GAM run 04-02

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REQUESTOR:

TWDB Staff on behalf of Janet Guthrie of Hemphill Groundwater Conservation District

DESCRIPTION OF REQUEST:

What pumping rate will limit aquifer volume depletion to no more than 1 percent per year?

METHODS:

To address the request, we:

- Extracted saturated thickness information from the Northern Ogallala Groundwater Availability Model (GAM) for Hemphill County,
- Calculated total volume of water in storage in Hemphill County, and
- Estimated maximum pumping rate from:

$$\frac{\text{Total aquifer volume} * \text{Specific Yield} * 0.01}{\text{area}}$$

PARAMETERS AND ASSUMPTIONS:

Production rates in surrounding counties will not change significantly over time.

RESULTS

Volumes and estimated pumping rate are shown in Table 1. The estimated pumping rate to allow no more than 1 percent depletion per year is 0.26 acre-ft/acre/year.

Table 1. Aquifer volume and estimated pumping rate

Total aquifer volume (acre-ft)	Specific yield	Area of Hemphill County (acre)	Total water volume (acre-ft)	Pumping rate (acre-ft/acre/year)
91,351,000	0.17	595,200	15,529,670	0.26

REFERENCES:

Dutton, A.R., Reedy, R.C., and Mace, R.E., 2001, Saturated thickness in the Ogallala aquifer in the Panhandle Water Planning Area – Simulation of 2000 through 2050 withdrawal projections: Final Report Prepared for the Panhandle Water Planning Group, Panhandle Regional Planning Commission by the Bureau of Economic Geology.