

TO: Board Members

THROUGH: Kevin Patteson, Executive Administrator
Robert E. Mace, Deputy Executive Administrator, Water Science & Conservation

FROM: Cynthia K. Ridgeway, Manager, Groundwater Availability Modeling Section

DATE: April 15, 2015

SUBJECT: Groundwater Availability Modeling Program Research and Modeling Contracts

ACTION REQUESTED

Authorize the Executive Administrator to (a) negotiate and execute contracts no later than August 31, 2015, for research in support of the Groundwater Availability Modeling Program, and to (b) transfer up to \$1,440,000 from the Water Assistance Fund to the Research and Planning Fund.

BACKGROUND

For the 2014 to 2015 biennium, the Groundwater Availability Modeling Program was budgeted \$1,440,000 (\$720,000 each fiscal year) to fund grants for projects in support of the program. On November 20, 2014, the Texas Water Development Board (TWDB) authorized the Executive Administrator to publish in the *Texas Register* Requests for Qualifications for three projects (Table 1). The request for qualifications was submitted to the Texas Secretary of State on December 3, 2014, and appeared in the *Texas Register* on December 19, 2014 (Attachment A).

Table 1. Proposed Research Projects for Groundwater Availability Modeling grants

<p><u>Project 1.</u> Lower Rio Grande Valley groundwater transport model (Estimated cost: \$740,000)</p>
<p><u>Project 2.</u> Mapping fresh, brackish, and saline groundwater in the Queen City, Sparta, and Carrizo-Wilcox aquifers mainly in Groundwater Management Area 13 (Estimated cost \$380,000)</p>
<p><u>Project 3.</u> Effect of faults on groundwater flow in the Carrizo-Wilcox Aquifer in Central Texas and model updates (Estimated cost \$520,000, including outside participation of at least \$200,000 in matching funds)</p>

In response to the request for qualifications, the Contract Administration Division received a total of seven statements of qualifications on or before the 12:00 P.M., February 17, 2015, deadline. Statements of

qualifications were reviewed by TWDB staff who quantitatively evaluated the proposals according to a set list of criteria. Point totals were used to rank the applicants.

RECOMMENDATION

Authorize the Executive Administrator to negotiate and execute contracts on or before August 31, 2015, with the below-named selected applicants. If contracts cannot be negotiated with the top-ranked candidate, contract negotiations will proceed with the second-ranked candidate (see Attachment B). This recommendation also includes authorizing the transfer of up to \$1,440,000 from the Water Assistance Fund to the Research and Planning Fund from the remaining funds in fiscal years 2014 and 2015 for the Groundwater Availability Modeling Program.

GSI Environmental Incorporated: Project 1 - Lower Rio Grande Valley groundwater transport model not to exceed \$740,000.

Bureau of Economic Geology, University of Texas at Austin: Project 2 - Mapping fresh, brackish, and saline groundwater in the Queen City, Sparta, and Carrizo-Wilcox aquifers, mainly in Groundwater Management Area 13, not to exceed \$380,000.

INTERA Incorporated: Project 3 - Effect of faults on groundwater flow in the Carrizo-Wilcox Aquifer in Central Texas and model updates not to exceed \$320,000. It should be noted that on February 16, 2015, we received a letter of intent with an expanded scope of work from four of the groundwater conservation districts located within the study area with the following commitment of funding and in-kind services:

- \$200,000 from the Post Oak Savannah Groundwater Conservation District,
- \$100,00 from the Brazos Valley Groundwater Conservation District,
- \$2,500 from the Mid-East Texas Groundwater Conservation District, and
- \$50,000 of in-kind services by their hydrogeologic consultant from the Lost Pines Groundwater Conservation District.

The Executive Administrator recommends approval of this item.

This recommendation has been reviewed by legal counsel and complies with applicable statutes and TWDB rules.

