Monthly Letter Progress Report #2 – June 2016
Study of Brackish Aquifers in Texas – Project No. 4
Trinity Aquifer
TWDB Contract No. 1600011950

Submitted to

Texas Water Development Board
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2.0 Progress on Tasks

This report summarizes activities on project tasks during May 2016 and represents the second progress report on this contract.

Task 1: Project Management

- The project setup was completed on May 2, 2016.
- Southwest Research Institute® (SwRI®) staff on the project had an internal kickoff meeting to coordinate future activities and management of the project.
- Subcontracts with the two teaming partners, INTERA and the Bureau of Economic Geology (BEG), and with the two in-kind teaming partners, Edwards Aquifer Authority (EAA) and Barton Springs Edwards Aquifer Conservation District (BSEACD), were in the process of being developed in May.
- The SwRI team met with INTERA/Daniel Lupton to discuss project logistics and methods.
- The SwRI team members met with INTERA to discuss the project setup, division of labor, and data sources and methods.
- The SwRI team met with the TWDB brackish water team. SwRI received the brackish water well database from TWDB. It was suggested at this meeting that some members of the TWDB brackish water team visit the SwRI campus once the project is underway.

Task 2: Data Acquisition and Method Development

Task 2 has been subdivided into four subtasks. Progress on the subtasks is as follows:

Subtask 2.1: Acquisition and Initial Analysis of Groundwater Samples

There has been no progress on this subtask.

Subtask 2.2: Acquisition and Initial Analysis of Geophysical Logs

Geophysical logs from TWDB were acquired during May. These logs are being evaluated for quality and coverage. Once we determine the full domain, we will send off all evaluated logs within the domain to be digitized by Well Green Tech Inc. (http://www.wellgreentech.com/Digitizing.html).

Subtask 2.3: Develop Technical Approach for Estimating Total Dissolved Solids From Geophysical Logs

There has been no progress on this subtask.

Subtask 2.4: Use Geophysical Log Interpretation to Analyze Stratigraphy and Map Fresh, Brackish, and Saline Groundwater

Data sources and methods for interpreting the geophysical logs are under evaluation.

Task 3: Develop a Stratigraphic Framework Model of the Trinity Aquifer and Calculate Brackish Water Volumes

Task 3 has been subdivided into two subtasks. Progress on the subtasks is as follows:

Subtask 3.1: Extend Stratigraphy for the Hill Country Trinity

There has been no progress on this subtask.

Subtask 3.2: Determine Volumes of Fresh, Brackish, and Saline Groundwater

There has been no progress on this subtask.

Task 4: Delineate Potential Production Areas

There has been no progress on this task.

Task 5: Determine the Amount of Brackish Groundwater That Can Be Produced Without Causing Impact on Lateral and Vertical Fresh Water

There has been no progress on this task.

Task 6: Stakeholder Communication

There has been no progress on this task.

Task 7: Reporting

Please note that Task 7 budget is reported with Task 1 budget.

Task 7 has been subdivided into two subtasks. Progress on the subtasks is as follows:

Subtask 7.1: Project Monitoring Procedures

There has been no progress on this subtask.

Subtask 7.2: Project Deliverables

In May 2016, the Progress Report for April 2016 was submitted to TWDB.

3.0 Planned Activities for the Next Month

Task 1: Project Management

- Subcontracts for the two in-kind teaming partners, Edwards Aquifer Authority and the Bureau of Economic Geology, will be finalized in June.
- The division of labor between SwRI, the subcontractors, and the in-kind contributors will be determined, as well as the division of labor within the SwRI team.

Task 2: Data Acquisition and Method Development

Task 2 has been subdivided into four subtasks. Planned activities for the subtasks are as follows:

Subtask 2.1: Acquisition and Initial Analysis of Groundwater Samples

- We will begin to gather data on water quality during June. The aerial down-dip extent for the project domain is under evaluation. This evaluation will be ongoing for most of the project.
- Analysis of the groundwater data will be initiated in June.
- Spatial queries will begin on the Brackish Resources Aquifer Characterization System (BRACS) and TWDB databases.
- We will evaluate other sources of information, such as groundwater conservation districts, oil and gas databases, and water supply wells. We will initiate the project database of water quality data within the project domain.
- A project database of water quality data relevant to the project domain and preliminary hydrochemical facies analysis for project domain will be initiated.

Subtask 2.2: Acquisition and Initial Analysis of Geophysical Logs

- The geophysical logs acquired from TWDB will continue to be evaluated to determine which need to be digitized. Evaluation of geophysical logs will continue. The logs will be evaluated against the current Groundwater Availability Model (GAM). This evaluation will be conducted to determine which logs need to be digitized.
- We will begin to develop a database with spatial attributes of all available geophysical logs (e.g., BRACS, IHS, BEG) with care to adhere to BRACS format.
- Geophysical logs will be sent to Well Green Tech for digitization.
- Spatial queries will begin on BRACS/TWDB databases.
- Other sources of relevant information, including Groundwater Conservation Districts, Oil and Gas databases, water supply wells, Texas Commission on Environmental Quality (TCEQ) Public Supply, and United States Geological Survey (USGS) Produced Water databases, will be evaluated.

Subtask 2.3: Develop Technical Approach for Estimating Total Dissolved Solids From Geophysical Logs

- Preliminary assessment of methods for developing correlations between total dissolved solids (TDS) and geophysical logs will be initiated.
- Interpretation of geophysical logs for stratigraphy will begin as well as estimation of TDS/Salinity from logs. We will utilize water chemistry statistical tools or equivalent sources to correct TDS values for various chemical influences.

Subtask 2.4: Use Geophysical Log Interpretation to Analyze Stratigraphy and Map Fresh, Brackish, and Saline Groundwater

- We will use geophysical logs to map and quantify Trinity groundwater resources after evaluating well log quality. For the logs determined to be of good quality, we will digitize the spontaneous potential and resistivity curve(s). Progress on this subtask is expected to continue in June.

Task 3: Develop a Stratigraphic Framework Model of the Trinity Aquifer and Calculate Brackish Water Volumes

Task 3 has been subdivided into two subtasks. Planned activities for the subtasks are as follows:

Subtask 3.1: Extend Stratigraphy for the Hill Country Trinity

Progress on this subtask will begin in June with the initiation of the literature search.

Subtask 3.2: Determine Volumes of Fresh, Brackish, and Saline Groundwater

Evaluation of the relationship between electrical resistivity and fluid salinity will begin in June. It is recognized that articulating this relationship will be challenging due to the confounding influences of electrically conductive clay zones, but this work will be central to delineating the extent of brackish water in the Trinity Aquifer because geophysical logs will be the primary source of information used in this subtask.

Task 4: Delineate Potential Production Areas

No work on this task is expected to occur in June.

Task 5: Determine the Amount of Brackish Groundwater That Can Be Produced Without Causing Impact on Lateral and Vertical Fresh Water

No work on this task is expected to occur in June.

Task 6: Stakeholder Communication

No work on this task is expected to occur in June.

Task 7: Reporting

Task 7 has been subdivided into two subtasks. Planned activities for the subtasks are as follows:

Subtask 7.1: Project Monitoring Procedures

Project monitoring procedures will be prepared during June.

Subtask 7.2: Project Deliverables

The second progress report (covering progress in May 2016) will be submitted to TWDB.

4.0 Problems/Issues and Actions Required/Taken

No problems or issues were encountered in the month of May.