

Scope of Services for the Tontitown, AR Flow Monitoring Study 2025

Project Overview - This project includes a flow monitoring study for the City of Tontitown, AR (City). TREKK Design Group, LLC (Consultant) will provide and install up to eight (8) area/velocity sensors and two (2) rain gauges for a period of 60 days.

TASK SERIES 100 - PROJECT MANAGEMENT AND ADMINISTRATION

Task 101 Project Management & Administration Services

Consultant shall provide project management services necessary throughout the project to successfully manage and complete the Project, including project correspondence and consultation with City staff; supervision and coordination of services; assignment of personnel resources; continuous monitoring of work progress; and maintenance of project controls. Prepare and submit monthly invoices and provide a monthly project status report which will accompany the monthly invoice submittal. The monthly project status reports will document work progress, the percentage of completed work, schedule status, and budget status.

Deliverable(s): Monthly Invoices and Project Status Reports.

Task 102 Kick-Off and Deliverables Meetings

Consultant will meet with City staff during an initial “kick-off” meeting. The purpose of the meeting will be to discuss the Consultant’s and City’s project goals and objectives, establish project limits, and procedures.

Objectives of Kickoff Meeting:

- Discuss proposed metering sites.
- Discuss project objectives.
- Discuss next steps and project team.

Deliverable(s): Meeting Materials, Meeting Notes, and Project Schedule.

TASK SERIES 200 - COLLECTION SYSTEM FLOW AND RAINFALL MONITORING

Task 201 Meter Site Assessment

Consultant shall complete six (6) flow meter and two (2) rain gauge site assessments at the locations recommended by the City. Consultant shall complete site assessment forms for each flow monitoring and rain gauge location. Assessment form shall include installation photos, site details – including, but not limited to pipe size, pipe material, manhole depth, evidence of surcharge, flow quality and silt levels. A site assessment of potential flow and rainfall monitoring sites will be evaluated to determine, in general, the most suitable locations based on the following conditions:

- Suitability for Accurate Metering - The accuracy of the open channel flow metering will depend on numerous variables, and it is imperative that they be controlled as much as possible. For this reason, the reconnaissance inspections will be performed to identify the best sites for metering and to minimize such error-causing factors as changes in pipe alignment and size, interruption of channel flow by side inlets and turbulence caused by uneven channels.
- Safety - It is equally important that the proposed sites conform to Engineer’s requirements for safe operating conditions. If the site falls outside of these requirements, alternate sites that are suitable based on safety requirements will be selected upon further consultation with the Engineer.

Task 202 Flow Monitoring Installation, Maintenance, and Removal

Consultant shall provide and install up to eight (8) area/velocity sensors. These units will be initially installed, and the sites calibrated for the base monitoring period. The flow monitor(s) shall be maintained by Consultant. Maintenance shall include the upload and interrogation of all flow data, meter calibration (as needed), monthly velocity profiling, and other diagnostic checks. Flow monitors shall remain in place for a continuous base monitoring period. Upon completion of the base period, Consultant will remove the meter(s) unless it is recommended and approved by the City to keep them in place for additional time. Justification for extended metering will be due to insufficient rainfall, or dry days, during the monitoring period. Compensation for additional flow metering service and calibration shall be at the unit price to be negotiated between the City and Consultant.

Task 203 Rainfall Monitoring Installation, Maintenance, and Removal

Rainfall Monitoring (2 Rain Gauges)

Consultant shall provide and install two (2) rain gauge units. Consultant will install, service, and maintain continuous recording, electronic rain gauge(s) during the same base monitoring period. Proposed locations shall be determined by the Consultant. The gauge(s) will record rainfall to one-hundredths of inch increments. The instruments will be checked and downloaded monthly by Consultant. Consultant shall complete site assessment forms for each rainfall monitoring location.

Task 204 Remote Diagnostic Inspections (RDI)

RDI will be routinely completed throughout the monitoring period to verify meters are working properly and to complete engineered data reliability reviews. Consultant will utilize FlowWorks for RDI review and data viewing. The remote data server will allow reviewers to see the network in real-time and schedule maintenance site visits in order to maximize data uptime and minimize data gaps.

At the end of the monitoring period, flow data will be evaluated, and any necessary data adjustments will be made based on field interrogation data, field notes, and the potential impact of silt and debris at each site. Consultant will prepare an operations report summarizing the reporting period field activities, calibration checks, and any adjustments made to the sites.

The FlowWorks platform will be configured and made available to allow the City to remotely login and view data at all flow and rainfall monitoring locations. Usernames and passwords will be established as requested, for up to five (5) users. All engineering, software development and office technician labor needed to provide accurate and timely data on the platform is included in the unit price provided.

The following will be made available to Client through the platform:

- Processed data following each maintenance visit
- Tabular and graphical data of depth, velocity, flow, rainfall, digital camera pictures
- Scatterplots
- Map of installed sites with status of function
- Ability to export raw and engineered flow data.

TREKK equipment will include remote telemetry units which use cellular technology, however if data connections are lost, meters will be downloaded during next maintenance visit and data uploaded to the platform.

TASK SERIES 300 - DATA DELIVERABLES

Task 301 Flow and Rainfall Data QA/QC, and Processing

At the completion of the flow monitoring period, flow data will be evaluated, and any necessary data adjustments will be made based on calibration data and the potential impact of silt and debris at the site. Hydrographs, level and velocity graphs, and scatterplots will be created for each site. Consultant will prepare an operations report summarizing the reporting period field activities, calibration checks, and any adjustments made to the sites.

Task 302 Project Summary Deliverable and Review Meeting

Following the completion of the 60-day study, Consultant shall summarize the project results into a technical memorandum deliverable. The project summary deliverable shall include general project information, project study area maps, site specific details, project highlights, and an overview of insight observed through the data collected at each metering location.

Consultant shall meet with and City staff following completion of the project summary deliverable in a project summary review meeting.

OPTIONAL FLOW AND RAIN DATA ANALYSIS TASK

TASK SERIES 400 - OPTIONAL FLOW AND RAIN DATA ANALYSIS

Task 401 Flow and Rain Data Analysis

Consultant will evaluate the results of the flow monitoring program as follows: base flow, infiltration (groundwater-induced) and inflow (rainfall-induced) will be determined for the monitoring sites. Relationships between rainfall intensity and peak system flows for the site under non-bypassing conditions and saturated ground conditions will be determined. This is called the "Q vs. I" method of hydraulic analysis and will become the primary method of ranking sites. System curves will be developed for the sites by comparing maximum rainfall intensity "I" expressed in inches/hour and peak system flow "Q" expressed in gallons per minute. Separate curves will be developed for both inflow and rainfall-induced infiltration, including projected flow hydrographs for the design storm events.

Task 402 Data Analysis Technical Memorandum

Consultant will complete a data analysis technical memorandum including data tables, graphs, and findings from flow and rain data analysis.

End of Scope