



**Exhibit "A"**  
**SCOPE OF SERVICES**

**Phase 1 – Preliminary Evaluation for Feasibility of Levee Accreditation**  
**City of Arkansas City, Kansas**

March 16, 2023

**PROJECT DESCRIPTION:**

As part of floodplain re-mapping efforts for the Walnut Watershed and Cowley County, Kansas, the Kansas Department of Agriculture (KDA) Division of Water Resources Floodplain Management section and the Federal Emergency Management Agency (FEMA) has identified levees that are shown as providing 100-year flood protection on the Flood Insurance Rate Map (FIRM) for the adjacent community, including Arkansas City. For some levees, it is unknown if they meet the criteria as specified in Title 44 Code of Federal regulations (CFR) 65.10 for the purposes of continuing to be shown as providing 100-year flood protection on the updated floodplain maps for a community. As KDA and FEMA goes through the process of re-mapping or modernizing FIRM's nationwide, they are requesting documentation that these criteria are met so that they may continue to map the subject levee as providing 100-year flood protection.

The City of Arkansas City, Kansas is the sponsor of the approximately 9.22-mile-long levee system that was primarily constructed by the U. S. Army Corps of Engineers (USACE) in phases between October 1997 and summer 2006, with a segment completed by the Kansas Department of Transportation (KDOT) in 1998. As the flood hazard mapping project progresses, the City will need to develop and provide certified levee data to FEMA. The process will often include a Provisionally Accredited Levee (PAL) agreement between the City and FEMA, which indicates that the levee is believed to meet the criteria as specified in 44 CFR 65.10 and provides time to develop, certify and provide the data. If the data cannot be provided, or if the levee does not meet the requirements and no improvements are undertaken to address any identified deficiencies, FEMA will show areas landward of the levee as flood-prone on area FIRMs.

The criteria in 44 CFR 65.10 indicate five categories that must be evaluated and shown to be acceptable prior to accreditation and acceptance by FEMA. These categories include:

- 1) Design Criteria
  - a. Freeboard
  - b. Closure Structures
  - c. Embankment Protection
  - d. Embankment and Foundation Stability, Underseepage, and Settlement (Geotechnical)
  - e. Interior Drainage
- 2) Updated and Current Operations Plan
  - a. Flood Warning System
  - b. Operation of Closures
- 3) Current Interior Drainage Operations Plan
- 4) Updated and Current Maintenance Plan
- 5) Certification Data Submittal

JEO has proposed a phased approach to the process of levee accreditation evaluation and submittal of a certified data package to FEMA. The phased approach includes the following:

**Phase 1: Preliminary Evaluation for Feasibility of Levee Accreditation (Reconnaissance Evaluation) (Subject of this Contract).**

Potential Future Phases (to be completed at a later time):

Phase 2: Detailed Evaluation for Feasibility of Levee Accreditation (Scope items informed by Phase 1)

Phase 3: Levee Modification Design and Construction (If necessary)

Phase 4: Levee Accreditation Submittal to FEMA (Partial or Full Certification dependent upon prior Phase findings)

- O&M Manual Revisions and Submittal to the USACE
- Emergency Preparedness Plan (EPP) Development and Submittal to the USACE
- Certified Data Tabbed Submission Development and Submittal to FEMA

The City will have an option to decide whether to proceed with future phases, based on the results of this evaluation. Analysis completed in Phases 1 and 2 are required for levee certification data development and, if necessary, for levee improvements or utilization of FEMA procedures - Analysis and Mapping Procedures for Non-Accredited Levees. The scope and fee for any future phases will be developed based on the findings of this phase.

All Tasks associated with this scope of services are outlined and described in the detailed scope of services below.

**PROJECT TASKS:**

The consultant shall perform the following tasks for this project:

**Task 1: Background Research and Levee Walk Through**

Task 1.1 – Gather and review all available information such as previous field survey data and other pertinent historical records and data which support levee data certification and potential future phase scoping. This data may include:

- Hydrology and hydraulic modeling background information and data for the existing and in development updated floodplain maps,
- Operation, maintenance and inspection records for the levee including embankment, outfalls, utility penetrations, encroachments, closures, and seepage management features,
- Review of recent USACE inspections and the current Operations and Maintenance manuals and procedures,
- Preliminary review of existing interior drainage documentation,
- Preliminary review of existing geotechnical and/or structural documentation,



Task 1.2 – Conduct levee walk through in order to evaluate the existing condition of the levee and to identify potential locations for further investigation and analysis needs.

