GAM Run 09-034

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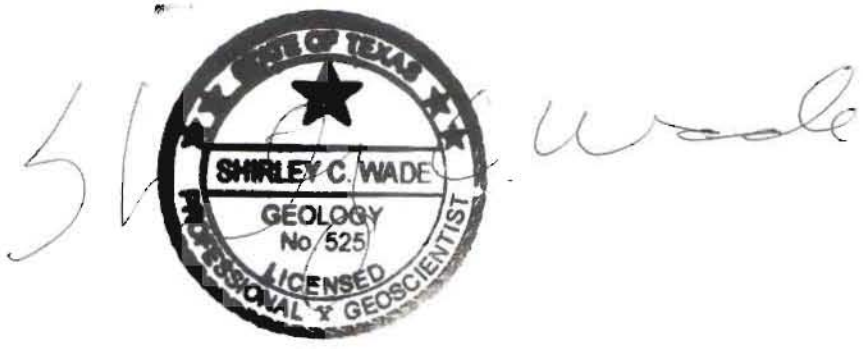

EXECUTIVE SUMMARY:

Four pumping scenarios for Groundwater Management Area 13 (GMA 13) were run using the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers. Groundwater Management Area 13 members specified pumping amounts and distributions for the base scenario (scenario 1) in the run request to help them develop their desired future conditions for the Queen City, Sparta, and Carrizo-Wilcox aquifers. Total pumping amounts for the four scenarios range from about 402,000 acre-feet per year for the base scenario (scenario 1) to 425,000 acre-feet per year for scenario 4. The overall Groundwater Management Area-wide average drawdown for scenarios 1 and 2 is 22 feet and the overall Groundwater Management Area-wide average drawdown for scenarios 3 and 4 is 23 feet.

REQUESTOR:

Mr. Mike Mahoney from the Evergreen Underground Water Conservation District acting on behalf of Groundwater Management Area 13.

DESCRIPTION OF REQUEST:

Mr. Mahoney requested a model run using the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers. This model run is a 61-year simulation using initial water levels from the end of the historic calibration period and average recharge conditions. Each year of the model run includes pumpage specified by the members of Groundwater Management Area 13.

In addition to the requested base scenario (scenario 1), we also ran three alternate scenarios, one with additional pumping in western Gonzales County (scenario 2), one with additional pumping in southeastern Caldwell County (scenario 3), and a combination of scenarios 2 and 3 (scenario 4).

METHODS AND RESULTS:

Groundwater Management Area 13, located in south central Texas, includes the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers (Figure 1). For the simulation we used average recharge and evapotranspiration rates and initial streamflows based on the historic calibration-verification runs, representing 1981 to 1999. These averages were then used for each year of the 61-year predictive simulations along with the specified pumpage (Table 1). Details on parameters and assumptions for the model can be found in previous reports (Kelley and others, 2004; Deeds and others, 2003; Donnelly, 2007a,b,c; and Wade, 2008a,b,c).

Pumping amounts and locations for the model run were provided by the groundwater district members and their representatives for scenario 1 (Table 1). The pumping represents both distributed pumping and specified point locations. Scenario 2 includes an additional 5,688 acre-feet per year at specified point locations in western Gonzales County. Scenario 3

includes an additional 16,000 acre-feet per year at specified point locations in southeastern Caldwell County and 4,000 acre-feet per year at two additional point locations not included in scenarios 1 and 2. Scenario 4 combines pumping from scenarios 1, 2, and 3.

The overall Groundwater Management Area-wide average drawdown for scenarios 1 and 2 is 22 feet (Tables 2 and 3). The overall Groundwater Management Area-wide average drawdown for scenarios 3 and 4 is 23 feet (Table 4 and 5). An overall Wilcox average drawdown was calculated for model layers 6, 7, and 8 because in some locations the model layers do not necessarily exclusively represent the individual Upper, Middle, and Lower Wilcox aquifers. For example, in Gonzales County the Upper Wilcox is missing and Layer 6 represents the upper portion of the Middle Wilcox (Deeds and others, 2003). The amount of pumping used in the model is less than requested pumpage in some counties due to cells going dry (Tables 1, 2, 3, 4, and 5). Dry cells significantly reduce pumpage in Uvalde County and to a lesser degree in Caldwell, Guadalupe, Medina, and Zavala counties. Tables of total pumping and average drawdown for each groundwater conservation district are presented in Appendix A.

In addition to the four scenarios, the model was run for each scenario with pumping scaled by 70 percent, 80 percent, 90 percent, 110 percent, 120 percent and 130 percent and drawdowns were calculated for the scaled scenarios (28 total runs; Figure 2 and Appendix B).

The model water budgets for Groundwater Management Area 13 list the balance of water inflows to and outflows from the aquifers (Tables 6, 7, 8, and 9). Plots of the water budget terms through time for scenarios 1 and 4 are shown in Appendix C. Water budgets for each groundwater conservation district and the remaining counties are shown in Appendix D. The components of the water budget are described below:

- Recharge—simulates areally distributed recharge due to precipitation falling on the outcrop (where the aquifer is exposed at land surface) areas of aquifers. Recharge is always shown as “Inflow” into the water budget.

- Reservoirs and Streams—water that flows between streams and reservoirs and an aquifer. The direction and amount of flow depends on the water level in the stream or reservoir and the aquifer. In areas where water levels in the stream or reservoir are above the water level in the aquifer, water flows into the aquifer and is shown as “Inflow” in the budget. In areas where water levels in the aquifer are above the water level in the stream or reservoir, water flows out of the aquifer and into the stream and is shown as “Outflow” in the budget. Reservoir and streams are modeled in the model using the MODFLOW Stream and River packages.

- Vertical leakage—describes the vertical flow, or leakage, between two layers (aquifers or confining units) in the model. This flow is controlled by the water levels in each of the layers and aquifer properties of each layer that define the amount of leakage that can occur. “Inflow” to an aquifer from an overlying or underlying layer will always equal the “Outflow” from the other layer.

- Lateral flow—describes lateral flow within an aquifer between a county and adjacent counties.

- Wells—water produced from wells in each aquifer. In the model this component is always shown as "Outflow" from the water budget, because all wells included in the model produce (rather than inject) water. Wells are simulated in the model using the MODFLOW Well package. It is important to note that values in Appendix A for wells in the water budget may not precisely match the pumpage amounts requested in Tables 1 and 2 because of dry cells and slight deviations generated by the programs written to create the well package.

- Springs—water that naturally discharges from an aquifer when water levels rise above the elevation of the spring. This component is always shown as "Outflow", or discharge, from the water budget. Spring flows are simulated in the model using the MODFLOW Drain package.

- Evapotranspiration—water that flows out of an aquifer due to direct evaporation and plant transpiration. This component of the budget will always be shown as "Outflow". Evapotranspiration is modeled in the model using the MODFLOW Evapotranspiration (EVT) package.

- Storage—water stored in the aquifer. The storage component that is included in "Inflow" is water that is removed from storage in the aquifer (that is, water levels decline). The storage component that is included in "Outflow" is water that is added back into storage in the aquifer (that is, water levels increase). This component of the budget is often seen as water both going into and out of the aquifer because this is a regional budget, and water levels will decline in some areas (water is being removed from storage) and will rise in others (water is being added to storage).

- General-Head Boundary (GHB)—The model uses general head boundaries to simulate groundwater flow across the northeastern lateral aquifer boundaries and vertical movement of groundwater between the Sparta Aquifer (layer 1) and younger sediments that overlie the Sparta Aquifer in the downdip portions (areas where the layer is confined or covered by other aquifers or geologic formations) are simulated using general head boundaries.

Groundwater management area members also requested maps of drawdown distribution in the southwest and northeast portions of the model area for each scenario and model layer. Those maps are shown in Appendix E. It should be noted that drawdown maps for layer 6 or the Upper Wilcox are not shown because in much of the model area the Upper Wilcox is missing and Layer 6 represents the upper portion of the Middle Wilcox (Deeds and others, 2003).

REFERENCES:

Deeds, N., Kelley, V., Fryar, D., Jones, T., Whallon, A. J., and Dean, K. E., 2003, Groundwater Availability Model for the Southern Carrizo-Wilcox Aquifer: contract report to the Texas Water Development Board, 452 p.

Donnelly, A.C.A., 2007a, GAM Run 06-29, Texas Water Development Board GAM Run Report, 59 p.

Donnelly, A.C.A., 2007b, GAM Run 07-16, Texas Water Development Board GAM Run Report, 63 p.

Donnelly, A.C.A., 2007c, GAM Run 07-17, Texas Water Development Board GAM Run Report, 38 p.

Kelley, V. A., Deeds, N. E., Fryar, D. G., and Nicot, J. P., 2004, Groundwater availability models for the Queen City and Sparta aquifers: contract report to the Texas Water Development Board, 867 p.

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Wade S.C., 2008b, GAM Run 08-42, Texas Water Development Board GAM Run Report, 56 p.

Wade S.C., 2008c, GAM Run 08-43, Texas Water Development Board GAM Run Report, 58 p.

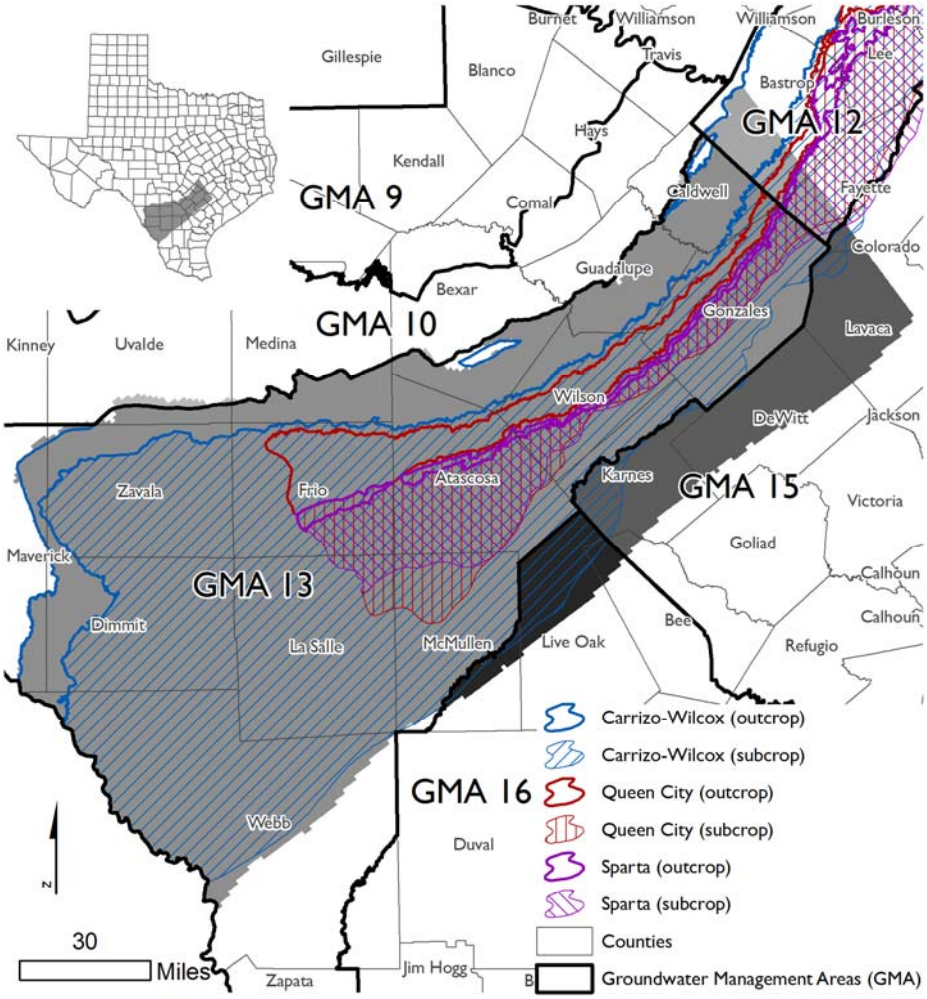


Figure 1. Location map showing Groundwater Management Area 13 and the southern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers.

Table 1. Groundwater Management Area 13 requested pumpage

Groundwater Conservation District or County	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Evergreen UWCD	1,756	9,030	157,768	375	375	34,000	203,304
Bexar County	0	0	10,013	0	0	17,000	27,013
Caldwell County (non-GCD)	0	0	0	0	497	427	924
Gonzales County UWCD base scenario (1)	3,552	5,372	49,642	0	12,267	20,062	90,985
Gonzales County UWCD scenario 2	3,552	5,372	55,330	0	12,267	20,062	96,583
Gonzales County UWCD scenario 3	3,552	5,372	69,642	0	12,267	20,062	110,895
Gonzales County UWCD scenario 4	3,552	5,372	75,330	0	12,267	20,062	116,583
Guadalupe County GCD	0	0	9,500	0	3,240	1,608	14,348
McMullen GCD	100	150	2,000	0	0	0	2,250
Maverick County	0	0	596	276	856	1570	3,298
Medina County GCD	0	0	400	0	1,250	1,250	2,900
Plum Creek CD	0	0	0	0	5,189	10,063	15,253
Uvalde County UWCD	0	0	1,250	3,750	0	0	5,000
Webb County	0	0	896	13	6	1	916
Wintergarden GCD	987	1	32,499	9,415	4,007	465	47,374
Total scenario 1	6,395	14,553	264,564	13,829	27,687	86,516	413,068
Total scenario 2	6,395	14,553	270,252	13,829	27,687	86,516	418,666
Total scenario 3	6,395	14,553	284,564	13,829	27,687	86,516	432,978
Total scenario 4	6,395	14,553	290,252	13,829	27,687	86,516	438,666

Note: For the Carrizo aquifer, the Plum Creek Conservation District total is included in the Gonzales Underground Water Conservation District so the same pumping is not listed twice.

