

**Monthly Letter Progress Report #3 – May 2016
Study of Brackish Aquifers in Texas – Project No. 3 –
Rustler Aquifer**

TWDB Contract No. 1600011949

Submitted to

**Texas Water Development Board
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Prepared by:



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1.0 Budget and Expenses

This report summarizes the project costs for the billing period of May 2016. The total expenses through May 2016 are \$78,077. A budget breakdown by tasks is provided in Table 1. A copy of the progress report has been sent to TWDB contracts department along with the monthly invoice.

TASK	DESCRIPTION	Budget	Invoices			Remaining Budget
			Current	Previous	Total	
1	Project Management	\$9,235	\$ 925	\$ 2,494	\$ 3,418	\$ 5,817
2	Delineate Vertical & Horizontal Extent of Fresh, Brackish & Saline Groundwater	\$97,688	\$ 14,128	\$ 30,003	\$ 44,130	\$ 53,558
3	Quantify Volume of Fresh, Brackish & Saline Groundwater	\$13,679	\$ 5,855	\$ 1,304	\$ 7,158	\$ 6,521
4	Delineate Potential Production Areas	\$20,532	\$ 2,300	\$ 5,928	\$ 8,228	\$ 12,304
5	Determine Availability	\$23,086	\$ 176	\$ 3,577	\$ 3,753	\$ 19,333
6	Final Report, Documentation & Technology Transfer	\$35,780	\$ 11,158	\$ 231	\$ 11,389	\$ 24,391
Total		\$200,000	\$ 34,541	\$ 43,537	\$ 78,077	\$ 121,923

Table 1. Project Budget Versus Expenses

2.0 Progress on Tasks

This report summarizes activities on project tasks through the month of May, 2016 and is the third progress report on this contract

Task 1 Project Management

INTERA Project Management activities have been focused on several items since INTERA was given the notice to proceed in January. Primary activities have included:

- In May the Carollo Engineers contract was finalized and submitted for TWDB review.

- The Project Manager has worked to organize project activities and make sure that the Methods Report was submitted in May.

Task 2 Delineate Vertical and Horizontal Extent of Brackish and Saline Groundwater

Task 2 has been subdivided into 6 subtasks. Progress made on the 6 subtasks is as follows:

Task 2.1 – Acquire and Digitize Geophysical Well Logs:

Dr. Powers finalized his review of the structure picks and his understanding of the member units as well as what we are interpreting as collapse.

Task 2.2 – Draft Techniques and Approaches Report and Meeting:

The Draft Methods Report was submitted to the TWDB on May 23rd for review. We had an initial meeting to discuss the report on May 31st.

Task 2.3 – Evaluate Structure and Lithology:

In May Dr. Powers finalized his review of the lithology and structural features.

Task 2.4 – Generate Surfaces Defining the Member Units of the Rustler:

In May we made continued progress on a methodology for developing structural surfaces for the transmissive member units and the Rustler as a whole.

Task 2.5 – Formation Parameter Sensitivity Analysis:

Dr. Torres-Verdin delivered preliminary results on 17 of the 25 key wells at the end of May as required by his scope of work. The preliminary results were incorporated into the draft Methods Report submitted to the TWDB on May 23rd.

Task 2.6 – Interpret Water Quality Based on Distribution of Resistivity:

In late May we started using the preliminary results from Dr. Torres-Verdin at key wells to augment the field measurements already collected.

Task 3 Quantify Volume of Fresh, Brackish and Saline Groundwater

Significant progress was made in May creating surfaces for the Rustler members considered water bearing. The creation of the surfaces is the bulk of the work for Task 3. Dr. Dr. Torres-Verdin has started the analysis of porosity logs (neutron, density and acoustic) in an attempt to better characterize our porosity distributions.

Task 4 Delineate Potential Production Areas

Task 4.1 - Refine Hydrostructural Model and Transmissivity Estimates

No additional progress was made on this task.

Task 4.2 – Map Hydrogeologic Barriers

No additional progress was made on this task.

Task 4.3 – Identify Protected Areas

INTERA made additional progress on identifying excluded areas in May specifically looking at groundwater use patterns in the aquifer and also investigating injection wells that could be completed within the Rustler.

Task 4.4 – Identify Potential Production Areas

No work was performed on this task in through May.

Task 4.5 – Potential Production Area Meeting with TWDB

No work was performed on this task in through May.

Task 5 Determine Availability of Brackish Groundwater in Potential Production Areas

John Ewing, author of the Rustler Groundwater Availability Model started development of scripts for application of the GAM in estimation of impacts.

Task 6 Final Report, Documentation and Technology Transfer

Reporting activities in May were focused on the development of the Draft Methods Report which was submitted on May 23rd.

3.0 Planned Activities for the Next Month

The project timeline is quite compressed on this project with a draft report due July 31st. The following section will define key expected activities that will be performed or completed in June of 2016.

Task 1 Project Management

In addition to standard project management activities, the following tasks will be performed in June as part of Project Management:

- The INTERA Team will meet with the TWDB to determine potential production areas (PPAs) after Stakeholder Meeting 2.
- All other activities will be focused on meeting project deliverables.

Task 2 Delineate Vertical and Horizontal Extent of Brackish and Saline Groundwater

Planned activities for task 2 are as follows:

Task 2.1 – Acquire and Digitize Geophysical Well Logs:

No work anticipated in this task in June.

Task 2.2 – Draft Techniques and Approaches Report and Meeting:

This work is complete. No work anticipated in this task in June.

