

# GAM run 03-20

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Groundwater Availability Modeling Section  
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## **REQUESTOR:**

Mr. Ferrel Wheeler, Board President, Garza County U & FWCD

## **DESCRIPTION OF REQUEST:**

Mr. Wheeler requested the following information from the Southern Ogallala aquifer Groundwater Availability Model (GAM) for the Garza County Underground Fresh Water Conservation District (UFWCD):

- Water budget and
- Total available storage.

## **METHODS:**

To address the request, we:

- Ran the Southern Ogallala aquifer Groundwater Availability Model (Blandford and others, 2003) for the projected period 2000-2050 with average recharge and queried the budget files in Garza County for 2003-2014; and
- Estimated total aquifer storage in 2003.

## **PARAMETERS AND ASSUMPTIONS:**

None: Data request.

## **RESULTS:**

### **Recharge and Water budget**

Table 1 shows the water budget for the Southern Ogallala GAM model in Garza County for the years 2003-2014. Recharge values from the model are listed in the table.

## Aquifer Storage

The total volume of water stored in Garza County in the aquifer in 2003 from the Southern Ogallala GAM was 1.07 million acre-ft. This number was calculated by:

- subtracting the base elevation of the aquifer from the modeled 2003 water levels for each model cell,
- multiplying by the specific yield for the cell (ranging from 0.15 to 0.22), and the area of the cell (1 mi<sup>2</sup>), and
- summing over all of the cells in Garza County.

## REFERENCES:

Blandford, T. N., Blazer, D. J., Calhoun, K. C., Dutton, A. R., Naing, T., Reedy, R. C., and Scanlon, B. R., 2003, Groundwater Availability of the Southern Ogallala Aquifer in Texas and New Mexico; Numerical Simulations Through 2050: Final Report prepared for the Texas Water Development Board.

Year	In-to-Storage	Water from Storage	X-flow in	X-flow out	Wells	Springs and Seeps	Recharge	Total		% diff
								In	Out	
2003	7,848	1,172	2,714	10	2,890	1,910	8,775	12,662	12,658	0.03
2004	7,848	1,258	2,611	10	2,867	1,918	8,775	12,644	12,643	0.01
2005	7,843	36	2,504	10	1,460	1,927	8,703	11,243	11,239	0.03
2006	7,809	32	2,487	10	1,465	1,936	8,775	11,222	11,219	0.03
2007	7,778	29	2,473	10	1,469	1,945	8,703	11,205	11,202	0.03
2008	7,751	25	2,462	10	1,474	1,955	8,703	11,191	11,189	0.01
2009	7,723	22	2,453	10	1,478	1,965	8,703	11,179	11,176	0.02
2010	7,699	19	2,446	10	1,483	1,975	8,703	11,169	11,166	0.03
2011	7,685	17	2,441	10	1,478	1,985	8,703	11,161	11,159	0.02
2012	7,673	14	2,436	10	1,474	1,996	8,703	11,154	11,152	0.01
2013	7,659	12	2,433	10	1,470	2,007	8,703	11,148	11,145	0.03
2014	7,647	10	2,430	10	1,465	2,018	8,703	11,143	11,140	0.03

Notes:

1. **In-to-storage** refers to water put into storage
2. **Water from storage** refers to water withdrawn from storage
3. **X-flow in** refers to lateral flow into the county.
4. **X-flow out** refers to lateral flow out of the county.
5. **Wells** is for pumping input.