Table 2. Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 1

County	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Atascosa	994	4,202	58,308	250	250	17,000	81,004
Bexar	0	0	9,107	0	0	17,000	26,107
Caldwell	0	307	5,209	0	7,372	13,441	26,329
Dimmit	0	0	2,188	991	142	38	3,359
Frio	601	3,983	70,030	0	0	0	74,614
Gonzales	3,552	5,065	44,433	0	9,577	16,272	78,899
Guadalupe	0	0	9,500	0	2,994	1,549	14,043
Karnes (GMA 13)	0	0	1,280	0	0	0	1,280
Karnes (GMA 15)	0	0	601	0	0	0	601
La Salle	987	1	4,263	1,952	189	50	7,442
Maverick	0	0	143	136	259	992	1,530
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina	0	0	400	0	1,248	886	2,534
Uvalde	0	0	828	0	0	0	828
Webb	0	0	896	13	6	1	916
Wilson	140	845	27,549	125	121	17,000	45,780
Zavala	0	0	24,649	6,316	3,676	328	34,969
Total (GMA 13)	6,364	14,539	260,602	9,783	25,834	84,557	401,679

Groundwater Management Area 13 drawdowns in feet - scenario 1

County	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox	Overall
Atascosa	10	13	14	42	73	73	85	145	101	62
Bexar	0	0	0	8	63	47	37	135	94	90
Caldwell	0	0	3	6	50	50	49	64	57	51
Dimmit	-2	3	-4	-14	-17	-17	-22	-18	-19	-15
Frio	4	3	-3	19	39	38	31	35	35	24
Gonzales	18	22	26	47	72	72	83	81	78	55
Guadalupe	0	0	-11	5	48	46	20	31	29	30
Karnes	16	24	31	55	78	77	58	87	74	53
La Salle	7	8	9	11	12	12	-1	-9	1	6
Maverick	0	0	0	1	-8	-12	-11	-3	-7	-7
McMullen	25	29	32	38	45	43	12	9	21	29
Medina	0	0	0	-1	29	29	28	28	28	28
Uvalde	0	0	0	0	1	0	12	30	22	19
Webb	-7	-4	-9	-5	-4	-3	-1	-3	-2	-4
Wilson	7	13	12	40	70	70	76	152	100	65
Zavala	-7	-5	-13	-14	2	0	-5	-3	-3	-5
Overall	8	11	6	15	28	28	24	38	30	22

Table 3. Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 2

County	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Atascosa	994	4,202	58,308	250	250	17,000	81,004
Bexar	0	0	9,107	0	0	17,000	26,107
Caldwell	0	307	5,209	0	7,372	13,441	26,329
Dimmit	0	0	2,188	991	142	38	3,359
Frio	601	3,983	70,030	0	0	0	74,614
Gonzales	3,552	5,065	50,121	0	9,577	16,272	84,587
Guadalupe	0	0	9,500	0	2,994	1,549	14,043
Karnes (GMA 13)	0	0	1,280	0	0	0	1,280
Karnes (GMA 15)	0	0	601	0	0	0	601
La Salle	987	1	4,263	1,952	189	50	7,442
Maverick	0	0	143	136	259	992	1,530
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina	0	0	400	0	1,248	886	2,534
Uvalde	0	0	828	0	0	0	828
Webb	0	0	896	13	6	1	916
Wilson	140	845	27,549	125	121	17,000	45,780
Zavala	0	0	24,649	6,316	3,676	328	34,969
Total (GMA 13)	6,364	14,539	266,290	9,783	25,834	84,557	407,367

Groundwater Management Area 13 drawdowns in feet - scenario 2

County	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox	Overall Overall
Atascosa	10	13	15	43	74	73	85	145	101	62
Bexar	0	0	0	8	64	48	37	136	94	90
Caldwell	0	0	3	7	52	51	49	64	57	52
Dimmit	-2	3	-4	-14	-17	-17	-22	-18	-19	-15
Frio	4	3	-3	19	39	38	31	35	35	24
Gonzales	19	24	29	52	80	80	85	81	82	59
Guadalupe	0	0	-11	5	53	50	20	31	30	32
Karnes	17	26	34	59	84	83	61	88	77	56
La Salle	7	8	9	11	12	12	-1	-9	1	6
Maverick	0	0	0	1	-8	-12	-11	-3	-7	-7
McMullen	25	29	32	39	45	44	12	9	22	29
Medina	0	0	0	-1	29	29	28	28	28	28
Uvalde	0	0	0	0	1	0	12	30	22	19
Webb	-7	-4	-9	-5	-4	-3	-1	-3	-2	-4
Wilson	7	13	13	42	74	74	77	152	102	67
Zavala	-7	-5	-13	-14	2	0	-5	-3	-3	-5
Overall	9	11	6	16	30	29	25	38	31	22

Table 4. Groundwater Management Area 13 pumpage in acre feet per year used in model - scenario 3

County	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Atascosa	994	4,202	58,308	250	250	17,000	81,004
Bexar	0	0	9,107	0	0	17,000	26,107
Caldwell	0	307	22,809	0	7,372	13,441	43,929
Dimmit	0	0	2,188	991	142	38	3,359
Frio	601	3,983	70,030	0	0	0	74,614
Gonzales	3,552	5,065	44,433	0	9,577	16,272	78,899
Guadalupe	0	0	9,500	0	2,994	1,549	14,043
Karnes (GMA 13)	0	0	1,280	0	0	0	1,280
Karnes (GMA 15)	0	0	601	0	0	0	601
La Salle	987	1	4,263	1,952	189	50	7,442
Maverick	0	0	143	136	259	992	1,530
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina	0	0	400	0	1,248	886	2,534
Uvalde	0	0	828	0	0	0	828
Webb	0	0	896	13	6	1	916
Wilson	140	845	27,549	125	121	17,000	45,780
Zavala	0	0	24,649	6,316	3,676	328	34,969
Total (GMA 13)	6,364	14,539	278,202	9,783	25,834	84,557	419,279

Groundwater Management Area 13 drawdowns in feet - scenario 3

County	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox	Overall
Atascosa	10	13	14	42	73	73	85	145	101	62
Bexar	0	0	0	8	63	47	37	135	94	90
Caldwell	0	0	5	15	95	91	51	65	64	63
Dimmit	-2	3	-4	-14	-17	-17	-22	-18	-19	-15
Frio	4	3	-3	19	39	38	31	35	35	24
Gonzales	20	25	30	55	85	85	86	81	84	61
Guadalupe	0	0	-11	5	49	47	20	31	29	31
Karnes	16	25	32	56	79	79	59	87	75	54
La Salle	7	8	9	11	12	12	-1	-9	1	6
Maverick	0	0	0	1	-8	-12	-11	-3	-7	-7
McMullen	25	29	32	38	45	43	12	9	21	29
Medina	0	0	0	-1	29	29	28	28	28	28
Uvalde	0	0	0	0	1	0	12	30	22	19
Webb	-7	-4	-9	-5	-4	-3	-1	-3	-2	-4
Wilson	7	13	13	40	71	71	76	152	100	66
Zavala	-7	-5	-13	-14	2	0	-5	-3	-3	-5
Overall	9	11	6	16	30	29	25	38	31	23

Table 5. Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 4

County	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Atascosa	994	4,202	58,308	250	250	17,000	81,004
Bexar	0	0	9,107	0	0	17,000	26,107
Caldwell	0	307	22,809	0	7,372	13,441	43,929
Dimmit	0	0	2,188	991	142	38	3,359
Frio	601	3,983	70,030	0	0	0	74,614
Gonzales	3,552	5,065	50,121	0	9,577	16,272	84,587
Guadalupe	0	0	9,500	0	2,994	1,549	14,043
Karnes (GMA 13)	0	0	1,280	0	0	0	1,280
Karnes (GMA 15)	0	0	601	0	0	0	601
La Salle	987	1	4,263	1,952	189	50	7,442
Maverick	0	0	143	136	259	992	1,530
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina	0	0	400	0	1,248	886	2,534
Uvalde	0	0	828	0	0	0	828
Webb	0	0	896	13	6	1	916
Wilson	140	845	27,549	125	121	17,000	45,780
Zavala	0	0	24,649	6,316	3,676	328	34,969
Total (GMA 13)	6,364	14,539	283,890	9,783	25,834	84,557	424,967

Groundwater Management Area 13 drawdowns in feet - scenario 4

County	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox Overall	Overall
Atascosa	10	13	15	43	74	74	85	145	102	62
Bexar	0	0	0	8	64	48	37	136	94	90
Caldwell	0	0	5	16	97	93	52	65	64	63
Dimmit	-2	3	-4	-14	-17	-17	-22	-18	-19	-15
Frio	4	3	-3	19	39	38	31	35	35	24
Gonzales	21	26	32	60	94	94	88	82	88	65
Guadalupe	0	0	-11	5	54	52	20	31	30	32
Karnes	17	27	34	60	85	85	61	88	78	57
La Salle	7	8	9	11	12	12	-1	-9	1	6
Maverick	0	0	0	1	-8	-12	-11	-3	-7	-7
McMullen	25	29	32	39	45	44	12	9	22	29
Medina	0	0	0	-1	29	29	28	28	28	28
Uvalde	0	0	0	0	1	0	12	30	22	19
Webb	-7	-4	-9	-5	-4	-3	-1	-3	-2	-4
Wilson	7	13	13	43	75	75	78	153	102	68
Zavala	-7	-5	-13	-14	2	0	-5	-3	-3	-5
Overall	9	11	7	17	31	31	25	38	31	23

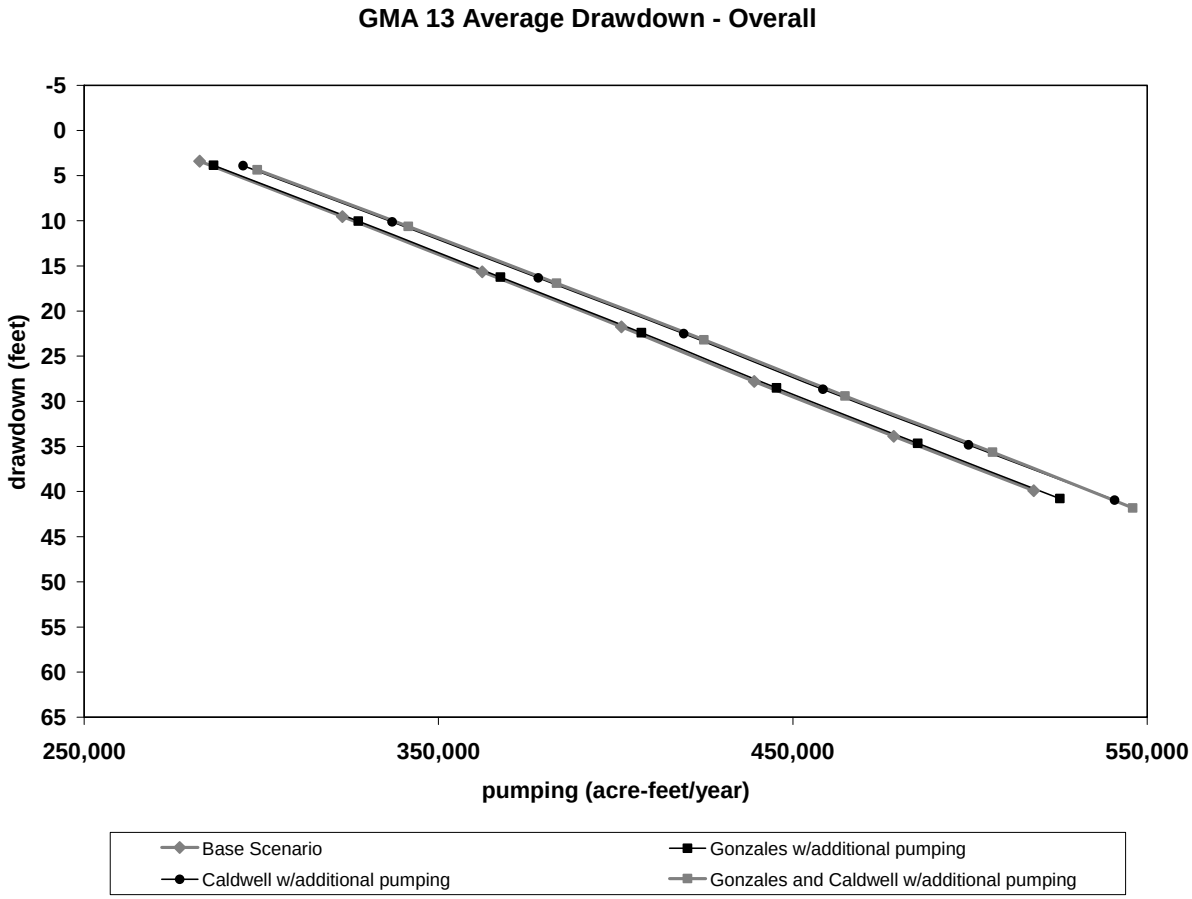


Figure 2. Overall average drawdown for Groundwater Management Area 13 based on the four model scenarios with pumping scaled. From left to right each point on the lines represents pumping scaled by 70, 80, 90, 100, 110, 120, and 130 percent.

Table 6. Water Budget for Scenario 1.

GMA 13 Scenario 1 2060 Water Budget (acre-feet per year)									
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**	**Total**
Recharge	24,857	3,468	66,405	6,193	61,840	1,251	20,820	18,560	203,394
Stream Losses	5,366	1,891	59,545	9,675	24,037	156	20,285	10,393	131,349
Reservoir Losses	0	0	0	0	0	0	1,801	0	1,801
Vertical Leakage from upper unit	0	31,536	34,287	73,772	88,592	22,022	8,286	35,555	294,050
Vertical Leakage from lower unit	9,300	7,902	1,048	538	29,067	22,623	16,397	0	86,875
Lateral inflows from adjacent GMAs	470	280	1,003	367	19,155	522	4,141	16,408	42,347
Vertical flow from younger units	28,237	0	0	0	0	0	0	0	28,237
Total inflows	*68,230*	*45,077*	*162,288*	*90,544*	*222,691*	*46,574*	*71,730*	*80,917*	*788,051*
Outflow									
Wells	6,364	0	14,539	0	260,603	9,783	25,834	84,494	401,616
Springs	148	59	0	0	0	0	62	384	653
Evapotranspiration	2,866	293	1,561	1,625	124	69	159	1,250	7,947
Stream Gains	7,106	534	20,360	3,189	247	359	7,975	1,692	41,462
Reservoir Gains	0	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	9,300	7,902	1,048	538	29,067	22,623	16,397	86,875
Vertical Leakage to lower unit	31,536	34,287	73,772	88,592	22,022	8,286	35,555	0	294,050
Vertical flow to younger units	20,221	0	0	0	0	0	0	0	20,221
Lateral outflows to adjacent GMAs	61	60	192	145	1,868	155	61	1,051	3,593
Total outflows	*68,303*	*44,532*	*118,325*	*94,600*	*285,401*	*47,718*	*92,270*	*105,267*	*856,416*
Inflows - outflows	-73	545	43,963	-4,056	-62,710	-1,144	-20,540	-24,350	-68,365
change in storage	71	-546	-43,969	4,053	62,710	1,144	20,540	24,351	68,354
Model Error (acre-feet)	-2	-1	-6	-3	0	0	0	1	-12
Model Error (percent)	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00

Table 7. Water Budget for Scenario 2.

