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by **Robert E. Mace**

Texas Water Development Board
Groundwater Availability Modeling Section
(512) 463-7847
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REQUESTOR:

Mr. Marshall Jennings, Hays-Trinity Groundwater Conservation District
Mr. Ron Fiesler, Blanco-Pedernales Groundwater Conservation District

DESCRIPTION OF REQUEST:

What is the county-by-county water budget in the Hill County Trinity model?

METHOD:

Ran the steady-state model for the Hill Country Trinity aquifer (Mace and others, 2001) and queried the budget files for each aquifer layer in each county.

PARAMETERS AND ASSUMPTIONS:

None: Data request.

RESULTS:

See attached table.

REFERENCES:

Mace, R. E., Chowdhury, A. H., Anaya, R., and Way, S.-C., 2000, Groundwater availability of the Middle Trinity aquifer, Hill Country area, Texas- Numerical simulations through 2050: Texas Water Development Board Report 353, 117 p.

County flow budget from the Hill Country Trinity aquifer model (Mace and others, 2000) for the steady state model in 1975, AFY

County	Lyr	Recharge	Rivers	GHB	Lakes	Storage	Wells	X-flow in	X-flow out	upper		lower		Total in	Total out	% dif
										Z-flow in	Z-flow out	Z-flow in	Z-flow out			
Bandera	1	12,200	-14,200	0	0	200	-100	2,500	-100	0	0	0	-500	15,000	-15,000	-0.02
	2	37,800	-14,200	-400	-700	400	-100	5,200	-13,200	500	0	0	-15,200	43,800	-43,800	0.01
	3	5,100	-17,000	-700	0	-200	-400	10,300	-12,300	15,200	0	0	0	30,600	-30,700	0.08
	all	55,200	-45,400	-1,100	-700	400	-700	18,000	-25,600	15,700	0	0	-15,700	89,400	-89,500	0.03
Bexar	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	9,700	-2,100	-10,200	0	0	-100	6,100	-2,100	0	0	0	-1,200	15,900	-15,900	0.00
	3	1,400	0	-8,100	0	-100	-700	9,200	-2,900	1,200	0	0	0	11,900	-11,900	0.00
	all	11,000	-2,100	-18,300	0	-100	-800	15,400	-5,100	1,200	0	0	-1,200	27,700	-27,700	0.00
Blanco	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	20,100	-14,200	0	0	100	-100	3,700	-1,800	0	0	0	-7,800	23,900	-23,900	-0.03
	3	9,300	-10,800	0	0	-100	-200	4,400	-10,400	7,800	0	0	0	21,500	-21,600	0.08
	all	29,400	-25,000	0	0	0	-300	8,100	-12,300	7,800	0	0	-7,800	45,400	-45,400	0.02
Comal	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	13,900	-1,000	-9,000	-100	0	-100	2,400	-3,000	0	0	100	-3,400	16,700	-16,700	0.00
	3	11,900	-7,700	-4,700	-2,700	-100	-500	9,900	-9,400	3,400	-100	0	0	26,900	-26,900	0.00
	all	25,900	-8,600	-13,700	-2,800	-100	-700	12,300	-12,300	3,400	-100	100	-3,400	43,600	-43,600	0.00
Gillespie	1	11,600	8,800	0	0	0	500	1,100	-1,200	0	0	0	-2,200	12,900	-12,900	-0.02
	2	4,900	-300	0	0	0	-100	100	-2,100	2,200	0	0	-4,700	7,200	-7,200	0.01
	3	7,100	-5,100	0	0	200	-600	0	-6,400	4,700	0	0	0	12,100	-12,100	0.26
	all	23,700	3,400	0	0	100	-100	1,200	-9,700	6,900	0	0	-6,900	32,200	-32,300	0.09
Hays	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	27,000	-16,100	-3,800	0	0	-100	2,500	-1,700	0	0	100	-8,000	29,700	-29,700	0.00
	3	5,900	-12,400	-4,600	0	-200	-600	8,400	-4,300	8,000	-100	0	0	22,300	-22,300	0.00
	all	33,000	-28,500	-8,400	0	-200	-700	10,900	-6,100	8,000	-100	100	-8,000	52,000	-52,000	0.00
Kendall	1	6,200	-5,900	0	0	0	-100	100	-200	0	0	0	0	6,300	-6,300	-0.04
	2	27,000	-5,000	0	0	-100	-300	1,800	-8,400	0	0	0	-15,000	28,900	-28,900	0.00
	3	16,800	-28,600	0	0	0	-1,400	8,200	-10,000	15,000	0	0	0	40,200	-40,200	0.01
	all	49,900	-39,500	0	0	-100	-1,800	10,100	-18,600	15,100	0	0	-15,100	75,400	-75,400	0.00