Task Deliverables:

- Database including available levee documentation

Key Assumptions:

- Available data will be provided by the City, USACE, and/or KDA/FEMA
- The City will be able to secure or assist JEO with access to all portions of the levee system

**Task 2: Preliminary Hydrology & Hydraulics Review**

Task 2.1 – Obtain and review the existing and best available hydrology and hydraulic models to evaluate overall quality, completeness, and time period of production of the data. Note that at this time it is assumed the ongoing KDA/FEMA mapping project in the Walnut Watershed will provide updated and best available data.

Task 2.2 – Identify any deficiencies in previous hydrologic and hydraulic modeling.

Task Deliverables:

- After review, JEO will make recommendations on existing hydrologic and hydraulic modeling for inclusion into the final report.

Key Assumptions:

- It is assumed the ongoing KDA/FEMA mapping project in the Walnut Watershed will provide updated and best available data. If not available, the current Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) data will be utilized.

**Task 3: Freeboard Assessment**

Task 3.1 - Based on regulatory 100-year floodplain elevations (BFE's), draft updated BFE's, and available LiDAR data, evaluate the basic requirements of levee accreditation for freeboard requirements as per the criteria of 44 CFR 65.10.

Task Deliverables:

- JEO will develop CADD and/or GIS map indicating the available freeboard of the levee for inclusion into the final report.

Key Assumptions:

- Existing Base Flood Elevation (BFE) information will be utilized from the current regulatory FIS and FIRM as well as data from the ongoing KDA/FEMA Walnut Watershed

mapping project. No additional hydrologic/hydraulic modeling will be completed at this time.

- LiDAR data will be used in lieu of field survey for initial freeboard analysis. If freeboard deficiencies are noted, JEO will need to contract for Task 4 field survey.

#### **Task 4: Field Survey**

Task 4.1 – After completion of the freeboard analysis, JEO will review results and determine what survey work is needed. Field survey will likely include limited site data collection for the purposes of evaluating elevations of the top of the existing levee and select ancillary features. No other topographic elements will be collected at this time. Survey data will be disseminated in an appropriate format.

##### **Task Deliverables:**

- JEO will develop a CADD or GIS drawing of survey data collected to be used for evaluation purposes

##### **Key Assumptions:**

- The City will be able to secure or assist JEO with access to all portions of the levee system
- Scope for Field survey may need to be refined from results of freeboard analysis and levee walk through.

#### **Task 5: Preliminary Economic Impact**

Task 5.1 - Provide preliminary opinion of probable cost ranges for recommended future evaluations and improvement alternatives (if identified in this phase), pending details of further investigations required as noted.

Task 5.2 – Provide a preliminary opinion of economic impacts of levee de-accreditation, including a preliminary review of potential full or partial de-accreditation scenarios, as well as development regulations within the floodplain. Note with the introduction of the National Flood Insurance Program's "Risk Rating 2.0" proprietary program processes/data, detailed potential flood insurance cost implications/estimates due to full or partial de-accreditation are likely not feasible. A concept level estimate for decision making purposes will be developed to the extent possible.

##### **Task Deliverables:**

- JEO will develop a preliminary cost for future phases and develop a matrix to compare cost of future phases with an estimated impact of no action (levee de-accreditation).

##### **Key Assumptions:**

- Costs for future construction (if necessary) and impacts shall be considered preliminary in nature.

## **Task 6: Summary of Findings**

Task 6.1 – Provide a draft summary report and review findings, recommendations for further investigations, preliminary recommendations for action alternatives, and next steps/funding recommendations with the City (one meeting).

Task 6.2 – Based on input and comments received from the City and relevant stakeholders produce and distribute a final summary report.

### **Task Deliverables:**

- JEO will develop a summary report of the findings and deliver up to 4 hard copies and 1 digital copy to the City.