	GMA 13 scenario 2 2060 Water Budget (acre-feet per year)								
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**	**Total**
Recharge	24,857	3,468	66,405	6,193	61,840	1,251	20,820	18,560	203,394
Stream Losses	5,373	1,907	59,571	9,739	24,705	156	20,332	10,402	132,185
Reservoir Losses	0	0	0	0	0	0	1,801	0	1,801
Vertical Leakage from upper unit	0	31,658	34,473	74,896	90,005	21,937	8,163	35,492	296,624
Vertical Leakage from lower unit	8,937	7,538	910	428	29,436	22,925	16,456	0	86,629
Lateral inflows from adjacent GMAs	470	279	1,007	381	19,893	534	4,176	16,422	43,164
Vertical flow from younger units	28,377	0	0	0	0	0	0	0	28,377
Total inflows	*68,013*	*44,850*	*162,367*	*91,637*	*225,879*	*46,802*	*71,749*	*80,876*	792,173
Outflow									
Wells	6,364	0	14,539	0	266,291	9,783	25,834	84,494	407,304
Springs	147	59	0	0	0	0	62	384	651
Evapotranspiration	2,866	290	1,553	1,625	124	69	159	1,250	7,936
Stream Gains	7,084	521	20,156	3,173	247	359	7,931	1,692	41,162
Reservoir Gains	0	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	8,937	7,538	910	428	29,436	22,925	16,456	86,629
Vertical Leakage to lower unit	31,658	34,473	74,896	90,005	21,937	8,163	35,492	0	296,624
Vertical flow to younger units	19,966	0	0	0	0	0	0	0	19,966
Lateral outflows to adjacent GMAs	62	60	198	145	1,726	160	60	1,049	3,460
Total outflows	*68,146*	*44,339*	*118,879*	*95,858*	*290,752*	*47,970*	*92,464*	*105,324*	863,734
Inflows - outflows	-133	511	43,487	-4,221	-64,874	-1,168	-20,715	-24,447	-71,560
change in storage	131	-511	-43,494	4,217	64,874	1,168	20,715	24,448	71,548
Model Error (acre-feet)	-2	-1	-7	-3	0	0	0	0	-12
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 8. Water Budget for Scenario 3.

GMA 13 scenario 3 2060 Water Budget (acre-feet per year)

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**	**Total**
Recharge	24,857	3,468	66,405	6,193	61,691	1,400	20,820	18,560	203,394
Stream Losses	5,367	1,894	59,645	10,001	24,865	156	20,325	10,402	132,655
Reservoir Losses	0	0	0	0	0	0	1,801	0	1,801
Vertical Leakage from upper unit	0	31,620	34,439	74,845	90,456	21,574	7,787	35,534	296,255
Vertical Leakage from lower unit	8,946	7,560	793	365	29,501	22,812	16,500	0	86,476
Lateral inflows from adjacent GMAs	469	279	976	410	31,016	551	4,289	16,456	54,446
Vertical flow from younger units	28,333	0	0	0	0	0	0	0	28,333
Total inflows	*67,972*	*44,821*	*162,258*	*91,813*	*237,529*	*46,493*	*71,521*	*80,952*	*803,361*
Outflow									
Wells	6,364	0	14,539	0	278,203	9,783	25,834	84,494	419,217
Springs	147	58	0	0	0	0	62	384	651
Evapotranspiration	2,866	292	1,558	1,624	124	69	159	1,250	7,942
Stream Gains	7,058	517	20,053	3,136	247	359	7,887	1,692	40,950
Reservoir Gains	0	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	8,946	7,560	793	365	29,501	22,812	16,500	86,476
Vertical Leakage to lower unit	31,620	34,439	74,845	90,456	21,574	7,787	35,534	0	296,255
Vertical flow to younger units	20,016	0	0	0	0	0	0	0	20,016
Lateral outflows to adjacent GMAs	62	60	213	152	2,815	163	63	1,051	4,580
Total outflows	*68,134*	*44,312*	*118,767*	*96,162*	*303,328*	*47,663*	*92,352*	*105,370*	*876,087*
Inflows - outflows	-161	509	43,491	-4,348	-65,798	-1,170	-20,830	-24,418	-72,726
change in storage	159	-509	-43,498	4,346	65,798	1,170	20,830	24,418	72,714
Model Error (acre-feet)	-2	-1	-7	-3	0	0	0	0	-12
Model Error (percent)	0	0	0	0	0	0	0	0	0.00

Table 9. Water Budget for Scenario 4.

GMA 13 Scenario 4 2060 Water Budget (acre-feet per year)									
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**	**Total**
Recharge	24,857	3,468	66,405	6,193	61,691	1,400	20,820	18,560	203,394
Stream Losses	5,375	1,910	59,675	10,062	24,987	156	20,373	10,410	132,947
Reservoir Losses	0	0	0	0	0	0	1,802	0	1,802
Vertical Leakage from upper unit	0	31,748	34,636	76,024	91,958	21,489	7,666	35,473	298,993
Vertical Leakage from lower unit	8,580	7,197	669	289	29,896	23,134	16,563	0	86,329
Lateral inflows from adjacent GMAs	469	278	981	426	31,831	565	4,325	16,471	55,345
Vertical flow from younger units	28,480	0	0	0	0	0	0	0	28,480
Total inflows	*67,760*	*44,601*	*162,366*	*92,993*	*240,363*	*46,744*	*71,548*	*80,914*	807,290
Outflow									
Wells	6,364	0	14,539	0	283,891	9,783	25,834	84,494	424,905
Springs	146	57	0	0	0	0	62	384	649
Evapotranspiration	2,866	289	1,551	1,624	124	69	159	1,250	7,931
Stream Gains	7,035	504	19,852	3,118	247	359	7,842	1,691	40,649
Reservoir Gains	0	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	8,580	7,197	669	289	29,896	23,134	16,563	86,329
Vertical Leakage to lower unit	31,748	34,636	76,024	91,958	21,489	7,666	35,473	0	298,993
Vertical flow to younger units	19,763	0	0	0	0	0	0	0	19,763
Lateral outflows to adjacent GMAs	62	61	220	152	2,650	169	63	1,049	4,426
Total outflows	*67,985*	*44,128*	*119,382*	*97,521*	*308,690*	*47,942*	*92,566*	*105,431*	883,644
Inflows - outflows	-224	472	42,985	-4,527	-68,327	-1,198	-21,018	-24,517	-76,355
change in storage	222	-473	-42,992	4,524	68,327	1,198	21,018	24,517	76,342
Model Error (acre-feet)	-2	-1	-7	-3	1	0	0	0	-13
Model Error (percent)	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A

Pumping and average drawdowns by groundwater conservation district for scenarios 1 through 4

Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 1

Groundwater Conservation District	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Evergreen (GMA 13)	1,735	9,030	157,168	375	371	34,000	202,679
Evergreen (GMA 15)	0	0	601	0	0	0	601
Caldwell County shared area	0	57	840	0	308	448	1,653
Gonzales County UWCD [1]	3,552	5,372	49,583	0	12,294	20,086	90,887
Guadalupe County	0	0	9,500	0	2,994	1,549	14,043
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina County	0	0	400	0	1,248	886	2,534
Plum Creek	0	0	0	0	4,158	9,202	13,361
Uvalde County	0	0	828	0	0	0	828
Wintergarden	987	1	31,100	9,259	4,007	416	45,770

Groundwater Conservation District	Groundwater Management Area 13 drawdown in feet base scenario								
	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox Overall
Evergreen	9	12	9	34	61	60	63	106	77
Gonzales County	18	22	25	44	72	72	84	85	80
Guadalupe County	0	0	-11	5	48	46	20	31	29
McMullen	25	29	32	38	45	43	12	9	21
Medina County	0	0	0	-1	29	29	28	28	28
Plum Creek	0	0	5	13	43	42	38	70	57
Uvalde County	0	0	0	0	1	0	12	30	22
Wintergarden	5	6	0	-4	0	-1	-9	-10	-7

1 Pumpage for Caldwell shared area is also included in Gonzales County UWCD total

Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 2

Groundwater Conservation District	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Evergreen (GMA 13)	1,735	9,030	157,168	375	371	34,000	202,679
Evergreen (GMA 15)	0	0	601	0	0	0	601
Caldwell County shared area	0	57	840	0	308	448	1,653
Gonzales County UWCD [1]	3,552	5,372	55,271	0	12,294	20,086	96,575
Guadalupe County	0	0	9,500	0	2,994	1,549	14,043
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina County	0	0	400	0	1,248	886	2,534
Plum Creek	0	0	0	0	4,158	9,202	13,361
Uvalde County	0	0	828	0	0	0	828
Wintergarden	987	1	31,100	9,259	4,007	416	45,770

Groundwater Conservation District	Groundwater Management Area 13 drawdown in feet - scenario 2								
	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox Overall
Evergreen	9	12	9	35	63	62	63	107	77
Gonzales County	19	23	27	49	80	80	86	85	84
Guadalupe County	0	0	-11	5	53	50	20	31	30
McMullen	25	29	32	39	45	44	12	9	22
Medina County	0	0	0	-1	29	29	28	28	28
Plum Creek	0	0	5	13	44	43	38	70	57
Uvalde County	0	0	0	0	1	0	12	30	22
Wintergarden	5	6	0	-4	0	-1	-9	-10	-7

1 Pumpage for Caldwell shared area is also included in Gonzales County UWCD total

Groundwater Management Area 13 pumpage in acre feet per year used in model - scenario 3

Groundwater Conservation District	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Evergreen (GMA 13)	1,735	9,030	157,168	375	371	34,000	202,679
Evergreen (GMA 15)	0	0	601	0	0	0	601
Caldwell County shared area	0	57	5,107	0	308	448	5,920
Gonzales County UWCD [1]	3,552	5,372	67,183	0	12,294	20,086	108,487
Guadalupe County	0	0	9,500	0	2,994	1,549	14,043
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina County	0	0	400	0	1,248	886	2,534
Plum Creek	0	0	0	0	4,158	9,202	13,361
Uvalde County	0	0	828	0	0	0	828
Wintergarden	987	1	31,100	9,259	4,007	416	45,770

Groundwater Conservation District	Groundwater Management Area 13 drawdown in feet - scenario 3								
	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox Overall
Evergreen	9	12	9	34	61	60	63	107	77
Gonzales County	20	24	28	52	89	88	88	85	87
Guadalupe County	0	0	-11	5	49	47	20	31	29
McMullen	25	29	32	38	45	43	12	9	21
Medina County	0	0	0	-1	29	29	28	28	28
Plum Creek	0	0	6	29	96	72	39	71	59
Uvalde County	0	0	0	0	1	0	12	30	22
Wintergarden	5	6	0	-4	0	-1	-9	-10	-7

1 Pumpage for Caldwell shared area is also included in Gonzales County UWCD total

Groundwater Management Area 13 pumpage in acre-feet per year used in model - scenario 4

Groundwater Conservation District	Sparta	Queen City	Carrizo	Layer 6	Layer 7	Layer 8	Total
Evergreen (GMA 13)	1,735	9,030	157,168	375	371	34,000	202,679
Evergreen (GMA 15)	0	0	601	0	0	0	601
Caldwell County shared area	0	57	5,107	0	308	448	5,920
Gonzales County UWCD [1]	3,552	5,372	72,871	0	12,294	20,086	114,175
Guadalupe County	0	0	9,500	0	2,994	1,549	14,043
McMullen (GMA 13)	90	136	1,819	0	0	0	2,045
McMullen (GMA 16)	10	14	181	0	0	0	205
Medina County	0	0	400	0	1,248	886	2,534
Plum Creek	0	0	0	0	4,158	9,202	13,361
Uvalde County	0	0	828	0	0	0	828
Wintergarden	987	1	31,100	9,259	4,007	416	45,770

Groundwater Conservation District	Groundwater Management Area 13 drawdown in feet - scenario 4								
	Sparta	Weches	Queen City	Reklaw	Carrizo	Layer 6	Layer 7	Layer 8	Wilcox Overall
Evergreen	9	12	9	35	63	62	64	107	78
Gonzales County	21	25	30	57	97	97	90	85	91
Guadalupe County	0	0	-11	5	54	52	20	31	30
McMullen	25	29	32	39	45	44	12	9	22
Medina County	0	0	0	-1	29	29	28	28	28
Plum Creek	0	0	6	30	97	73	39	71	59
Uvalde County	0	0	0	0	1	0	12	30	22
Wintergarden	5	6	0	-4	0	0	-9	-10	-7