Les Trobman, General Counsel

ATTACHMENTS

- Attachment A: Texas Water Development Board Requests for Statements of Qualifications for Water Research Published in the December 19, 2014, *Texas Register* Docket 201405808
- Attachment B: Summary of Recommendation

Attachment A:
Texas Water Development Board
Requests for Statements of Qualifications for Water Research
Published in the December 19, 2014, Texas Register Docket 201405808

Requests for Statements of Qualifications for Water Research for Groundwater Availability Modeling Program

Pursuant to 31 Texas Administrative Code §355.3, the Texas Water Development Board (TWDB) requests the submission of Statements of Qualifications leading to the possible award of contracts for groundwater related studies for three separate projects. We expect to get separate Statements of Qualifications specific for each project. The projects should take no more than two years to complete.

Details on the research projects and project requirements are available from the TWDB website http://www.twdb.texas.gov/about/contract_admin/RFQ/index.asp. The TWDB website includes (1) guidelines for the Statements of Qualifications; (2) copies of this document; (3) a list of Statement of Qualifications Review Criteria; and (4) some supporting material. We expect potential contractors to indicate their abilities in (1) general hydrogeology; (2) hydrogeology of the respective study area; (3) interpretation and use of geophysical well logs, as applicable to the project; (4) numerical groundwater flow modeling including water quality analyses, as applicable to the project; (5) geographical information systems including geodatabase construction, use, design, and documentation; (6) communication with the public; (7) technology transfer; (8) production of high-quality technical reports; and (9) meeting deadlines within budget (contract time extensions will be granted only in extreme cases). Specific criteria to include in the submitted Statement of Qualifications, germane to each project, are discussed in each project description.

Description of Research Objectives

Since 1999, the Texas Legislature has approved funding for the Groundwater Availability Modeling Program. The products of the Groundwater Availability Modeling Program will result in better understanding of our groundwater resources and scientific tools designed to manage groundwater and predict the effects of withdrawals and climate on our aquifer systems. As part of the modeling program, we periodically reassess the existing models to address the needs and objectives of planning by local water providers, groundwater conservation districts, and regional water planning groups. We determined that two of the following projects would assess fresh, brackish, and saline water including a possible water quality model of the Lower Rio Grande Valley and the development of a tool to calculate and estimate zones of water quality based on total dissolved solids (TDS) mainly in Groundwater Management Area 13. In addition, we propose an update to the central portion of the Queen City, Sparta, and Carrizo-Wilcox aquifers model in Groundwater Management Area 12 that includes an analysis of the significance of modeling faults in the current model. The following describes each of the projects, their objectives, our expectations, and the anticipated deliverables.

Project 1. Lower Rio Grande Valley groundwater transport model (Estimated Cost: \$740,000)

The Conservation and Innovative Water Technologies Division of the TWDB has recently completed an assessment of brackish groundwater resources in the Gulf Coast Aquifer System in part of a four-county area in the Lower Rio Grande Valley (TWDB Report 383: http://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R383_BrackishGW.pdf).

Most of the groundwater in the Lower Rio Grande Valley has total dissolved solids greater than 1,000 milligrams per liter and does not meet drinking water quality standards. Currently, seven desalination plants treat brackish groundwater for municipal use in the study area. An additional 23 desalination projects have been recommended by water user groups of the Rio Grande Group (Region M) in the 2012 State Water Plan. Groundwater quantity and quality changes, effects on groundwater flow and water levels, and potential ground subsidence are significant factors that must be evaluated in areas where multiple groundwater desalination plants are operating.

The Lower Rio Grande Valley was selected for a groundwater modeling study because of the anticipated need for additional water in the region and the lack of a groundwater model specifically dealing with the technical issues of brackish groundwater development. The primary objective of this project is to develop a numerical groundwater model to simulate impacts of brackish water withdrawal by the current and recommended desalination plants in the Lower Rio Grande Valley. The new model shall utilize data from the existing Groundwater Availability Model for the Lower Rio Grande Valley (Chowdhury and Mace, 2007), incorporate new framework information from a study conducted by Young and others (2010) and include water quality data from the Brackish Resource Aquifer Characterization System (BRACS) database