### **Key Assumptions:**

- JEO anticipates one series of comments and revisions

## **Task 7: Public Information/Education**

Task 7.1 – Produce one fact sheet for the City's general use in providing public information about the project, such as potential implications and anticipated next steps, and attend a City Council meeting to present the report findings.

### **Task Deliverables:**

- JEO will provide a fact sheet to the City in a digital format (pdf) for use by the City

## **Task 8: Project Management**

Task 8.1 – Perform routine project management tasks and general project coordination (not including meetings) with the City and relevant stakeholders. This includes preparation of a project management plan, general project administration, and monthly progress reports to be included with billing statements.

Task 8.2 – Attendance at up to three City Council Meetings to review status and schedule of the project with the City and to answer any questions.

Task 8.3 – Coordinate with and attend meetings as necessary with involved parties (City, USACE, KDA, FEMA, etc.) as necessary for preliminary investigations/review (two meetings maximum). This task is intended to serve as the coordination effort and open the lines of communication to gather background information required in Task 1.

### **Task Deliverables:**

- Monthly Progress Reports
- Meeting Minutes
- Written Schedule
- Coordination and facilitation of kick-off and other meetings as defined



Key Assumptions:

- The duration of the project is identified in the Schedule section below. Additional project management tasks not identified above or resulting from an extended schedule outside of JEO's control may require an amendment.

**PROPOSED PROJECT SCHEDULE:**

We anticipate completion of this project within six (6) months of receiving notice to proceed. Notice to Proceed is anticipated no later than January 2023.

\* Note: Project schedule is dependent upon timely reviews and data being provided by regulatory agencies and stakeholders, as well as timely project direction from the Owner. Project schedule is also contingent upon ability to complete field work due to weather conditions.

**PROJECT FEE AND PAYMENT SCHEDULE:**

The consultant will provide the services described above for a lump sum amount of \$ 56,910.00. A breakdown of engineering fees is included below. Additional services can be provided based upon current hourly rates as requested by the Owner. The consultant will invoice monthly for services to date, due upon receipt. Invoices unpaid after 30 days will accrue interest at 12% per annum (1% per month), credited first to interest and then to principal.

PHASE 1 TASKS	COST
Task 1 – Background Research and Levee Walkthrough	\$14,235.00
Task 2 – Preliminary Hydrology & Hydraulics	\$8,885.00
Task 3 – Preliminary Freeboard Assessment	\$7,055.00
Task 4 – Field Survey <sub>1</sub>	\$TBD
Task 5 – Preliminary Economic Impact	\$5,450.00
Task 6 – Summary of Findings	\$11,445.00
Task 7 – Public Information/Education	\$2,580.00
Task 8 – Project Management	\$7,260.00
<b>PHASE 1 TOTAL</b>	<b>\$56,910.00</b>

1. Survey cost is not included in lump sum. Work from Phase 1 Freeboard analysis will determine survey needs. Estimated cost is \$18K- \$25K for survey.

## **FUTURE PROJECT PHASES:**

Pending the results of the Phase 1 - Preliminary Evaluation for Feasibility of Levee Accreditation (Reconnaissance Evaluation), there are several potential additional project phases which may or may not become necessary. The following provides a preliminary outline of what these phases could include, although it should be noted that depending on the circumstances and the findings of this preliminary review, some of these items may be unnecessary and additional items may be required. It is anticipated that final negotiations and agreements for these future items will be completed at such time as they are needed.

