



Request for Proposals: Groundwater Science Support for Comanche Springs

About Texas Water Trade

Over the next thirty years, Texas' population is set to double. While the economic powerhouses of Texas—its cities and industries—are positioned to capture the water they need to enable this growth, the state's agricultural producers, its rural communities, and its environment are predicted to be less water secure than ever before. Avoiding this looming water crisis will require investments that transcend sectors and deploy innovative tools that work in Texas' pro-property rights culture. Texas Water Trade (TWT) was incorporated in 2018 in recognition of the scale of this challenge, with the mission of channeling the power of markets and technological innovation to create a future of clean, flowing water for all Texans.

About The Project

With financial support from the National Fish and Wildlife Foundation, the City of Fort Stockton Convention and Visitors Bureau and the Cynthia and George Mitchell Foundation, TWT and The Meadows Center for Water and the Environment at Texas State University undertook a 24-month feasibility study on the potential to restore Comanche Springs to perennial flow. Comanche Springs is one of the major springs of Texas but has not flowed reliably since the 1950s due to increased groundwater production in its primary tributary aquifer, the Edwards-Trinity.

TWT is working closely with local stakeholders, including the City of Fort Stockton and the Middle Pecos Groundwater Conservation District (MPGCD), to implement a number of recommendations from our feasibility study to push Comanche back to perennial flow. Our target flow rate is a minimum 10 cubic feet per second (cfs) of flow at the main spring complex. This flow target was selected since flow at this rate would allow for recreational contact in the springs at the historic bathhouse in downtown Fort Stockton if the pool were retrofitted to its native spring environment.

Shifting some proportion of demand on the Edwards-Trinity to alternative aquifer formations is one of the options identified in the feasibility study for returning the spring to perennial flow. This could be undertaken for municipal supply purposes (roughly 20% of current

pumping in the spring's contributing zone is for drinking water) or for alternative agricultural irrigation supply (80% of current demand).

With the support of a U.S. Bureau of Reclamation Applied Science grant, TWT is now pursuing additional inquiries into aquifer properties in the contributing zone of Comanche Springs. These inquiries are needed to elucidate the extent to which stored water in underlying aquifers below the Edwards-Trinity contribute to flow at Comanche Springs. This work is needed to evaluate the potential springflow benefit of redirecting some level of agricultural and municipal demand in the Leon-Belding Irrigation Area away from the Edwards-Trinity Aquifer and toward alternative formations such as the Rustler, Dockum or Capitan Reef Aquifers.

The study area is colloquially known as the Leon Belding Irrigation Area and is designated as Management Zone 1 (MZ1) by MPGCD. This work will be undertaken in close coordination with MPGCD, including integration of data collected through our study into MPGCD's groundwater-springflow model for MZ1.

Funds will be used to pay for the preparation, execution and interpretation of results from well pumping tests in the contributing zone of Comanche Springs. MPGCD is currently adjusting its groundwater model for MZ1 to support prediction of springflow responses to seasonal groundwater pumping; data generated by TWT through this study will be fed into the MPGCD model to support modeling validation.

The work described in this proposal, to be completed no later than February 28, 2022, will contribute to developing hydrologic information and water management tools and improve modeling and forecasting capabilities which may be used by water managers to increase water supply reliability and enable conjunctive use of groundwater and surface water.

About The Request for Proposals

TWT is seeking a suite of technical support to advance the objectives of our Applied Science grant. Those technical support services are presented holistically within this Request for Proposals. Respondents are invited to submit proposals in whole or in part for the services described below.

The grant supporting this work concludes in February 2022. All work under this program must be completed by the end of that month, and most desirably by the end of January 2022. Based upon discussions with our existing Advisory Group and in consideration of agricultural production cycles in the Leon Belding Irrigation Area, we anticipate that the most preferred window for aquifer pump tests will be in February 2021 and/or November 2021.

All spatially explicit data or tools developed in this project will be developed in industry standard formats that are compatible with industry accepted Geographic Information System (GIS) platforms.

All contractors will be required to conform to Office of Management and Budget (OMB) Uniform Guidance, and shall ensure that all applicable federal, state and local requirements are properly flowed down to any subcontractor, including but not limited to the provisions of the OMB Uniform Guidance.