(<http://www.twdb.texas.gov/innovativewater/bracs/database.asp>), especially data from the brackish groundwater study (TWDB Report 383). The model grid discretization should be sufficient to appropriately capture the migration of saline groundwater in the project area; however, they will not be greater than one-mile by one-mile. The study discussed in TWDB Report 383 used 250-foot by 250-foot for spatial grid cell dimensions. Other objectives of this project include assessment of the possibility of ground subsidence and changes in water quality occurring in the model area due to long-term withdrawal of groundwater including possible impacts of probable seawater intrusion. The proposed model is recommended to be constructed using the variable density code SEAWAT (version (4) or a later version) and the model shall be produced and calibrated to modified Groundwater Availability Modeling standards (http://www.twdb.texas.gov/about/contract_admin/RFQ/index.asp) and fully documented. The project will adhere to other general groundwater availability modeling standards including documentation and stakeholder involvement.

Pumping and model calibration should be projected to the most recent time defensible. The approach used to distribute pumping and to calibrate the model is subject to prior approval by TWDB staff. The calibration period should also encapsulate any historical periods of stresses upon the aquifer system. This proposed groundwater modeling project shall (1) include stakeholder involvement (at least three meetings); (2) use valid, defensible, and documented data and standard scientific modeling procedures; (3) follow all TWDB groundwater availability modeling protocol and standards, as applicable; and (4) update TWDB's BRACS database with all hydrostratigraphic picks, data, and logs from the non-proprietary geophysical logs used to re-evaluate the boundaries and aquifer characteristics from areas outside of the previous BRACS study (TWDB Report 383).

At a minimum, TWDB staff expects to meet with the project team (1) at the beginning of the project, (2) after receipt of the conceptual model and source databases, (3) after model calibration and before predictive simulations, and (4) after receipt of the final draft deliverables. Additional meetings are encouraged throughout the project to allow TWDB staff to assess progress on the project, understand challenges that may be encountered, and seek solution to potential problems.

These technical meetings shall be scheduled either in person, through a webinar, or teleconferencing venue to discuss modeling progress and issues. TWDB staff may periodically visit the contractor's work premises to assess progress of the project. Formal stakeholder meetings shall be scheduled in the study area throughout the project. Monthly progress reports must be submitted to the TWDB outlining progress of the project and shall include the original (or adjusted) schedule timeline with an indication on how the project is progressing relative to this standard. Project invoices cannot be processed without detailed description of the progress made by tasks. Each of the project tasks must be described in detail consistent with the budget description. We expect any issues to be reported to the TWDB contract manager as they appear.

Interim deliverables shall include a draft geodatabase of all source data, an updated BRACS compatible database documenting the hydrostratigraphic picks including acceptable images of the geophysical logs, and a conceptual model report. At the end of the project, deliverables will include the updated interim deliverables, a numerical groundwater flow model (in SEAWAT and Groundwater Vistas format), a separate model report describing the model construction and calibration portion of the project, and a report documenting the negotiated predictive simulations. Additionally, the final deliverable shall also include a computer workstation utilized to develop and run the final model. This shall be the fastest (with highest specifications) workstation that the contractor will have used on the modeling project. If alternative approaches or methods for analyzing water quality or subsidence are developed, these scientific tools shall also be provided, documented, and training provided, if needed to TWDB staff and applicable stakeholders. Reports shall be delivered in Microsoft Word and PDF formats. All information used in the modeling effort should be included and documented in sufficient detail so TWDB staff can duplicate the process from beginning to end. Draft deliverables will be submitted for review and comment by TWDB staff. These comments will be incorporated in the final deliverables.

The following issues need to be addressed in each Statement of Qualifications for this project and should be easily located by TWDB staff: (1) experience with hydrogeology, BRACS database, MODFLOW, SEAWAT and Groundwater Vistas including variable density flow modeling approaches, and knowledge of the Gulf Coast Aquifer System; (2) planned communication between the contractor and the stakeholder advisory forum for the model including regional water planning groups and groundwater conservation districts; (3) hydrostratigraphy for the model including review and analysis of geophysical well logs compiled by TWDB's Innovative Water Technologies Team as well as discussion of approaches and methods for interpretation of other non-proprietary geophysical data applicable to this project; (4) approaches for spatial and temporal discretization of the model; (5) discussion of various approaches for selecting model boundary conditions especially the model base boundary and the seaward boundary; (6) approaches for calibrating the model particularly water quality; (7) approach for handling dewatered cells; (8) discussion of alternative methods or tools to be delivered if ground subsidence modeling is not feasible; (9) how the project will benefit statewide water planning and groundwater districts; (10) total budget and an itemized budget broken by tasks and personnel; and (11) project schedule grouped by tasks and projected expenditures. The entire Statement of Qualifications shall not be more than 25 pages in length using Times Roman 12 font excluding qualifications and experience of project staff and HUB plan. The detailed scope of work portion of the Statement of Qualifications describing each task, a percent of effort per each task, a time schedule for each task, and the amount of time each team member will

