Monthly Letter Progress Report #3– June 2016

Study of Brackish Aquifers in Texas – Gulf Coast Aquifer

TWDB Contract No. 1600011947

Submitted to:

Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711

Prepared by:

INTERA Inc.
1812 Centre Creek Drive – Suite 300
Austin, Texas 78754
512/425-2000

June 23, 2016

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1.0 Budget and Expenses

This report summarizes the project costs for a billing period from 5/01/2016 to 5/31/2016. The total invoice is $77,481.91. The total expenditures to date are $208,922.51. 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.

Table 1. Planned and Incurred Expenses by Task Progress by Tasks

TASK	DESCRIPTION	Budget	Invoices			Remaining Budget
			Current	Previous	Total	
1	Project Management	$22,740.00	$0	$5,764.23	$5,764.23	$16,975.77
2	Delineate Fresh, Brackish, and Saline Groundwater	$196,650.00	$47,352.79	$95,061.74	$142,414.53	$54,235.47
3	Quantify Groundwater Volumes	$52,430.00	$9,061.09	$17,829.65	$26,890.74	$25,539.26
4	Delineate Brackish Groundwater Zones	$93,160.00	$10,350.00	$10,602.34	$20,952.34	$72,207.66
5	Stakeholder Communications	$11,815.00	$0	$201.45	$201.45	$11,613.55
6	Determine GW Brackish Groundwater Over 30-year and 50-year Periods	$92,690.00	$10,718.03	$1,981.19	$12,699.22	$79,990.78
7	Reporting and Deliverables	$30,515.00	$0	$0	$0	$30,515.00
Total		$500,000	$77,481.91	$131,440.60	$208,922.51	$291,077.49

Progress on tasks is reported through June 22nd.

Task 1 Project Management

Conducted teleconference with subcontractors.

Met with the TWDB Staff on June 21 to discuss comments on the draft presentation for the stakeholder meeting.

We have submitted a request to Mr. Nathan van Oort to increase our subcontractor budget by $3,501.

Met with TWDB and Texas Railroad Commission staff to discuss HB 30 on June 1st.

Task 2 Delineate Fresh, Brackish, and Saline Groundwater

Continued the process of obtaining logs, scanning logs, and digitizing logs. We have completed the digitizing the logs for use in the "water well-geophysical log" pairs to support the development of the Ro-TDS method. We have completed the digitizing approximately 90% of the logs that will be used to determine the quality of the Gulf Coast Aquifer System. We have digitized approximately 1,200 logs thus far.

We have completed a preliminary analysis of the data obtained from the 'water well-geophysical log" pairing and constructed interim graphs of Ro-TDS for most of the Gulf Coast formations. Several of these graphs were presented at the stakeholder meeting on June 22nd.

We have implemented a method to calculate TDS using the Rwa method using our digital logs and have applied the method to calculate base of groundwater with a TDS of 10,000 mg/l and 35,000 mg/L.

We have developed surfaces for base of fresh water based on TDS concentration measurements in approximately 9,000 wells in the TWDB groundwater database and from the Recommendation Picks for Superior water made by the Texas Railroad Commission.

Task 3 Quantify Groundwater Volumes

Our vendors and the INTERA team have reviewed approximately 200 geophysical logs to define the spatial pattern in porosity for the Gulf Coast Aquifer System. We have selected 35 logs for analysis and developed a porosity versus depth relationship using approximately 280 porosity measurements. There is considerable scatter in the data. Our relationship between porosity and depth is consistent with other similar relationship reported in the groundwater literature.

We continued work on the groundwater volume calculator. The aquifer structure is based on the chronographic stratigraphic analysis provided in recent TWDB reports by Young and others (2010, 2012). The spatial discretization consists of a uniform grid of 1-mile-by-1-mile grid cells.

Task 4 Delineate Groundwater Brackish Zones

Tom Ewing has completed a stratigraphic and hydrogeologic analysis of nine cross-sections along the Texas Gulf Coast. These nine cross-sections are comprised of three cross-sections per GMA. Dr. Ewing has identified sands and potential hydrogeological barriers on each cross section.

We identified potential production areas (PPAs) on eight of the nine cross-sections characterized by Tom Ewing. We have checked the location of PPAs against the location of permitted injection and disposal wells.

Task 5 Stakeholder Communications

We submitted a draft presentation to the TWDB on June 16.

We met with TWDB to discuss revision to the draft presentation on June 21. We submitted a revised presentation on June 22 and presented at the second stakeholder presentation on June 22 at the Travis Building in Austin Texas.

Task 6 Determine Volume of GW Brackish over 30-year and 50-year Periods

We continued work on the volume calculator. We have built the capability into the calculator to calculate volumes based on the formation surfaces developed by the TWDB (Young and others, 2010; 2012).

Task 7 Reporting and Deliverables

We delivered a draft technical report to the TWDB on June 13, 2016.

3.0 Planned Activities for the Next Month

Task 1 Project Management

Continue coordination with the TWDB and our subcontractors.

Task 2 Delineate Fresh, Brackish, and Saline Groundwater

Finalize Ro-TDS graphs and Rwa method for calculating groundwater. We will apply the necessary methods.

Task 3 Quantify Groundwater Volumes

Develop preliminary estimates of groundwater volumes for different water quality classification and review the calculations with TWDB staff.

Task 4 Delineate Potential Production Areas

Meet with the TWDB to finalize the PPAs. Simulate the drawdowns caused by pumping the PPAs.

Task 5 Stakeholder Communications

Receive and review comments from the stakeholder meeting.

Task 6 Reporting and Deliverables

Finalize the Technical Memo report and draft sections of the final report.

4.0 Problems/Issues and Actions Required/Taken

We still are about a week behind schedule because of delays with getting the log digitized. However, we have reached a point where the bottleneck is no longer with the vendor who digitized the logs and we will be able to catch up to make the July 31st deadline for the draft report.