1 Pumpage for Caldwell shared area is also included in Gonzales County UWCD total

Appendix B
Drawdown versus pumping charts

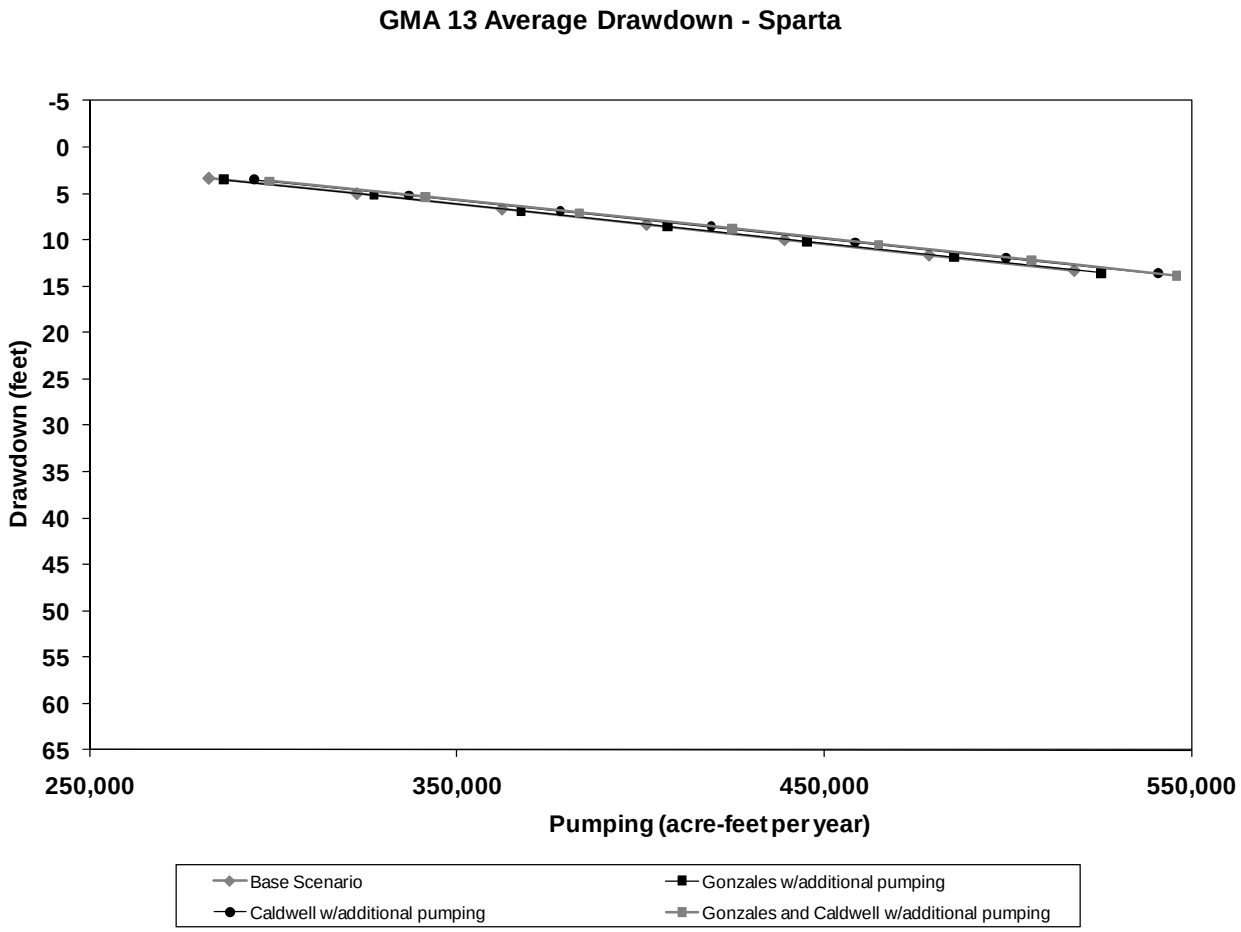


Figure A.1. Average drawdown in the Sparta Aquifer for Groundwater Management Area 13 based on the four model scenarios with pumping scaled. From left to right each point on the lines represents pumping scaled by 70, 80, 90, 100, 110, 120, and 130 percent.

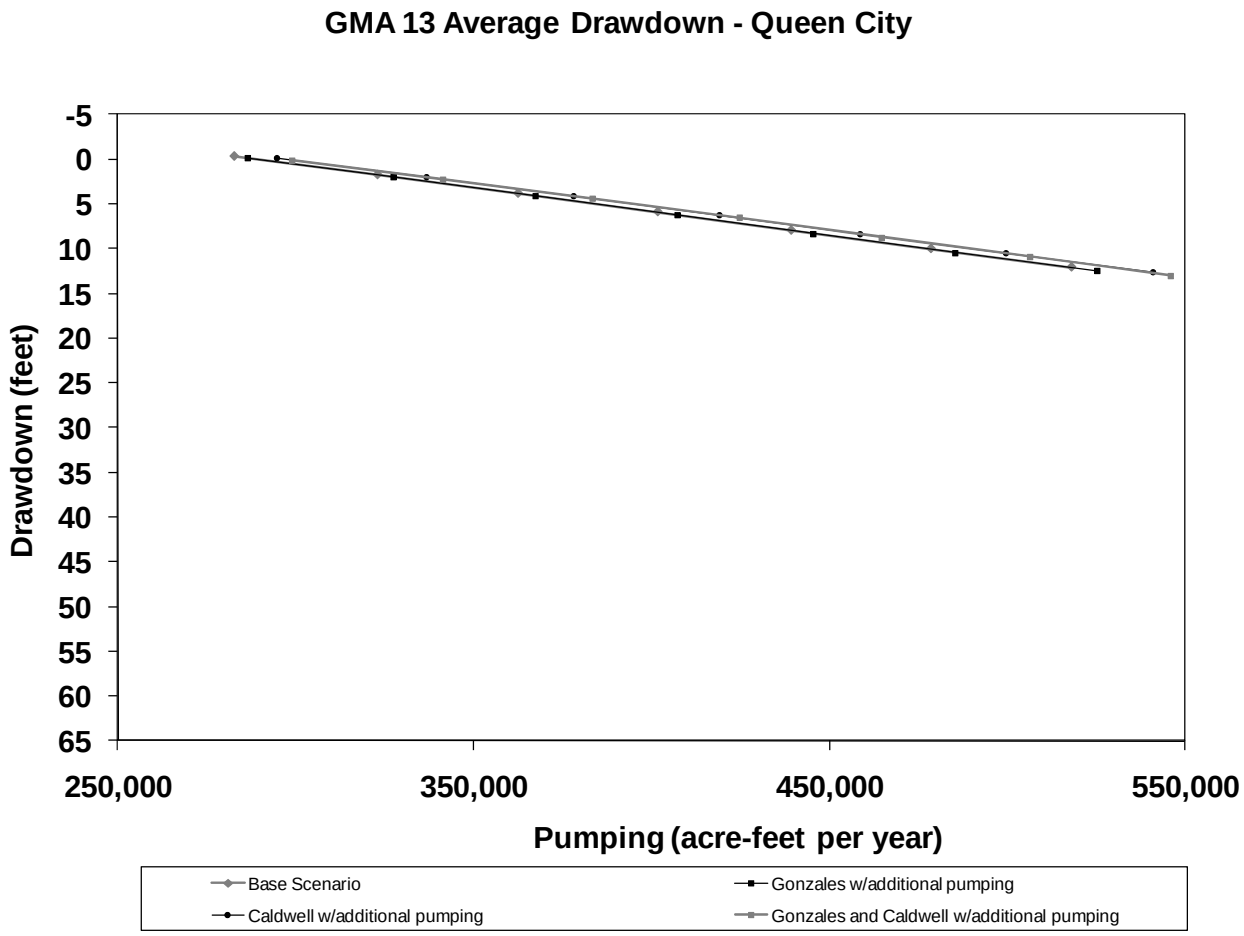


Figure A.2. Average drawdown in the Queen City Aquifer for Groundwater Management Area 13 based on the four model scenarios with pumping scaled. From left to right each point on the lines represents pumping scaled by 70, 80, 90, 100, 110, 120, and 130 percent.

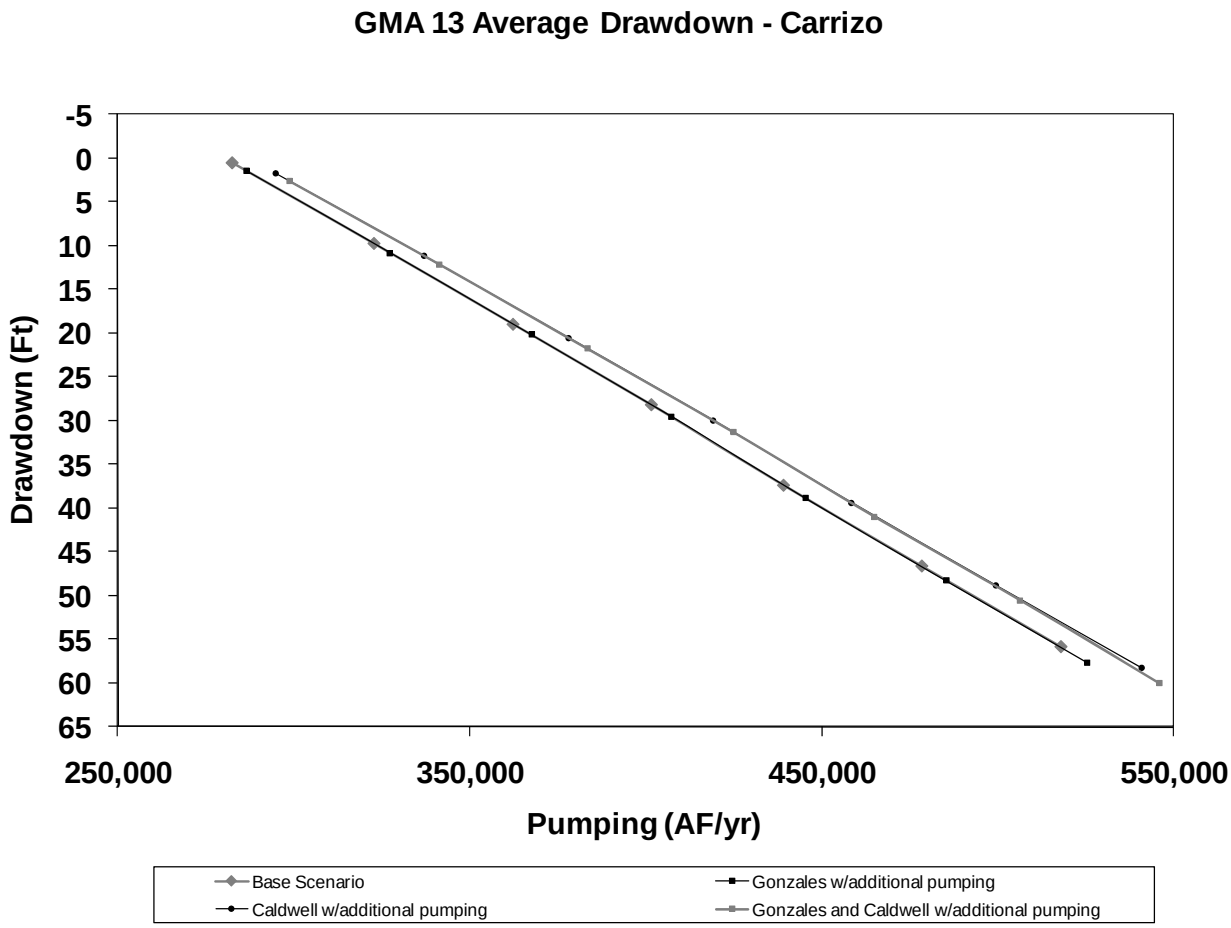


Figure A.3. Average drawdown in the Carrizo Aquifer for Groundwater Management Area 13 based on the four model scenarios with pumping scaled. From left to right each point on the lines represents pumping scaled by 70, 80, 90, 100, 110, 120, and 130 percent.