spend on the project shall not exceed 20 pages. Applicants should be familiar with standards and requirements for the TWDB groundwater availability models. An updated guideline will be provided (http://www.twdb.texas.gov/about/contract_admin/RFQ/index.asp).

Project 2. Mapping fresh, brackish, and saline groundwater in the Queen City, Sparta, and Carrizo-Wilcox aquifers mainly in Groundwater Management Area 13 (Estimated cost \$380,000)

Planners and decision makers need reliable estimates of available fresh, brackish, and saline groundwater to better formulate water management strategies. Currently, the basis for determining the amount of fresh groundwater in Texas relies on decades-old data. In 2003, TWDB contracted with LBG-Guyton Associates to develop a statewide assessment of the occurrence of brackish water (salinity from 1,000 to 10,000 milligrams per liter) that might be available for desalination in Texas (http://www.twdb.texas.gov/publications/reports/contracted_reports/doc/2001483395.pdf). The work by LBG-Guyton and Associates did not address saline groundwater (salinity greater than 10,000 milligrams per liter). In 2014, the Brackish Resources Aquifer Characterization System (BRACS) team within TWDB finished mapping the brackish to saline groundwater within the Gulf Coast Aquifer in parts of Cameron, Hidalgo, Starr, and Willacy counties (TWDB Report 383). Also in 2014, the BRACS team completed a detailed study of the brackish water resources in Atascosa and McMullen counties for the Queen City and Sparta aquifers (TWDB Technical Note 14-01: http://www.twdb.texas.gov/publications/reports/technical_notes/doc/TechnicalNote14-01.pdf). Staff in the TWDB Brackish Resources Aquifer Characterization System group is currently delineating water quality in the geologic units extending from the Yegua-Jackson Aquifer to the base of the Wilcox Formation in all or parts of Bexar, Wilson, Karnes, Bee, Guadalupe, Gonzales, De Witt, Caldwell, Lavaca, Bastrop, and Fayette counties. The projected completion for this study is summer 2015. In 2016, the study area will be extended farther south to the Rio Grande (completion date, end of 2017).

While improved brackish and saline water estimates have been made at a local scale, such as in the study outlined in TWDB Technical Note 14-01, the criteria for defining these resources have not been consistent, nor have they been defined in a way that is usable on a regional scale that is used by the Groundwater Availability Modeling Program.

In support of the Groundwater Availability Modeling Program, the TWDB is requesting Statements of Qualifications for (1) delineating fresh, brackish, and saline groundwater in the Carrizo-Wilcox, Queen City, and Sparta aquifers-both vertically and horizontally- and (2) quantifying volumes of available fresh, brackish, and saline groundwater using the geologic framework of the existing groundwater availability model for the southern portion of the aforementioned aquifers. This project should use current publicly available information from a variety of non-proprietary databases and geophysical log repositories to develop new and updated maps of the resources that can be used by planners and groundwater decision-makers. Focus will be on the groundwater availability model for the southern portion of the Queen City, Sparta, and Carrizo-Wilcox aquifers but will also include the Laredo and El Pico equivalents of the Queen City and Sparta aquifers. The project should build upon and extend the value of existing studies of fresh and brackish groundwater and should serve as an example and template for possible future water quality regional studies using groundwater availability models in other areas of the state. The final product will be a geographic information