Service 1: Study Design & Project Management

- With a perspective on the overall project objectives, and in close coordination with TWT's CEO, design a well pumping and water sampling workplan to be completed by December 2021. This should include establishing the study goals, project scope, schedule and responsibilities and identifying wells for testing.
- Review historical pump test data and water quality samples for relevant aquifers in MZ1 conducted by MPGCD, Texas Water Development Board (TWDB), United States Geological Survey (USGS) and other relevant stakeholders to avoid duplication of prior efforts and to integrate known dynamics into study design;
- Review data from at least 13 instrumented wells, karst features and stream channels which have been telemetered by MPGCD and which will be collecting hourly pumping, static water level and flow rate data in the 2021 growing season for the purpose of assessing the relationship between groundwater pumping, aquifer storage and springflow;
- Coordinate with TWT and MPGCD as needed to secure access to properties for pump tests;
- Coordinate with hydrogeologists at MPGCD, TWDB, USGS and at other relevant research institutions on an as-needed basis to inform study design;
- Manage deliverable advancement with teams undertaking other components of study design and implementation, including pump tests, water sampling and modeling;
- Participate in a monthly check-in call with the TWT CEO;
- Participate in monthly science team planning calls to ensure proper coordination and problem solving between project partners and contractors;
- Review and comment on work deliverables developed by other contractors retained by TWT in pursuit of this study;
- Plan pump test with field contractors retained by TWT;
- Plan water sampling (site selection, constituents to be analyzed, seasons to sample) with other contractors or collaborators selected by TWT;
- Manage data incoming from various contractors and coordinate integration of those data by TWT and its contractors and data sharing with the MPGCD and TWDB;
- Write final report synthesizing the study design and findings.

Service 2: Field Tests

- Assess well conditions for prospective wells to be tested, assemble field equipment and administer pump tests on 3-6 wells. Assumed well characteristics include depth to water of 150-200 feet and 400 gallon per minute capacity. Pump tests are expected to run for 24-48 hours. Cost should be quoted based on number of tests performed. All tests are assumed to be within MZ1 (Leon-Belding Irrigation Area), roughly 7 miles west of Fort Stockton. The steps assumed for delivery of this workstream component include:
 - With guidance of Project Manager, assess suitability of pumping well(s) (i.e. is pump of sufficient size, can/is flow being metered, run well(s) for short period of time and measure water level, assess whether discharge water be adequately routed to prevent immediate aquifer recharge;
 - Deploy down hole pressure transducers in all wells to be monitored, install flow measuring device at pumping well;
 - After transducer deployment, allow $7 \pm$ days of background water level monitoring and spring discharge measurements, periodically manually measure water levels, retrieve and review data;
 - Turn on pump and run for predetermined length of time (1-2 days), optional sample for general water quality at beginning and end of test, measure discharge, periodically manually measure water levels;
 - Allow wells to recover to 90-95% of pre-test levels, periodically manually measure water levels, retrieve transducers, download data;
- Coordinate with landowners and MPGCD as needed to secure access to property;
- Coordinate with project manager in advance of well tests and deliver data following test run;
- Must demonstrate appropriate liability and workers compensation insurance coverages.

Service 3: Water Sampling & Geochemical Analysis

- Recommend constituents to be sampled to advance study goals as articulated by the Project Manager. These will include a suite of inorganic cations, anions and trace metals patterned on the TWDB standard suite and isotopes selected to assess the source of flow at Comanche Springs based on water age and chemical processes in groundwater migration;
- Collect and analyze water quality samples from groundwater wells and Comanche Springs during its flow period. Samples will be collected from wells and spring outlets to be identified by the Project Manager and during times of year and in coordination with the pumping tests as determined Project Manager;
- Interpret water quality results to inform specific study questions related to aquifer properties and springflow;
- Cost should be quoted based on number of tests performed. All tests are assumed to be within MZ1 (Leon-Belding Irrigation Area), roughly 7 miles west of Fort Stockton.

For all services, TWT will reimburse expenses including mileage, lodging and per diem for necessary travel.

In selecting Contractor(s), Texas Water Trade will consider respondents':

- Demonstrated expertise in the technical services as described in this RFP
- Familiarity with the groundwater and surface water hydrology of the Edwards-Trinity and underlying aquifers in Pecos County
- Competitive cost.

Competitive proposals will include:

- A clear identification of the service(s) proposed, as numbered above;
- An itemized breakdown of labor, material, travel and other costs, with profits listed separately, for the service(s) proposed;
- A proposed timeline for undertaking the work;
- Examples and professional references of at least 3 projects on which the Contractor has delivered technical services similar to services as described herein;
- A statement agreeing to comply with any federal flowdown requirements imposed by U.S. Bureau of Reclamation or the Office of Management and Budget;
- Bios of the full contract team.

Proposals will be accepted until December 31, 2020 and can be sent to Christine Ann Rosales at rosales@texaswatertrade.org.

Technical inquiries can be made to Sharlene Leurig, Chief Executive Officer at leurig@texaswatertrade.org.