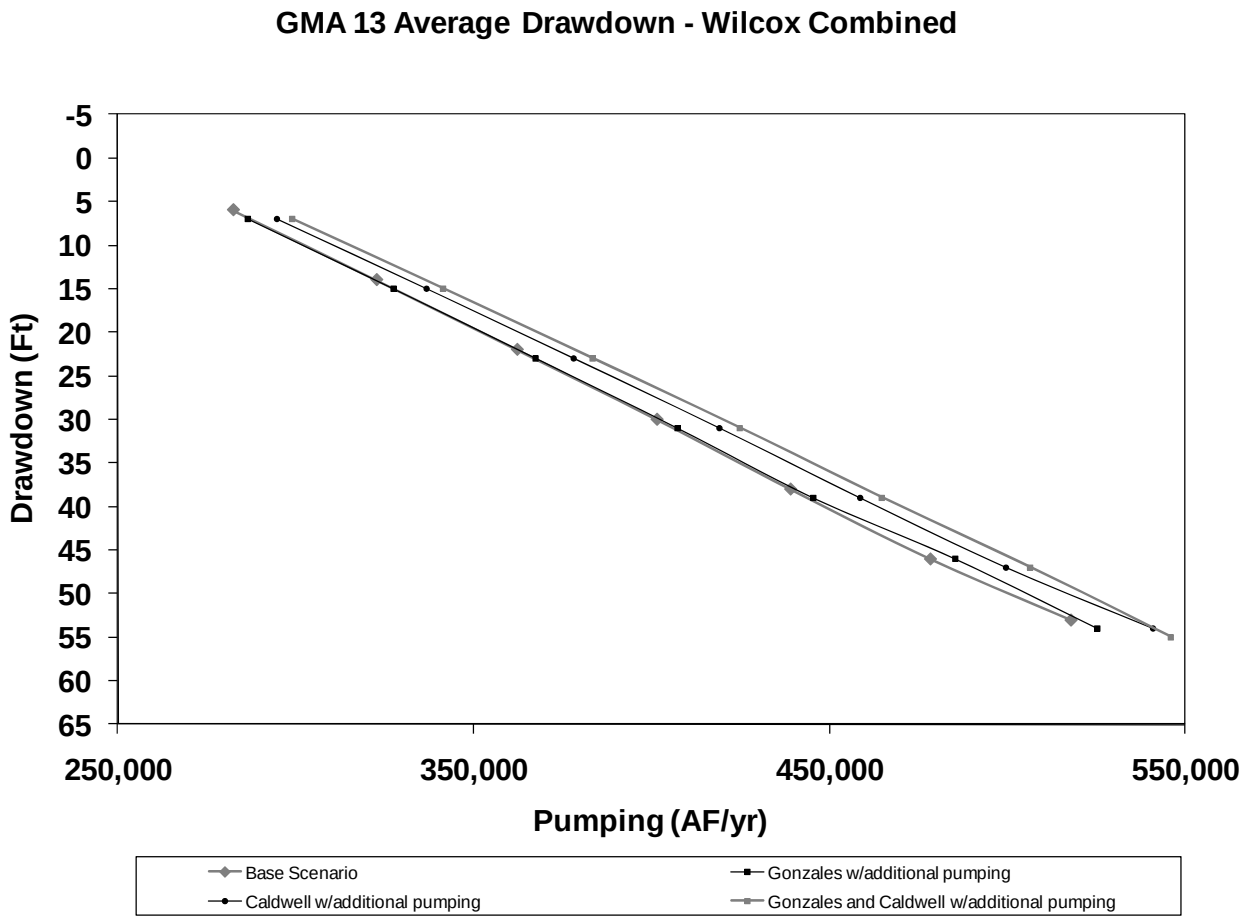
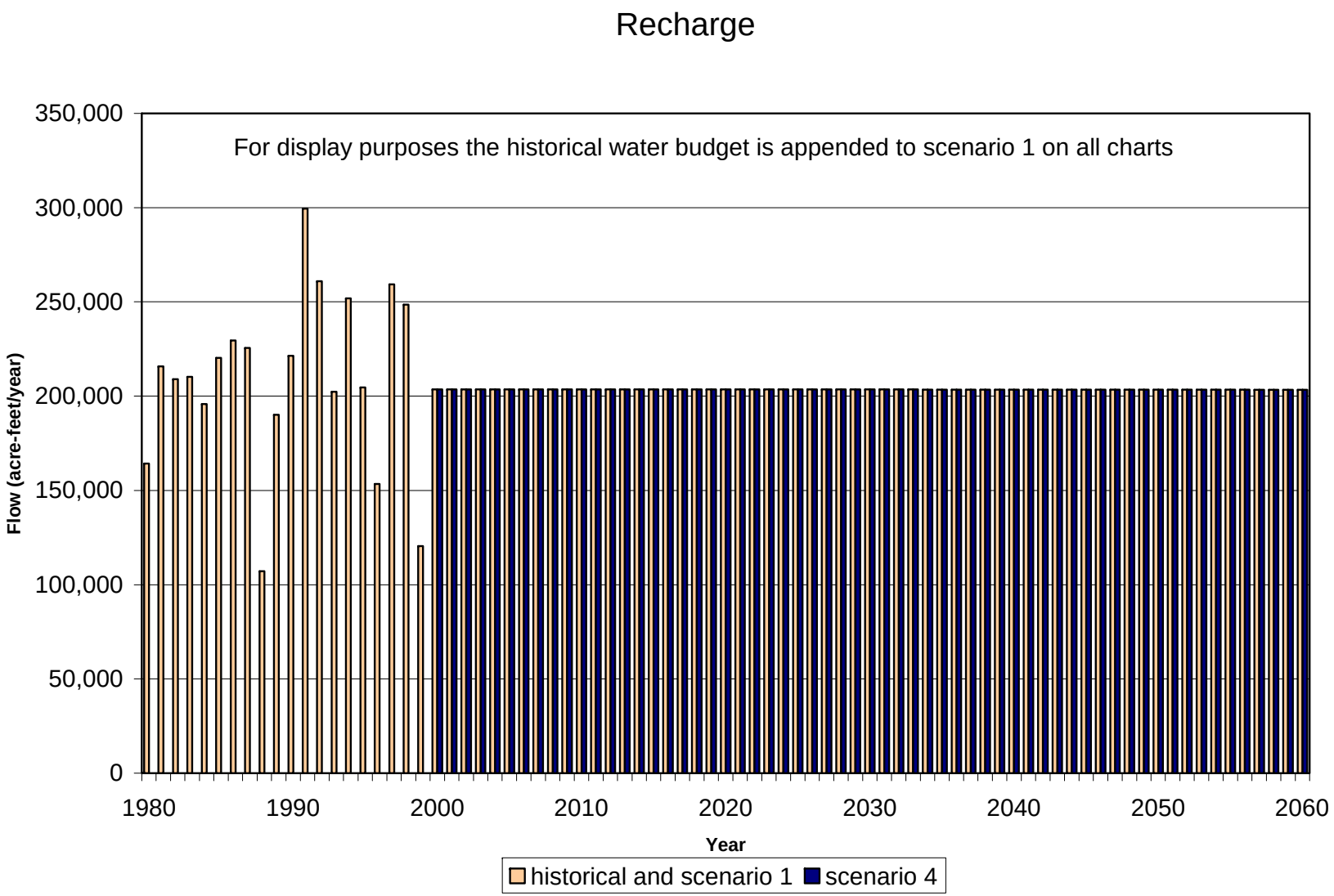
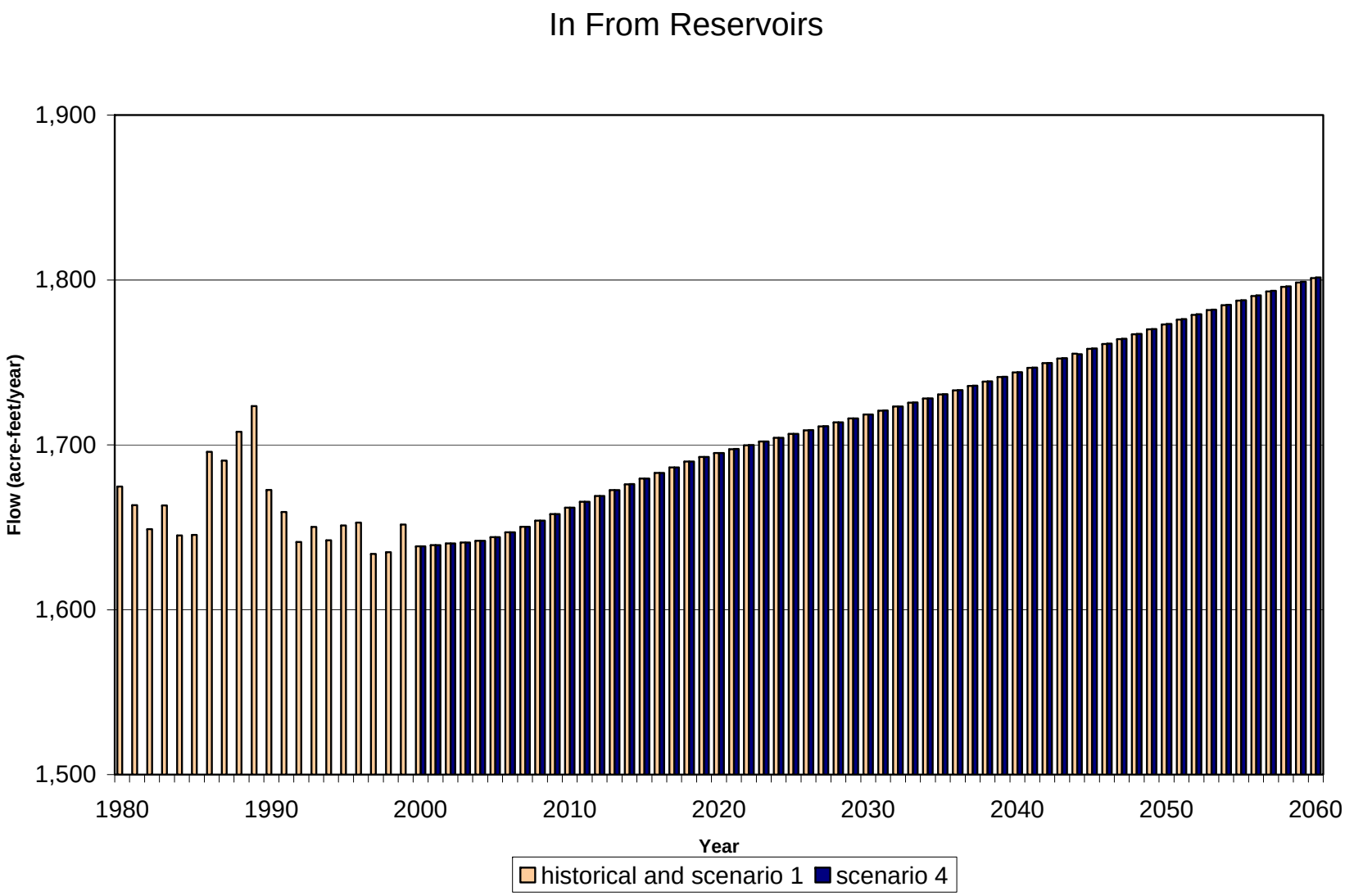


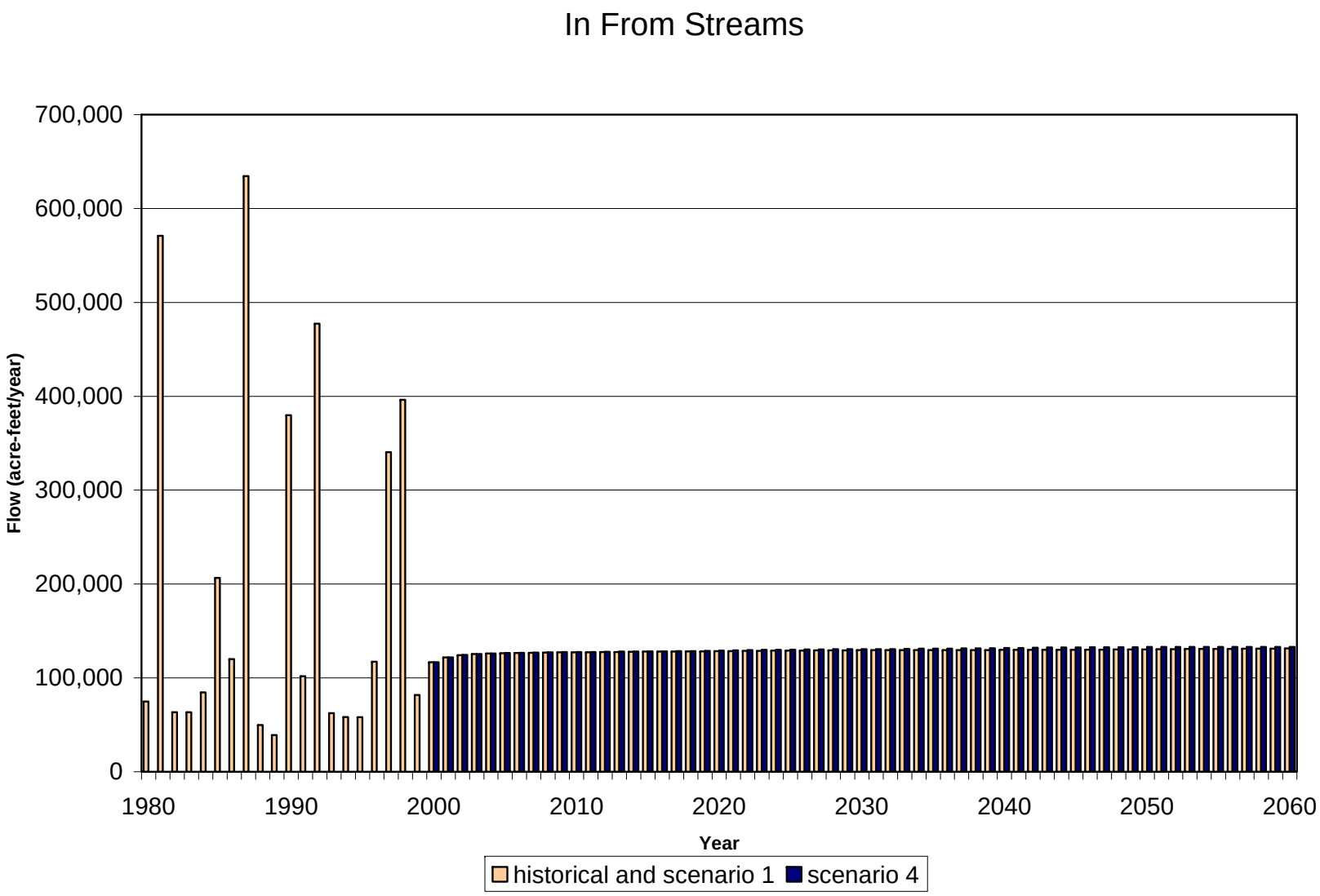
Figure A.4. Average drawdown in the Wilcox Aquifer (layer 6, 7, and 8) for Groundwater Management Area 13 based on the four model scenarios with pumping scaled. From left to right each point on the lines represents pumping scaled by 70, 80, 90, 100, 110, 120, and 130 percent.