system (GIS)-based application that delineates the fresh, brackish, and saline groundwater extents both vertically and laterally using ranges of concentrations of total dissolved solids of 0 to 1,000 milligrams per liter, 1,000 to 3,000 milligrams per liter, 3,000 to 10,000 milligrams per liter, 10,000 to 35,000 milligrams per liter, and greater than 35,000 milligrams per liter. In addition, we require that a GIS-based application be developed that can calculate and delineate volumes of fresh, brackish, and saline waters by aquifer, county, groundwater conservation district, and groundwater management area. Any geophysical log data obtained for the project should comply and be compatible with the BRACS Database such that the information may be uploaded immediately into the BRACS Database. Any other water quality data needs to be compatible with the Groundwater Database and include the source of the data. Documentation of the tools and techniques used for determining the extent and volumes of the required ranges of total dissolved solids shall be thorough, using defensible scientific means and approaches.

Deliverables shall include a geodatabase of all source data and a report showing data sources, methodology, sample visuals of salinity zone delineations, and calculated volumes of groundwater within each salinity category, by aquifer, county, groundwater conservation district, and groundwater management area. The tools developed and techniques used shall be thoroughly documented. Training shall be provided, as needed or requested by TWDB staff. All draft and final reports shall be delivered in Microsoft Word and PDF formats. All GIS data shall be thoroughly documented with metadata including source, field descriptions, and units (as applicable). Source data shall be incorporated into the BRACS database format. TWDB staff must be able to replicate the volumes estimated and techniques used to determine extents of each of the categories of total dissolved solids. The tool(s) developed should be flexible to be able to re-calculate different ranges of the total dissolved solids categories. Draft deliverables will be submitted for review and comment by TWDB staff. These comments will be incorporated in the final deliverables.

At a minimum, TWDB staff expects to meet with the project team at the beginning of the project and at the midpoint of the project. Coordination with TWDB staff will be critical throughout the project. We plan on exchanging data at the beginning and mid-point of this study to complement the contracted regional scale project with the local scale projects being developed by the staff in the TWDB's Brackish Resources Aquifer Characterization System team. A formal presentation discussing and presenting the results shall be given to TWDB staff at the end of the project. Additional technical meetings shall be scheduled either in person, through a webinar, or teleconference venue to discuss project progress and issues. TWDB staff may periodically visit the contractor's work premises to assess progress on the project. At least three formal stakeholder meetings shall be scheduled in the study area. TWDB staff will help with the selection of stakeholders to be invited to participate. Detailed monthly progress reports must be submitted to the TWDB outlining progress of the project and include the original schedule (or adjusted schedule) timeline and how the project is progressing relative to this standard. Project invoices cannot be processed without detailed description of the progress made by tasks. Each of the project tasks must be described in detail consistent with the budget description. We expect issues to be reported to the TWDB contract manager as they appear.

The Statement of Qualifications will include a detailed scope of work section describing each task, a percent of effort per each task, a time schedule for each task, and the amount of time each team

member will spend on the project. The scope of work section shall not exceed 20 pages and the entire Statement of Qualifications shall not be more than 25 pages in length pages using Times Roman 12 font, excluding qualifications and experience of project staff and HUB plan. Applicants should be familiar with standards and requirements for the TWDB groundwater availability models. An updated guideline will be provided at http://www.twdb.texas.gov/about/contract_admin/RFQ/. The following issues need to be addressed in each Statement of Qualifications for this project and should be easily located by TWDB staff: (1) intimate knowledge of the Carrizo-Wilcox, Queen City, Sparta aquifers and familiarity with the existing Groundwater Availability Model for these aquifers, with particular emphasis on their geologic framework; (2) discussion of the evaluation of the water quality data sources to be used to delineate and quantify the volumes of fresh, brackish, and saline groundwater; (3) discussion on the evaluation of the geophysical well logs including availability and quality of non-proprietary geophysical logs for the purpose of delineating and quantifying the volumes of brackish and saline groundwater; (4) approaches for interpreting groundwater salinity from geophysical logs, including (a) listing of the available and proven methods, their advantages and disadvantages and (b) justifying the selection of method(s) relative to conditions specific to the Carrizo-Wilcox, Queen City, and Sparta aquifers; (5) proposed approach for the development of GIS-based applications to (a) display the salinity data generated by the project-horizontally and vertically, and (b) to calculate volumes of fresh, brackish, and saline groundwater; (6) total budget and an itemized budget broken by tasks and personnel; and (7) project schedule grouped by tasks and projected expenditures.

