement development will be provided to Lockwood, Andrews & Newnam, Inc. (LAN) by ARKK Engineers as the base information to use in the H&H analysis.

The following scope details the H&H analysis that will be performed in support of the design and construction of the drainage improvements for the western portion of the Oaks of Clear Creek subdivision. The project limits are as follows:

- State Highway 3 to the Northeast
- Coleman Boylan Drive to the East
- Utility Easement (180-feet Southwest of Willow Branch Drive) to the Southwest
- Open tract of land (backlot of 801 SH-3 property) to the Northwest

The scope of services include the preparation of a detailed H&H analysis report (with supporting models and documentation) and two benefit-cost analyses (BCA) for the proposed improvements in accordance with the City of League City standards.

Disclaimer: This scope and fee is based on the expectation that the survey benchmark for the improvement plans will (where necessary) be adjusted from NAVD88 (2002 Adjustment) to NAVD88, GEOID 12B prior to delivery from ARKK. In support of the BCA, ARKK Engineers is to provide partial or full-coverage of surveyed finished floor elevations (FFE) on a per-structure basis for the contributing study area. Any structures without surveyed FFE information will be extrapolated based on nearby surveyed structure FFEs and LiDAR ground elevation information.

I. BASIC ENGINEERING SERVICES

A. Hydrologic & Hydraulic Analysis for Oaks of Clear Creek (West)

The 1D/2D InfoWorks ICM models developed as part of the Oaks of Clear Creek Drainage Analysis will be updated to incorporate the information used in development of the proposed improvements.

1. Atlas 14 Hydrology Development

a. Rainfall Parameters
Develop hydrology based on Atlas 14 2-, 10- and 100-year storm frequencies (per NOAA) within the Oaks of Clear Creek subdivision

b. Drainage Area Updates
Update drainage areas to inlet and/or manhole level for both existing and proposed conditions within the project improvement corridor.

2. Existing Conditions Hydraulic Analysis

a. Tail Water Evaluation and Development
The tailwater conditions will be updated to reflect the best available data for the receiving outfall channel.

b. Two-Dimensional Modeling Mesh – LiDAR
LAN will update the mesh to utilize 2018 LiDAR. Simulation areas requiring increased surface resolution will be determined to more accurately model field conditions and create 2D modeling mesh. The vertical datum of the 2018 LiDAR is NAVD88, GEOID 12B.

c. Update Existing Stormwater Infrastructure
The existing stormwater infrastructure within the dynamic model will be updated to reflect the surveyed information collected by ARKK as part of their analysis. It is expected that the improvement plans will (where necessary) be adjusted from NAVD88 (2002 Adjustment) to NAVD88, GEOID 12B prior to delivery from ARKK.

d. Update for Constructed Oaks of Clear Creek Improvements
Storm sewer and basin improvements that have been constructed to the Southeast will be updated to reflect current conditions based on City provided as-built or record drawings.

e. Hydraulic Model Simulations
Dynamic hydraulic models will be analyzed for the Atlas 14 2-, 10- and 100-year storm frequencies.

3. Proposed Conditions Hydraulic Analysis

Using proposed design information for two (2) alternatives developed by ARKK Engineers, the proposed improvements will be modeled to include a combination of storm sewer conveyance and detention. Improvement concepts will be inserted into the model for benefit comparison with existing conditions in support of the benefit-cost analyses. Dynamic hydraulic models will be analyzed for the Atlas 14 2-, 10- and 100-year storm frequencies for each of the two (2) alternatives. Iteration of proposed improvements to generate additional benefit is not included in the proposed conditions hydraulic analysis.

4. Reporting H&H Analysis

a. Memorandum, Exhibits, Output and Tables
The memorandum will include a discussion of the work performed, general methodology, assumptions, and discussions of the findings of the H&H analysis for the Oaks of Clear Creek improvements. Tabular model output, exhibits, and appendices will be included with the memorandum.

b. Final Memorandum and Models
One (1) joint round of comments from ARKK Engineers and the City will be used to revise and update draft report, exhibits, and appendices. The final report will be delivered via PDF. A flash drive or OneDrive link of all digital items will be included. Items are to include the InfoWorks ICM model and GIS exports.

B. BENEFIT-COST ANALYSIS (BCA)

1. FEMA BCA Development

Up to two (2) Benefit-Cost Analyses will be developed in support of FEMA grant applications. Model and GIS data from the Engineer will be used in these analyses. The BCAs will be developed using the FEMA BCA Toolkit Version 6.0.