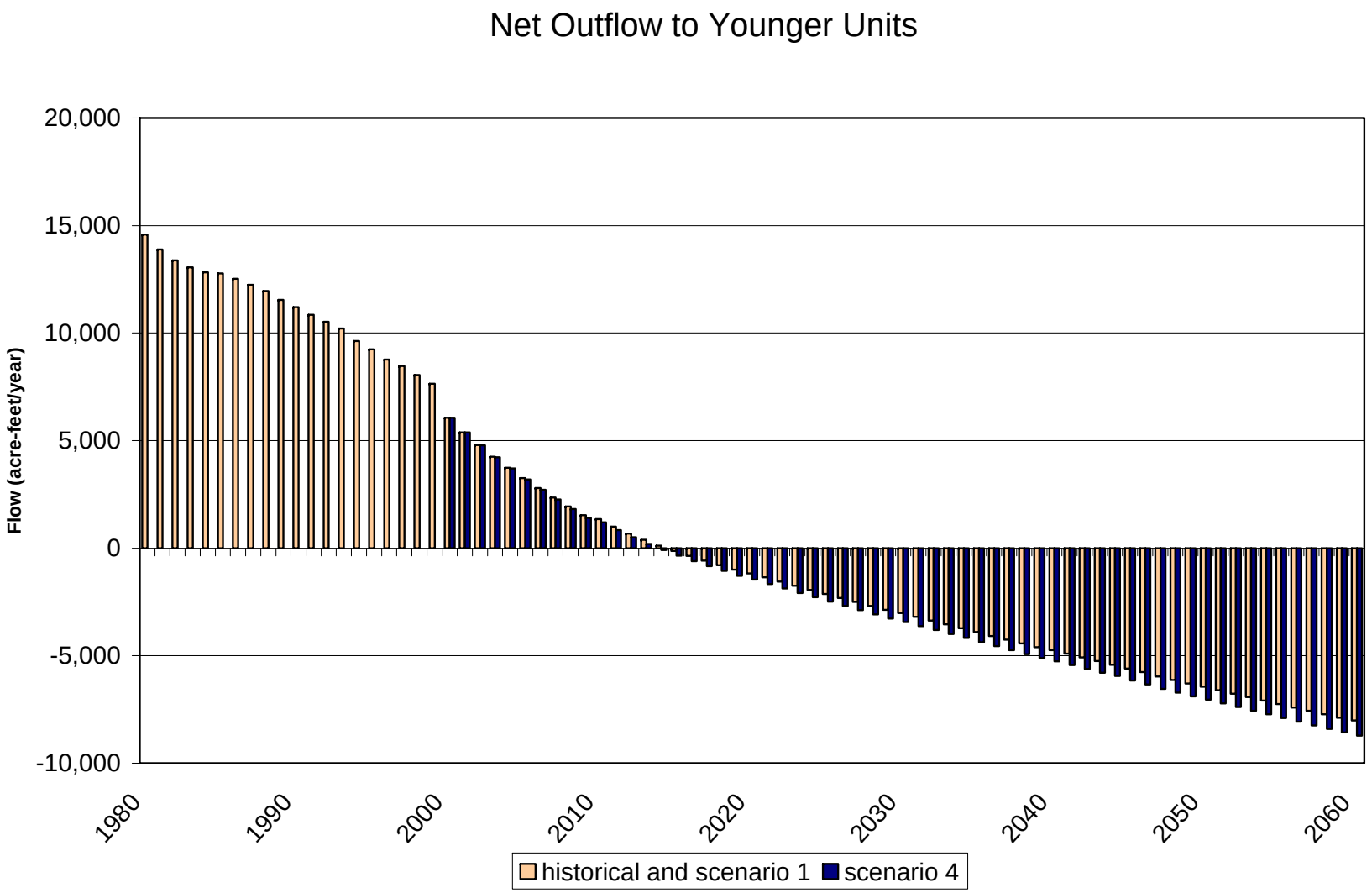
Appendix C

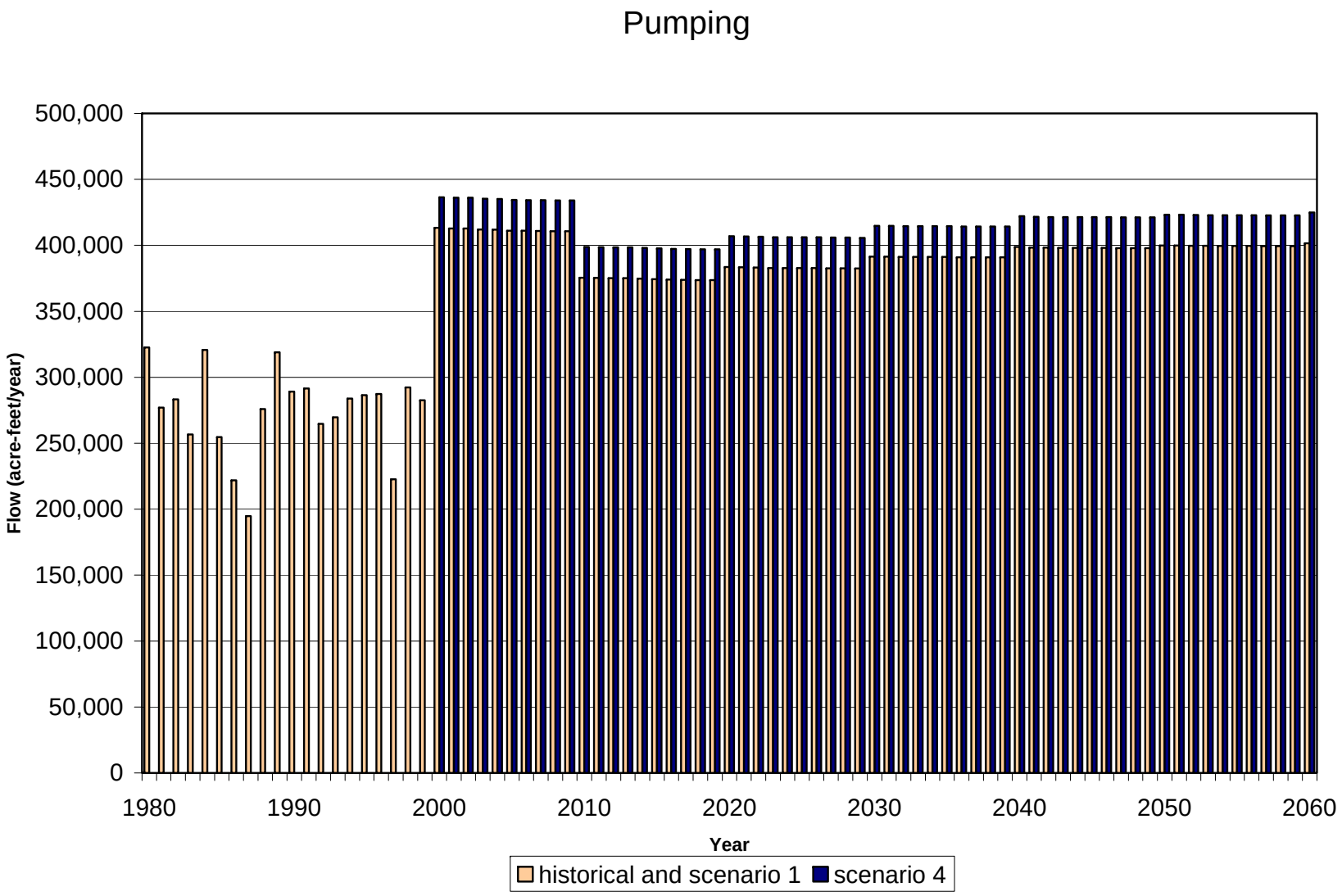
Water Budget Charts

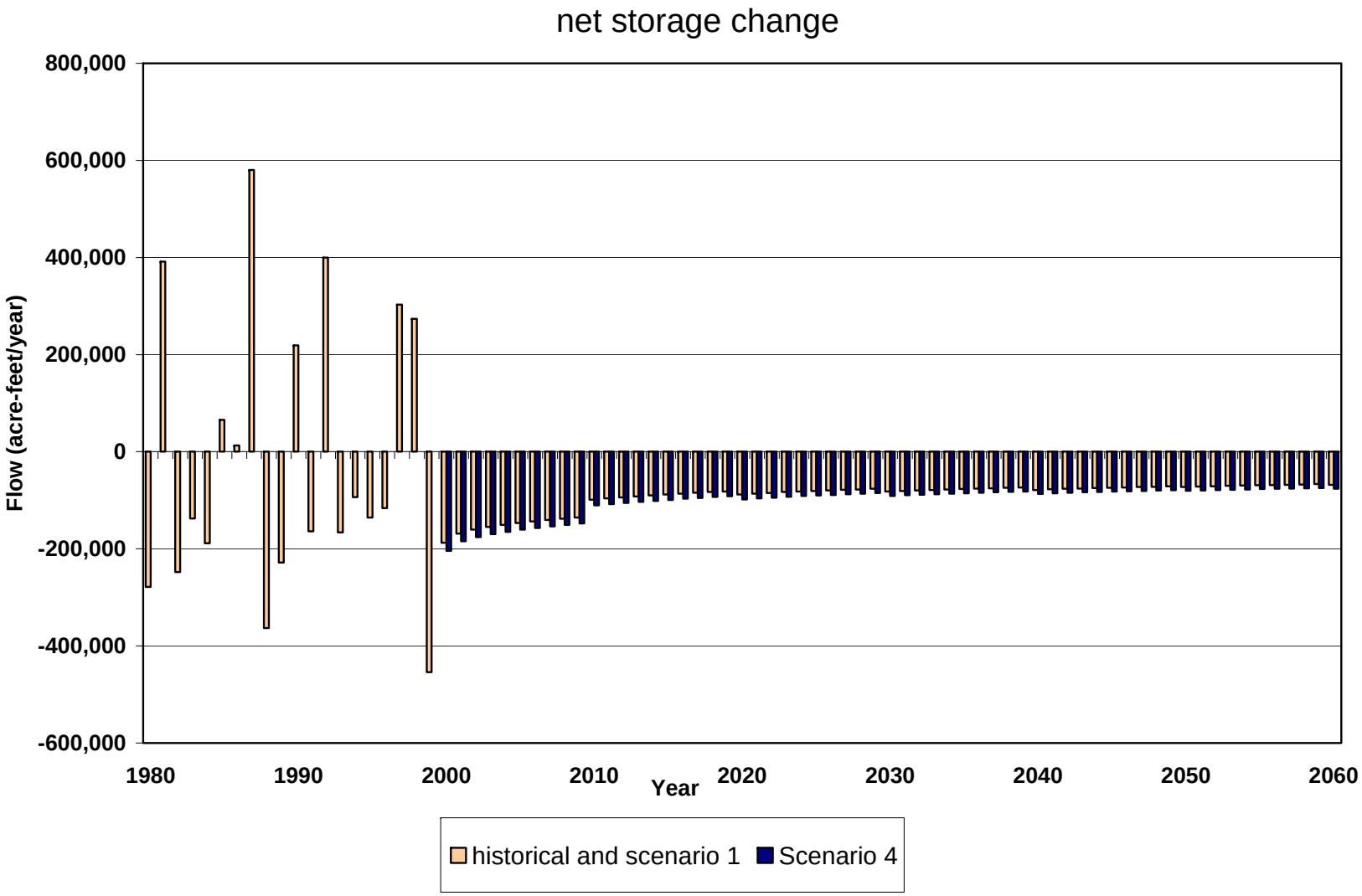

Recharge
For display purposes the historical water budget is appended to scenario 1 on all charts
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4

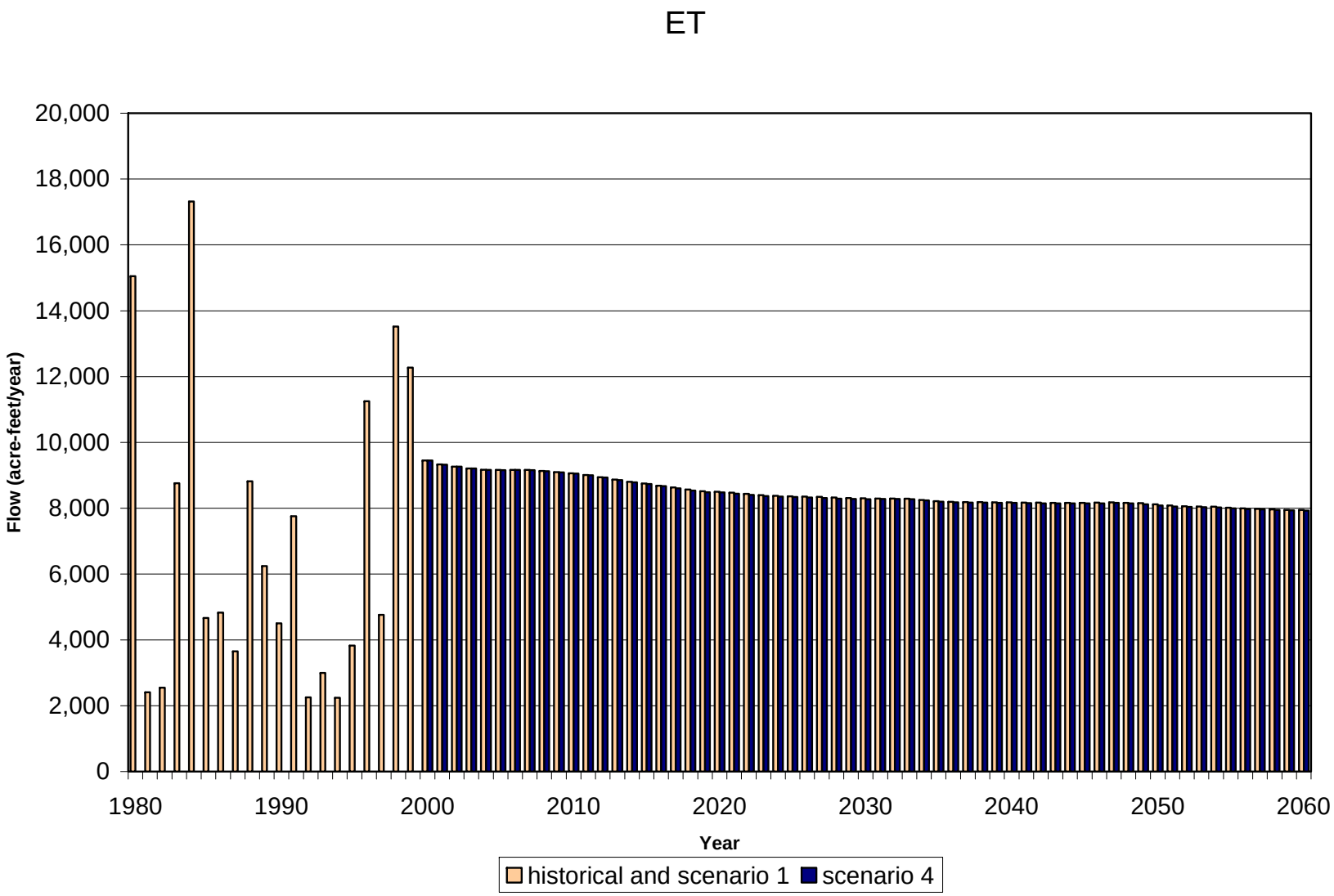

In From Reservoirs
1,900
1,800
1,700
1,600
1,500
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4