Project 3. Effect of faults on groundwater flow in the Carrizo-Wilcox Aquifer in Central Texas and model updates (Estimated cost \$520,000, including outside participation of at least \$200,000 in matching funds).

In 2003, groundwater availability models for the southern, central, and northern portions of the Carrizo-Wilcox Aquifer were completed through research contracts with TWDB. In 2005, the three-groundwater availability models were updated to include the Queen City and Sparta aquifers through another research contract. In 2009, the 81st Legislature directed the Texas Commission on Environmental Quality (TCEQ) to conduct a study of the characteristics and impacts on groundwater planning in the Carrizo-Wilcox Aquifer. As part of that study, the TCEQ (contracted with the Bureau of Economic Geology) evaluated the existing three-groundwater availability models for the Carrizo-Wilcox Aquifer. The study concluded that two critical issues deserving attention were (1) whether the central portion of the Carrizo-Wilcox Aquifer model should include faults as barriers to flow and (2) evaluation of the location of such faults.

The central portion of the Queen City, Sparta, and Carrizo-Wilcox aquifers model includes one of the most productive aquifer regions in Texas. The way that the Mexia-Talco Fault Zone and other faults in the model have been dealt with has been a technical question in Groundwater Management Area 12. The degree to which the faults are sealing has a minor effect on the model calibration but a major impact on predicted future drawdowns because future pumping is anticipated in the vicinity of the faults. Permitting of groundwater from the central Simsboro Formation (part of the Wilcox Group) will likely be affected by district interpretations of results from the model. Since the existing groundwater availability model was developed, additional information on the effects of the faults on the groundwater flow system has been gathered. This study will provide districts and other

interested parties in Groundwater Management Area 12 with a technical basis to update the model using recent site characterization information by looking at the sensitivity of model calibration metrics and multiple fault assumptions. This proposed project will use recently-acquired groundwater availability model for the central portion of the Queen City, Sparta, and Carrizo-Wilcox Aquifer was constructed-acquired aquifer data to better define the role that faults play in influencing groundwater flow. In addition other newly acquired data should be incorporated into the model. For example, staff in the TWDB BRACS group are currently working on a local study delineating water quality, aquifer framework, and net sands using non-proprietary geophysical logs that cover the Yegua-Jackson Aquifer to the base of the Wilcox Formations that includes all or parts of Bexar, Wilson, Karnes, Bee, Guadalupe, Gonzales, De Witt, Caldwell, Lavaca, Bastrop, and Fayette counties with a projected completion in the summer of 2015.

Evaluation of the faults in the groundwater availability model will consist of running multiple sensitivity analyses under various stress conditions to test fault properties and their effects on the groundwater flow system. The findings will be compared to aquifer test data and other water level data. Based on the evaluations, a decision will be made to either keep the faults in the groundwater availability model as is, adjust the properties, or remove the faults entirely. This decision will be discussed with TWDB and stakeholders in the study area before proceeding. After the fault analyses are evaluated, either the current model or an adjusted model with the faults removed will be updated to include corrected estimates of pumping for the Alcoa lignite mining operation. The model time period will also be extended to at least 2010, and the model will be re-calibrated to groundwater availability modeling standards including documentation and stakeholder involvement.

Interim deliverables shall include a draft geodatabase of all updated source data and a summary report discussing the analysis of data related to faults-including the sensitivity analysis results and recommendations for proceeding to the modeling phase of the project. Draft deliverables will be submitted for review and comment by TWDB staff. These comments will be incorporated in the final deliverables. At the end of the project, deliverables will include the final geodatabase and a numerical groundwater flow model (in MODFLOW and Groundwater Vistas format), as well as a model report describing the model construction and calibration portion of the project. The model calibration report will also include any data updated from the original conceptual reports and will incorporate the draft fault analysis report. All draft and final reports shall be delivered in Microsoft Word and PDF formats. All information used in the modeling effort should be included and documented in sufficient detail, including metadata that describes units, formulas, and source of the data, so TWDB staff can replicate the process from beginning to end.