2. Reporting BCA Supporting Documentation

Engineer will deliver electronic copies of the BCAs compatible with FEMA BCA Toolkit 6.0 and a summary PDF export as requested by the City Project Manager. Submittals will also include related supporting data including GIS data and calculations.

C. PROJECT MANAGEMENT, COORDINATION & DELIVERABLES

1. Project Management and Project Controls

Project management activities are ongoing through the period of the contract and will include items such as participation in the crafting of the Project Management Plan, preparing contract correspondence, transmitting deliverables, preparing invoices, documenting the quality control process, and other project oversight activities. This includes three (3) virtual coordination meetings (Microsoft Teams or Zoom) at discuss project milestones.

2. Deliverable Preparation

Provide electronic submittals for one (1) draft review to the City and one (1) final (100% completion) stage, unless otherwise directed.

3. Reimbursable Expenses

Reimbursable expenses are not anticipated for this project.

II. SERVICES NOT INCLUDED IN SCOPE OF WORK

City of League City and LAN agree that the following services are beyond the Scope of Services described in the tasks above. However, LAN can provide these services, if needed, upon the City's written request. Any additional amounts paid to LAN as a result of any material change to the Scope of the Project shall be agreed upon in writing by both parties before the services are performed. These additional services include the following:

1. Development of additional alternatives
2. Iterations of improvement alternatives
3. Phasing considerations of improvement alternatives
4. Design Services
5. Public meeting presentation development or attendance
6. Stakeholder coordination
7. FEMA modeling and submittals
8. Water quality analysis or design

TC Survey & Mapping

Andrew P. Titcomb, RPLS, President
TC Survey and Mapping
9711 S Mason Road Ste 125 #416
Richmond, TX 77407

September 18, 2024

David Fattig – ARKK Engineers
david.fattig@arkkengineers.com

Dear Mr. Fattig,

We are pleased to propose the following, in response to the RFP documents in your email dated Sep 4, 2024, 2:51 PM, regarding elevation work in the Oaks of Clear Creek subdivision.

Project Overview:

The project lies within the **Oaks of Clear Creek, Galveston County**.

The purpose of the project is to locate the "Finished First Floor" elevation on ~50 structures (dwellings)

TCSM will use an existing survey control network established by others (Ellis Surveying Services) as a basis for new elevation work to be undertaken within the Oaks of Clear Creek subdivision.

TCSM will use reasonable due diligence to ensure that previous work performed by others carries sufficient precision to this project as to satisfy the project requirements.

TCSM will use the existing survey control network and establish new control as necessary in parts of the subdivision which were not previously surveyed by others.

Approximately ~50 structures within the subdivision will be the subject of this work, please refer to the map provided by the Client (attached).

The "Lowest Finished Floor" (not garage sills) of each of the ~50 structures will be measured and recorded.

A CSV file containing the Property address, Lat/Long location, and Finished Floor elevation for each of the ~50 structures will be delivered to the Client.

Project Control:

The horizontal control survey will be based on the Texas South Central Zone NAD83 2011 Adjustment, using GPS observations from the HxGN SmartNet VRS network.

Vertical control will be based on said existing survey control network.

Exceptions from Survey:

The survey will not include the following: Boundary or topographic surveying of any kind.
Survey Accuracy: The survey will be conducted to a horizontal accuracy of +/- 0.02 feet and a vertical accuracy of +/- 0.03 feet.

Survey Deliverables:

A CSV file containing the Property address, Lat/Long location, and Finished Floor elevation for each of the ~50 structures will be delivered to the Client.

Survey Schedule:

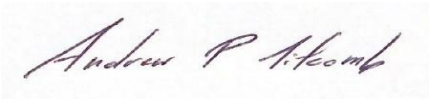
Day 1-4:	Perform GPS survey and run traverse(s)
Day 5-8:	Elevations to be completed, QC and checks
Day 15:	Delivery of CSV file

Fixed-Fee Project Cost:

Fixed Fee Cost: **$6,750 FIXED FEE***

*Compensation is due on a Net-30 term after ARKK Engineers has been paid**

We look forward to working with you!
Regards,



ACCEPTANCE:

_____
Name of Authorized Representative

TC Survey & Mapping

AFFECTED PROPERTIES