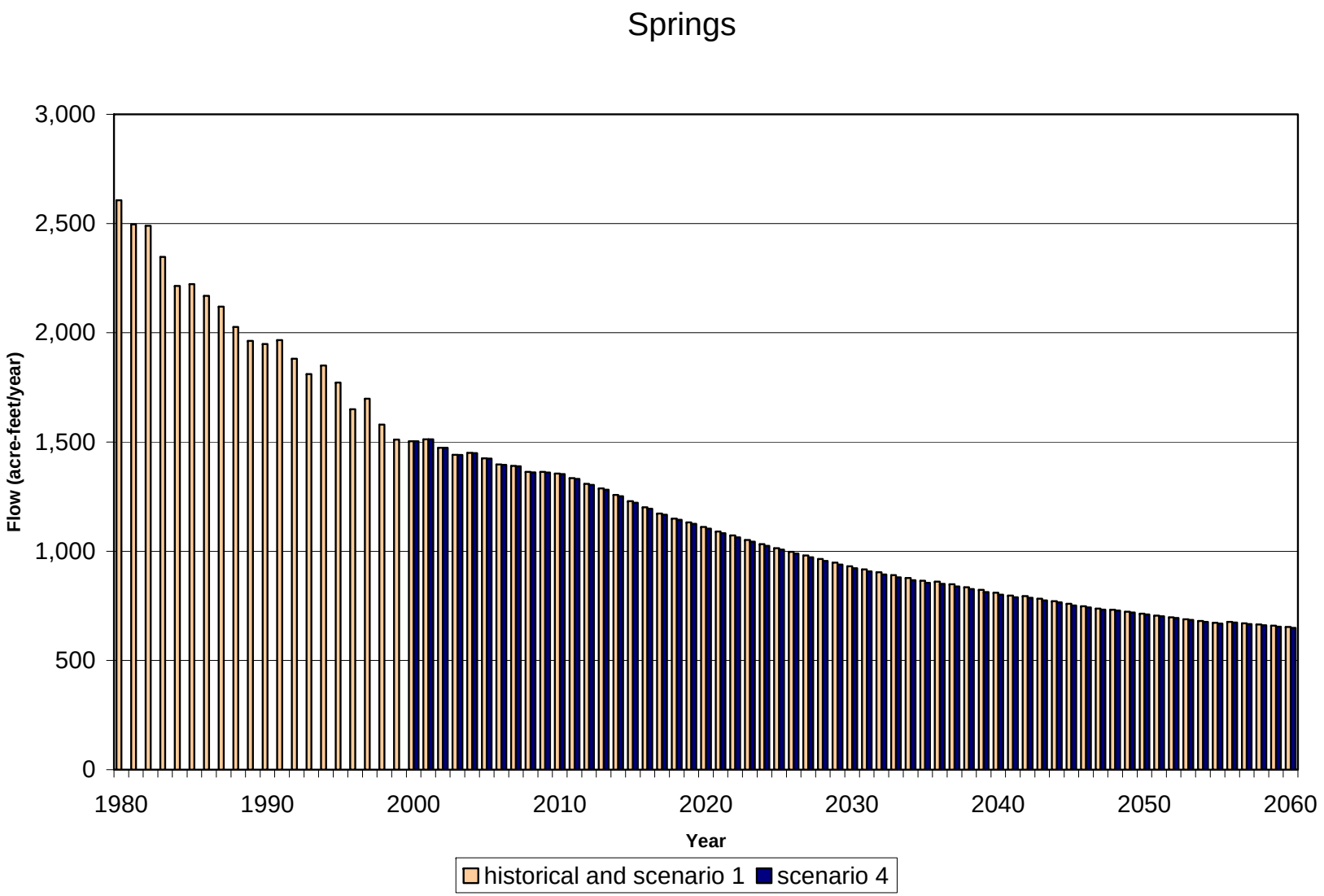

In From Streams
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4

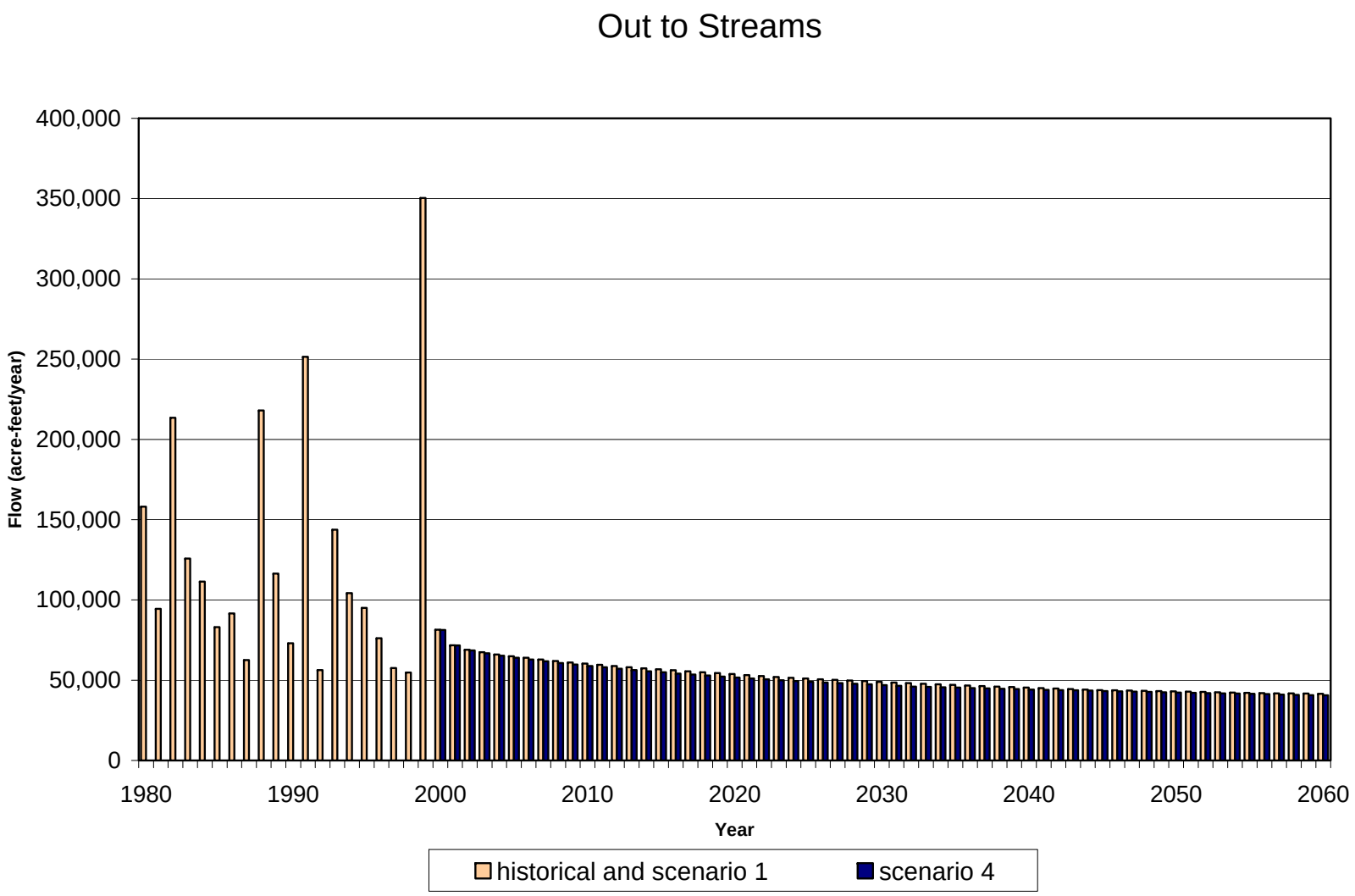

Net Outflow to Younger Units
Flow (acre-feet/year)
20,000
15,000
10,000
5,000
0
-5,000
-10,000
1980
1990
2000
2010
2020
2030
2040
2050
2060
historical and scenario 1
scenario 4

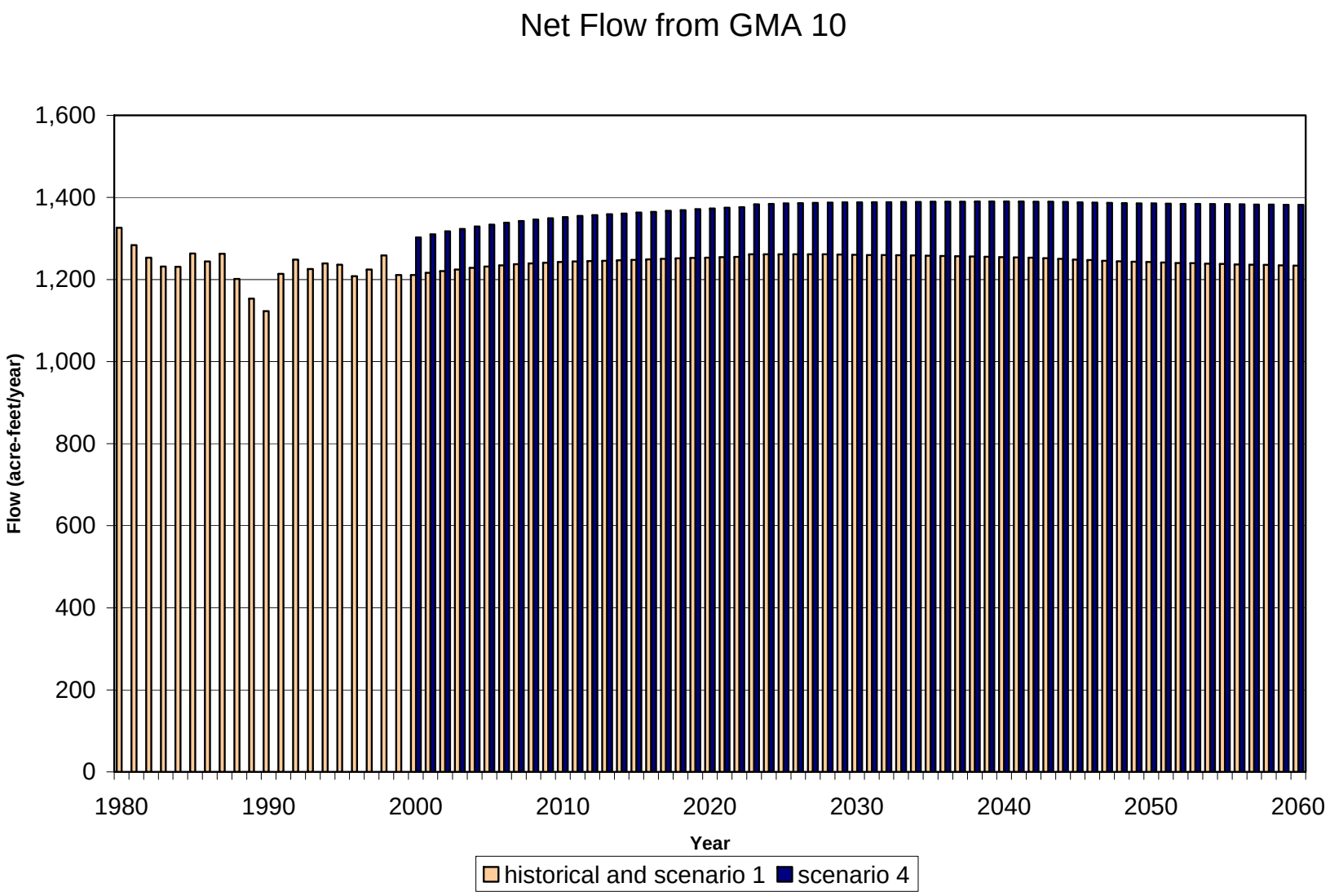

Pumping
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4

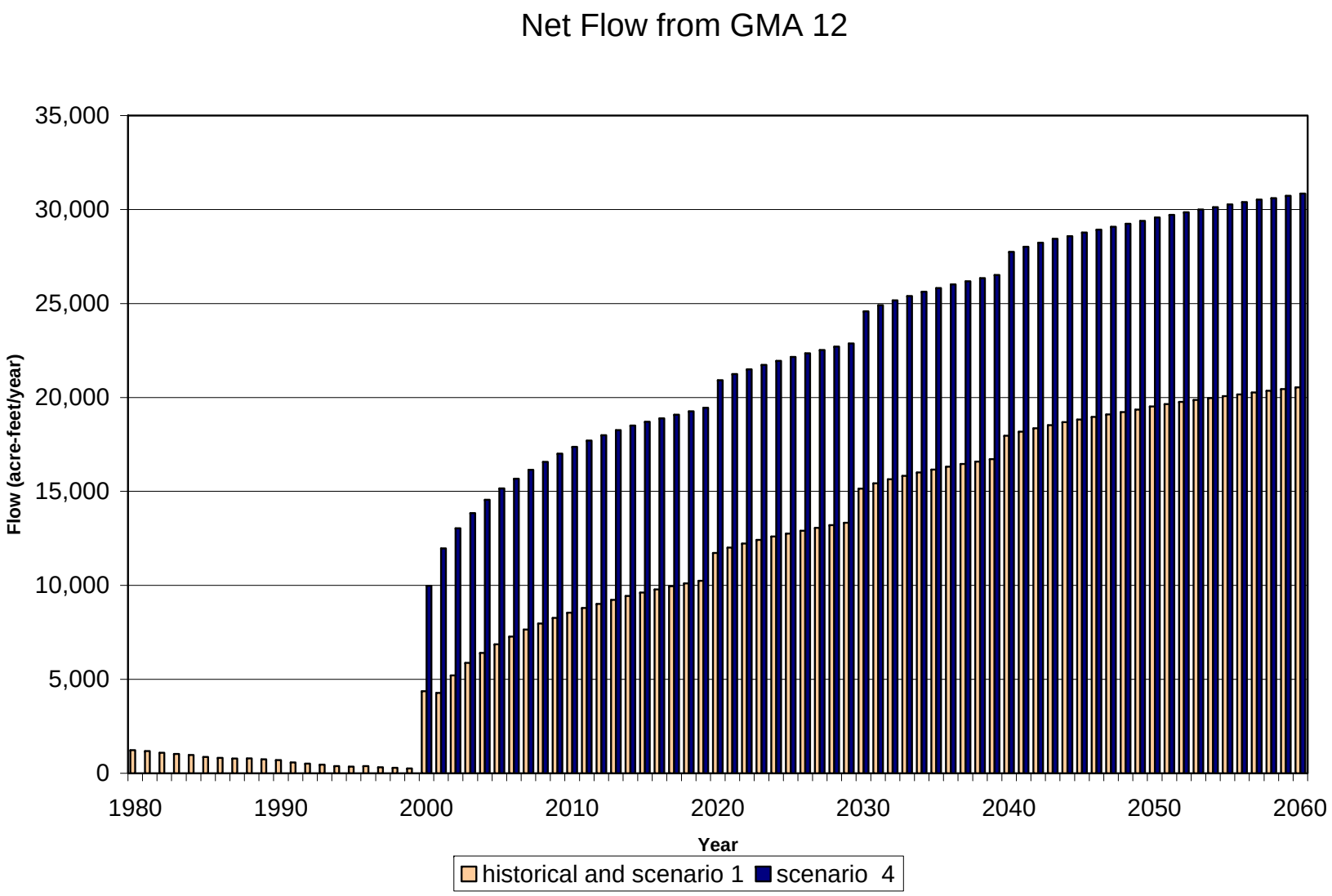

net storage change
800,000
600,000
400,000
200,000
0
-200,000
-400,000
-600,000
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
Scenario 4