Task 2.3 – Evaluate Structure and Lithology:

No work anticipated in this task in June.

Task 2.4 – Generate Surfaces Defining the Member Units of the Rustler:

No work anticipated in this task in June.

Task 2.5 – Formation Parameter Sensitivity Analysis:

Dr. Torres-Verdin has agreed to provide the necessary information to calculate brackish Potential Production Areas (PPAs) by the end of May. In order to provide that information Dr. Torres-Verdin will need to be close to or at completion with his formation parameter sensitivity analysis. Dr. Torres-Verdin provided some insight into his analysis in late April and is supporting the Methods Report.

Task 2.6 – Interpret Water Quality Based on Distribution of Resistivity:

Using the results and methods from Dr. Torres-Verdin we will develop estimates of TDS for all remaining resistivity logs.

Task 3 Quantify Volume of Fresh, Brackish and Saline Groundwater

This data required to support these calculations has largely been analyzed. We anticipate calculation of volumes in late June and early July.

Task 4 Delineate Potential Production Areas

Draft PPAs will be developed in June and we will meet with the TWDB after Stakeholder Meeting 2 to delete any PPAs from analysis.

Task 5 Determine Availability of Brackish Groundwater in Potential Production Areas

We expect to meet with the TWDB and discuss our approach to modeling in June. We also expect to have performed initial example calculations prior to meeting with the TWDB. Most of this work will fall in July.

Task 6 Final Report, Documentation and Technology Transfer

In June we will start working on the draft Final Report.

4.0 Problems/Issues and Actions Required/Taken

No problems or issues were encountered in April.

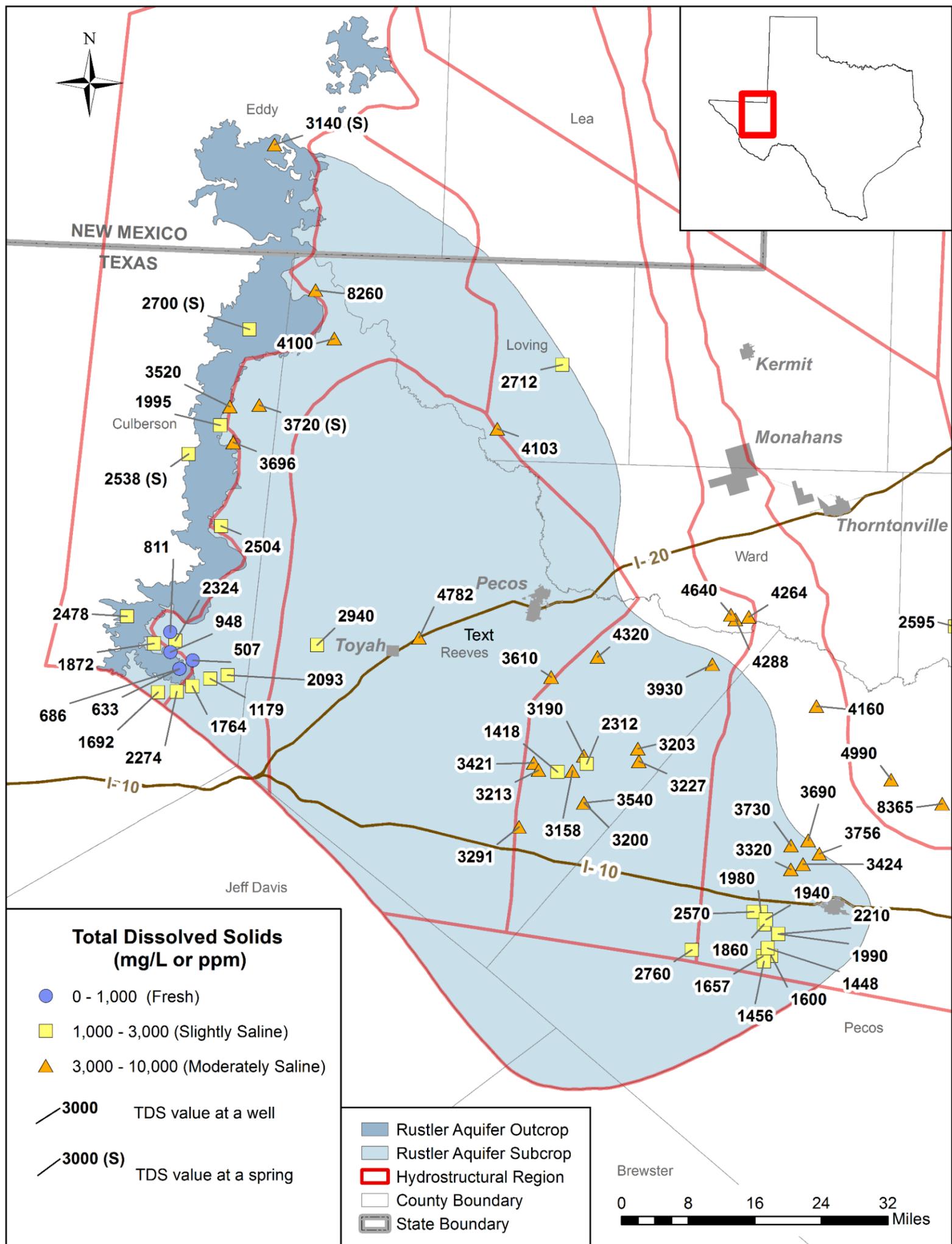


Figure 1 Distribution of water quality samples within the study area.