County	Lyr	Recharge	Rivers	GHB	Lakes	Storage	Wells	X-flow in	X-flow out	upper Z-flow in	upper Z-flow out	lower Z-flow in	lower Z-flow out	Total in	Total out	% dif
Kerr	1	28,900	-24,200	0	0	1,300	-400	1,400	-3,300	0	0	0	-3,600	31,600	-31,600	-0.01
	2	17,400	-15,100	0	0	400	-100	2,900	-1,800	3,600	0	100	-7,500	24,500	-24,500	0.07
	3	0	0	0	0	-100	-500	3,700	-10,700	7,500	-100	0	0	11,300	-11,400	0.78
	all	46,400	-39,300	0	0	1,600	-900	8,000	-15,800	11,100	-100	100	-11,100	67,300	-67,400	0.15
Kimble	1	200	0	0	0	0	0	0	-200	0	0	0	-100	300	-300	0.00
	2	0	0	0	0	0	0	0	-100	100	0	0	0	100	-100	0.01
	3	0	0	0	0	0	0	0	-100	0	0	0	0	100	-100	0.96
	all	200	0	0	0	0	0	100	-300	100	0	0	-100	400	-400	0.18
Medina	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	10,000	-4,200	-5,100	-5,400	0	-100	9,600	-3,600	0	0	100	-1,200	19,700	-19,700	0.00
	3	0	0	-10,000	0	0	-100	10,500	-1,400	1,200	-100	0	0	11,800	-11,800	0.01
	all	10,000	-4,200	-15,100	-5,400	0	-300	20,100	-5,000	1,200	-100	100	-1,200	31,600	-31,600	0.00
Travis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	13,200	-5,300	-1,400	-1,000	0	-200	1,300	-800	0	0	0	-5,900	14,600	-14,600	0.00
	3	2,300	-1,400	-1,500	-7,000	-100	-1,300	3,300	-200	5,900	0	0	0	12,100	-12,100	0.02
	all	15,500	-6,700	-2,900	-8,000	-100	-1,500	4,600	-1,000	5,900	0	0	-5,900	26,600	-26,600	0.01
Uvalde	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	2	2,700	-4,200	-1,100	0	0	0	2,900	0	0	0	0	-100	5,500	-5,500	0.00
	3	0	0	-300	0	0	0	800	-500	100	0	0	0	900	-900	0.10
	all	2,700	-4,200	-1,500	0	0	-100	3,600	-500	100	0	0	-100	6,400	-6,400	0.01
Sum:		302,800	-200,300	-61,000	-16,900	1,700	-7,900	112,300	-112,300	76,500	-400	400	-76,500	498,100	-498,300	0.04

Notes:

1. Units are in acre-ft/yr.
2. Layer 1: Edwards plateau aquifer.
3. Layer 2: upper Trinity aquifer.
4. Layer 3: middle Trinity aquifer.
5. All: sum of layers 1,2, and 3.
6. **Rivers** includes rivers, streams, and springs.
7. **GHB** refers to flow out of the Hill Country area to the south and east.
8. **X-flow in** refers to lateral flow into the county.
9. **X-flow out** refers to lateral flow out of the county.
10. **upper - Z-flow in** refers to flow into the layer from the layer above.
11. **upper - Z-flow out** refers to flow out of the layer into the layer above.
12. **lower - Z-flow in** refers to flow into the layer from the layer below.
13. **lower - Z-flow out** refers to flow out of the layer into the layer below.
14. **Wells** is for 1975 pumping.
15. A negative sign refers to flow out of the layer in the county.
16. A positive sign refers to flow into the layer in the county.
17. Values are rounded to the nearest 100 acre-ft.

Mace, R. E., Chowdury, A. H., Anaya, R., and Way, S.-C., 2000, Groundwater availability of the Middle Trinity aquifer, Hill Country area, Texas- Numerical simulations through 2050: Texas Water Development Board Final Report, 169 p.