At a minimum, TWDB staff expects to meet with the project team at least five times throughout the project. Coordination with TWDB staff, as well as with the groundwater conservation districts within the study area, will be critical throughout the project. A formal presentation discussing and presenting the results shall be given to TWDB staff at the end of the project. Additional technical meetings shall be scheduled either in person or through a webinar or teleconference venue to discuss modeling progress and issues. TWDB staff may periodically visit the contractor's work premises to assess progress on the project. At least three formal stakeholder meetings shall be scheduled in the study area throughout the project-at the beginning, midpoint, and at the end of the project. Detailed monthly progress reports must be submitted to the TWDB outlining progress of

the project and include the original schedule (or adjusted) timeline and how the project is progressing relative to this standard. Project invoices cannot be processed without detailed description of the progress made by tasks. Each of the project tasks must be described in detail consistent with the budget description. We expect issues to be reported to the TWDB contract manager as they appear.

The Statement of Qualifications will include a detailed scope of work section describing each task, a percent of effort per each task, a time schedule for each task, and the amount of time each team member will spend on the project and shall not exceed 20 pages. The entire Statement of Qualifications shall not be more than 25 pages in length using Times Roman 12 font, excluding qualifications and experience of project staff and HUB plan. Applicants should be familiar with standards and requirements for the TWDB groundwater availability models. An updated guideline will be provided (http://www.twdb.texas.gov/about/contract_admin/RFQ/). The following issues need to be addressed in each Statement of Qualifications for this project and should be easily located by TWDB staff: (1) experience with hydrogeology, aquifer testing, MODFLOW, and Groundwater Vistas and knowledge of the Queen City, Sparta, and Carrizo-Wilcox aquifers; (2) plan for communication between the contractor and stakeholders for the model including regional water planning groups and groundwater conservation districts; (3) approach for evaluating geophysical data (4) approach for conducting sensitivity analyses; (5) approach for re-calibrating the model; (6) approach for dealing with de-watered cells; (7) approach for modeling faults and hydraulic properties; (8) total budget and an itemized budget broken by tasks and personnel; and (9) project schedule grouped by tasks and projected expenditures.

Description of Funding Consideration

Up to \$1,440,000 has been identified for water research assistance from the Water Assistance Fund for research on these three projects with: (1) \$740,000 for the Lower Rio Grande Valley groundwater transport model; (2) \$380,000 for mapping fresh, brackish, and saline groundwater in Queen City, Sparta, and Carrizo-Wilcox aquifers mainly in Groundwater Management Area 13; and (3) \$320,000 (with at least an additional \$200,000 in matching funds from local groundwater conservation districts) to study the effect of faults on groundwater flow in the Carrizo-Wilcox Aquifer in Central Texas and model updates. Funding will be split between Fiscal Years 2014 and 2015. Following the receipt and evaluation of all Statements of Qualifications, the TWDB may adjust the amount of funding initially authorized. Oral presentations may be required as part of qualification review; however, an invitation for oral presentation is not an indication of probable selection. Up to 100 percent funding may be provided to individual applicants; however, applicants are encouraged to contribute matching funds or services, and funding will not include reimbursement for indirect expenses incurred by political subdivisions of the state or other state and federal agencies. In the event that acceptable Statements of Qualifications are not submitted, the TWDB retains the right to not award funds for the contracts.

Deadline, Review Criteria, and Contact Person for Additional Information.

Six double-sided copies of a complete Statements of Qualifications, including the required attachments, and one electronic copy (PDF format) of the Statements of Qualifications must be filed

with the TWDB prior to 12:00 noon, Tuesday, February 17, 2015. Statements of Qualifications must be directed either in person to Mr. David Carter, Texas Water Development Board, Stephen F. Austin Building, 1700 North Congress Avenue, Austin, Texas 78701; or by mail to Mr. David Carter. Statements of Qualifications will be evaluated according to 31 Texas Administrative Code §355.5 and the Statements of Qualifications Review Criteria rating form for GAM projects included in the TWDB's Guidelines for Water Research Grants. Research shall not duplicate work planned or underway by state agencies. All potential applicants must contact the TWDB to obtain these guidelines.