- 1) Phase 2 – Detailed Feasibility & Evaluation – The scope and necessity of these additional evaluations will be determined following the completion of the Phase 1 - Preliminary Evaluation for Feasibility of Levee Accreditation (Reconnaissance Evaluation).
  - a. Detailed geotechnical investigations and evaluation – These may include comprehensive geotechnical investigations including borings and other testing methods to determine the geotechnical composition and integrity of the levee system. Available geotechnical data will be identified for inclusion in a future detailed analysis; however, no geotechnical evaluations are anticipated for the Phase I review.
  - b. Use of available flood studies and Project Performance (Risk and Reliability) evaluations– may include leveraging the available detailed hydrologic and hydraulic analysis to perform an interior drainage evaluation and an analysis of flood data statistical probabilities for freeboard.
  - c. Detailed interior drainage evaluation – may include a detailed review of the existing interior storm drainage system to identify the locations of interior ponding, contingency planning/flood fighting procedures and capital improvement planning to address system deficiencies. Given the time period of the original levee design a detailed interior drainage evaluation may not have been completed during the design of the levee system, to the level required by FEMA. This Phase 1 preliminary levee accreditation feasibility review will include a review of any available documentation and a recommended course of action.
  - d. Schedule - approximately 6-12 months or more may be required for the Phase 2 step depending on level of complexity. Note that many tasks of the Phase 2 step can be completed concurrently with each other.
- 2) Preliminary and final design of any potential improvements that may be necessary. This task will include the engineering required to coordinate design of improvements needed to obtain levee accreditation.
  - a. Schedule – approximately 1-2 years or more may be required for this step depending on level of complexity and due to regulatory review and permitting requirements.
  - b. Construction of any necessary improvements
  - c. Production of O&M manual updates and revised as-builts for the O&M manual.
  - d. Production of a levee EPP based on existing EAP.
  - e. Estimated Fee – At this time the need for and the extent of levee modifications are unknown. An estimate for design services and an engineer's opinion of construction (if necessary) will be developed as part of Phase 1 and Phase 2 deliverables.
- 3) Preparation of the levee data certification packet for submittal to FEMA.



- a. Schedule – Dependent upon findings of Phase 1 and Phase 2 evaluations. If levee modifications are necessary, the full levee data certification package can be developed immediately following construction of improvements. If levee modifications are not needed, the levee data certification package submittal can occur immediately following Phase 2 Evaluation.

The specific scope of services and schedule for the above items will be refined based on the results of the Phase 1 preliminary evaluation for feasibility of levee accreditation. The City will have the option to decide whether to proceed with Phase 2, Phase 3 and Phase 4, based on the results of the Phase 1 evaluation. The scope and fee for Phase 2, Phase 3 and Phase 4 will be developed based on the findings of Phase 1. Phase 2 will include detailed feasibility evaluation; Phase 3 (if necessary) would include preparation of design plans and specifications as well as construction observation, while Phase 4 will include preparation of the levee data certification documents. The work efforts for Phases 2, 3 and 4 have not been included in this scope of services.

#### **SCOPE OF SERVICES AND FEE FOR ADDITIONAL SERVICES:**

A detailed scope of services and fee estimate for future phases will be provided to the Owner when the scope of services can be further refined. It is anticipated that the scope and fee for additional services will be negotiated with JEO Consulting Group, Inc. without going through an additional selection process with the Owner.

#### **SCOPE AND FEE EXPIRATION:**

The information contained in this Scope of Services is valid until 18 January 2023. After that date, the Scope and Fee are subject to adjustment.

**SERVICES NOT INCLUDED:** (If necessary, a fee for these services can be negotiated. Note that certain services (future project phases as indicated previously), are likely to be required before final levee data certification determinations can be achieved.)

1. Additional site visits, meetings, and public information efforts not previously noted.
2. Complete topographic survey of the levee and floodplain areas.
3. Preliminary and final design of potential levee improvements.
4. Detailed hydrologic and hydraulic analysis or development of base flood elevations (BFE's).
5. Project Performance (Risk & Reliability) Analysis
6. Coordination of securing funding or grants from outside parties.
7. Detailed real estate/easement review or negotiation of right-of-way and/or easements.
8. Detailed coordination with public and/or private utilities.
9. Any permitting such as Section 408 or 404; all permitting items will be part of Phases 2/3 (design and construction of improvements), if necessary.
10. Any floodplain mapping or LOMR submittal to FEMA
11. Production of necessary updates to O&M manuals and procedures.
12. Production of a levee EPP.
13. Final levee data certification determination and documentation.



**SERVICES PROVIDED BY THE CITY:**

1. Designate City staff member as project representative
2. Provide available levee system data (JEO will help coordinate what might be helpful)
4. Provide feedback and review of all submittals in a timely manner
5. Notify and acquire permission (if necessary) from landowners for field investigation activities, including the walk through and field survey.