A meeting for answering any questions related to this request for qualifications is scheduled for Tuesday, January 20, 2015, at the Stephen F. Austin Building, 1700 North Congress Avenue, Austin, Texas 78701 at 1:30 P.M. Space is limited to the first 30 attendees. Please contact Cindy Ridgeway at (512) 936-2386 or cindy.ridgeway@twdb.texas.gov if you are interested in attending the meeting. Additional information concerning the meeting room and parking will be provided at that time. If we receive enough interest, other meetings will be scheduled as needed. Requests for information, the TWDB's rules covering the Research and Planning Fund, detailed evaluation criteria, more detailed research topic information, and the guidelines may be directed to Mr. David Carter at the preceding address or by calling (512) 936-6079. All technical questions should be directed to Ms. Cindy Ridgeway at (512) 936-2386.

TRD-201405808
Les Trobman
General Counsel
Texas Water Development Board
Filed: December 3, 2014

Attachment B
Summary of Recommendation

Project 1: Lower Rio Grande Valley groundwater transport model not to exceed \$740,000.

Proposed Project Funding: The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$720,000 from the Research and Planning Fund from the remaining funds in Fiscal Year 2014 for the Groundwater Availability Modeling Program and \$20,000 from the Water Assistance Fund to the Research and Planning Fund in Fiscal Year 2015 for the Groundwater Availability Modeling Program.

Applicants: GSI Environmental Incorporated
INTERA Incorporated
Daniel B. Stephens & Associates

Staff Recommendation: Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with GSI Environmental Incorporated. If contracts cannot be negotiated with the top-ranked candidate, TWDB staff will proceed with contract negotiations with the second-ranked candidate.

Study Duration: The duration of the study will be negotiated with the contractor by TWDB staff.

Task and Expense Budget: Task budget and expense budgets will be negotiated with the contractor by TWDB staff.

Project 2: Mapping fresh, brackish, and saline groundwater in the Queen City, Sparta, and Carrizo-Wilcox aquifers mainly in Groundwater Management Area 13 not to exceed \$380,000.

Proposed Project Funding: The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$380,000 from the Research and Planning Fund from the remaining funds in Fiscal Year 2015 for the Groundwater Availability Modeling Program.

Applicants: Bureau of Economic Geology, The University of Texas at Austin¹
RPS Group Plc
U. S. Geological Survey

Staff Recommendation: Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with Bureau of Economic Geology, The University of Texas at Austin. If contracts cannot be negotiated with the top-ranked candidate, TWDB staff will proceed with contract negotiations with the second-ranked candidate.

Study Duration: The duration of the study will be negotiated with the contractor by TWDB staff.

Task and Expense Budget: Task budget and expense budgets will be negotiated with the contractor by TWDB staff.

¹ Statement of Qualifications noted an additional \$80,000 of matching funds from the Jackson School of Geosciences.

Project 3: Effect of faults on groundwater flow in the Carrizo-Wilcox Aquifer in Central Texas and model updates not to exceed \$320,000.

Proposed Project Funding: The total amount of TWDB grant funds to be allocated for this research topic is not to exceed \$320,000 from the Research and Planning Fund from the remaining funds in Fiscal Year 2015 for the Groundwater Availability Modeling Program. Memorandums of Agreement will be negotiated with the Post Oak Savannah Groundwater Conservation District (\$200,000), Brazos Valley Groundwater Conservation District (\$100,000), Mid-East Texas Groundwater Conservation District (\$2,500), and Lost Pines Groundwater Conservation District (\$50,000 of in-kind services by their hydrogeologic consultant).

Applicants: INTERA, Incorporated

Staff Recommendation: Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with INTERA, Incorporated. If a contract cannot be negotiated with the top-ranked candidate, staff will re-evaluate alternative projects or use of the funds and will advise the executive administrator.

Study Duration: The duration of the study will be negotiated with the contractor by TWDB staff.

Task and Expense Budget: Task budget and expense budgets will be negotiated with the contractor by TWDB staff.