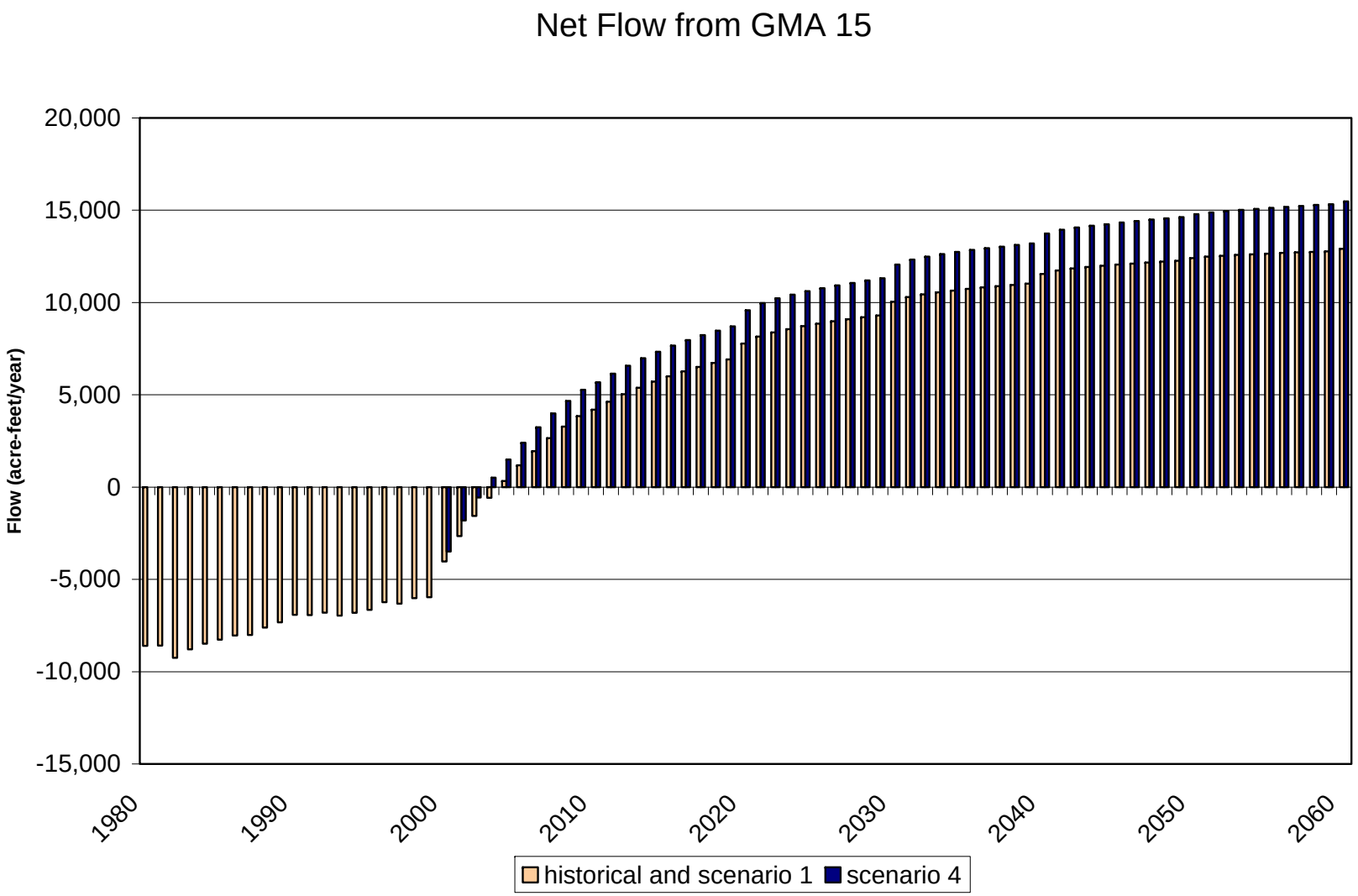

ET
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4

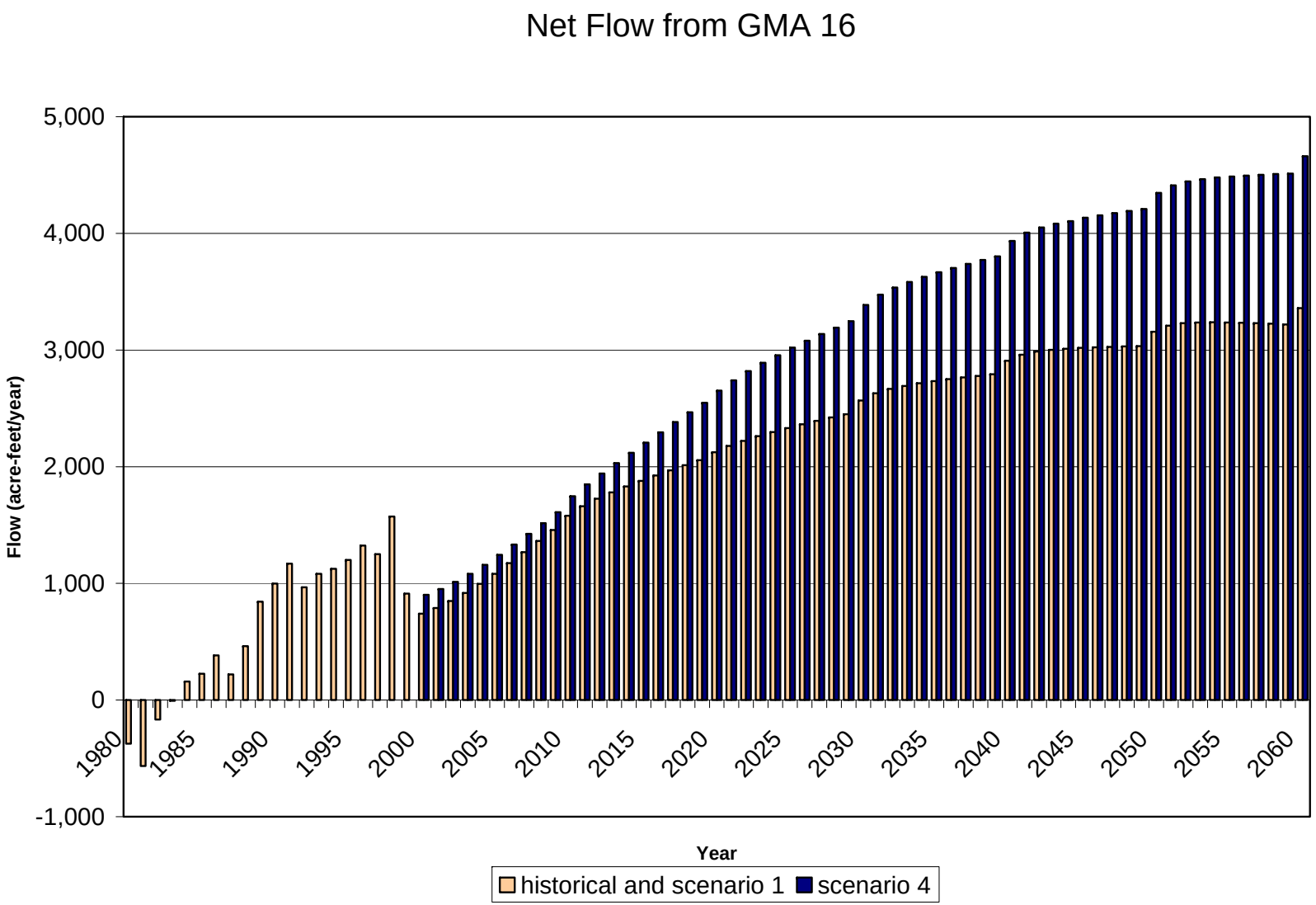

Springs
3,000
2,500
2,000
1,500
1,000
500
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4


Out to Streams
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4


Net Flow from GMA 10
1,600
1,400
1,200
1,000
800
600
400
200
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4


Net Flow from GMA 12
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Flow (acre-feet/year)
1980
1990
2000
2010
2020
2030
2040
2050
2060
Year
historical and scenario 1
scenario 4


Net Flow from GMA 15
Flow (acre-feet/year)
20,000
15,000
10,000
5,000
0
-5,000
-10,000
-15,000
1980
1990
2000
2010
2020
2030
2040
2050
2060
historical and scenario 1
scenario 4


Net Flow from GMA 16
5,000
4,000
3,000
2,000
1,000
0
-1,000
Flow (acre-feet/year)
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
Year
historical and scenario 1
scenario 4

Appendix D

Groundwater Conservation District and/or County Water Budgets for 2060

Bexar County Scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	96	4,277	434	2,989	5,284
Stream Losses	--	--	--	50	1,235	0	3,867	4,304
Reservoir Losses	--	--	--	0	0	0	1,801	0
Vertical Leakage from upper unit	--	--	--	0	131	323	320	9,489
Vertical Leakage from lower unit	--	--	--	0	344	23	0	0
Lateral inflows from adjacent county(s)	--	--	--	1	3,654	15	304	11,870
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*147*	*9,640*	*795*	*9,282*	*30,947*
Outflow	--	--	--					
Wells	--	--	--	0	9,107	0	0	17,000
Springs	--	--	--	0	0	0	62	135
Evapotranspiration	--	--	--	0	0	0	9	371
Stream Gains	--	--	--	0	0	0	11	762
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	344	23	0
Vertical Leakage to lower unit	--	--	--	131	323	320	9,489	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	88	4,940	104	2,297	20,992
Total outflows	--	--	--	*219*	*14,370*	*768*	*11,891*	*39,259*
Inflows - outflows	--	--	--	-71	-4,730	27	-2,609	-8,312
change in storage	--	--	--	71	4,730	-27	2,609	8,312
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	0.01	0.00	0.00	0.00	0.00

Caldwell County scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	1,145	904	5,420	0	4,358	4,657
Stream Losses	--	--	185	997	75	0	1,968	2,576
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	161	1,779	366	172	2,693
Vertical Leakage from lower unit	--	--	0	0	161	0	8	0
Lateral inflows from adjacent county(s)	--	--	19	9	4,344	5	3,753	4,919
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*1,348*	*2,071*	*11,779*	*371*	*10,260*	*14,846*
Outflow	--	--						
Wells	--	--	307	0	5,209	0	7,372	13,441
Springs	--	--	0	0	0	0	0	208
Evapotranspiration	--	--	0	0	0	0	0	383
Stream Gains	--	--	91	32	0	0	1,974	390
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	161	0	8
Vertical Leakage to lower unit	--	--	161	1,779	366	172	2,693	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	926	382	9,039	34	1,812	3,556
Total outflows	--	--	*1,484*	*2,192*	*14,614*	*367*	*13,851*	*17,984*
Inflows - outflows	--	--	-136	-122	-2,834	4	-3,591	-3,139
change in storage	--	--	136	122	2,834	-4	3,591	3,139
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	0.01	-0.01	0.00	-0.01	0.00	0.00

Evergreen UWCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	8,987	1,593	26,431	2,081	18,690	0	1,560	69
Stream Losses	700	720	12,572	1,478	14,080	0	1,535	207
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	14,466	16,282	35,222	44,182	3,015	1,972	9,948
Vertical Leakage from lower unit	2,945	2,455	0	0	14,037	10,456	5,536	0
Lateral inflows from adjacent county(s)	452	72	692	412	45,851	2,358	6,323	35,238
Vertical flow from younger units	12,837	0	0	0	0	0	0	0
Total inflows	*25,920*	*19,305*	*55,977*	*39,192*	*136,840*	*15,829*	*16,926*	*45,462*
Outflow								
Wells	1,735	0	9,030	0	157,769	375	371	34,000
Springs	137	47	0	0	0	0	0	0
Evapotranspiration	81	16	0	0	0	0	0	0
Stream Gains	1,111	234	4,326	5	103	0	463	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,945	2,455	0	0	14,037	10,456	5,536
Vertical Leakage to lower unit	14,466	16,282	35,222	44,182	3,015	1,972	9,948	0
Vertical flow to younger units	8,181	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	2,182	249	3,875	370	15,469	208	1,354	14,030
Total outflows	*27,894*	*19,772*	*54,907*	*44,557*	*176,355*	*16,592*	*22,593*	*53,567*
Inflows - outflows	-1,974	-467	1,069	-5,364	-39,515	-763	-5,666	-8,105
change in storage	1,974	467	-1,072	5,364	39,516	763	5,666	8,105
Model Error (acre-feet)	0	0	-2	0	1	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Gonzales County UWCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,082	803	7,239	2,139	6,819	0	972	0
Stream Losses	0	31	789	1,407	2,246	0	1,311	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	540	1,161	3,042	7,598	1,390	1,192	643
Vertical Leakage from lower unit	2,949	2,534	449	135	707	396	509	0
Lateral inflows from adjacent county(s)	733	264	2,043	431	28,238	105	9,481	20,419
Vertical flow from younger units	899	0	0	0	0	0	0	0
Total inflows	*7,663*	*4,172*	*11,681*	*7,155*	*45,608*	*1,892*	*13,466*	*21,062*
Outflow								
Wells	3,552	0	5,372	0	49,583	0	12,294	20,086
Springs	11	12	0	0	0	0	0	0
Evapotranspiration	1	54	34	2	0	0	0	0
Stream Gains	993	164	2,214	167	0	0	719	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,949	2,534	449	135	707	396	509
Vertical Leakage to lower unit	540	1,161	3,042	7,598	1,390	1,192	643	0
Vertical flow to younger units	2,947	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	64	19	138	87	1,290	25	2,071	1,678
Total outflows	*8,108*	*4,358*	*13,335*	*8,303*	*52,398*	*1,924*	*16,123*	*22,273*
Inflows - outflows	-445	-187	-1,654	-1,148	-6,790	-33	-2,658	-1,211
change in storage	445	187	1,654	1,148	6,790	33	2,658	1,211
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Guadalupe County GCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	78	454	7,210	0	5,607	4,546
Stream Losses	--	--	0	183	368	0	4,795	1,711
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	39	675	458	193	2,868
Vertical Leakage from lower unit	--	--	0	0	339	152	30	0
Lateral inflows from adjacent county(s)	--	--	1	10	1,439	8	385	2,193
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*79*	*686*	*10,031*	*619*	*11,011*	*11,319*
Outflow	--	--						
Wells	--	--	0	0	9,500	0	2,994	1,549
Springs	--	--	0	0	0	0	0	41
Evapotranspiration	--	--	0	0	0	0	0	67
Stream Gains	--	--	0	8	0	0	1,921	282
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	339	152	30
Vertical Leakage to lower unit	--	--	39	675	458	193	2,868	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	15	146	6,742	90	5,097	10,853
Total outflows	--	--	*55*	*829*	*16,701*	*622*	*13,033*	*12,822*
Inflows - outflows	--	--	24	-144	-6,670	-3	-2,022	-1,503
change in storage	--	--	-24	144	6,670	3	2,021	1,504
Model Error (acre-feet)	--	--	0	0	0	0	0	1
Model Error (percent)	--	--	-0.05	0.00	0.00	0.00	0.00	0.00

Maverick County scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	49	2,069	85	591	1,353
Stream Losses	--	--	--	6	436	51	897	373
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	46	823	599	1,331
Vertical Leakage from lower unit	--	--	--	0	46	50	31	0
Lateral inflows from adjacent county(s)	--	--	--	0	7	24	469	14
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*55*	*2,604*	*1,033*	*2,588*	*3,071*
Outflow	--	--	--					
Wells	--	--	--	0	143	136	259	992
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	195
Stream Gains	--	--	--	0	99	34	19	49
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	46	50	31
Vertical Leakage to lower unit	--	--	--	46	823	599	1,331	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	11	767	104	861	1,692
Total outflows	--	--	--	*57*	*1,832*	*919*	*2,521*	*2,960*
Inflows - outflows	--	--	--	-2	772	113	67	111
change in storage	--	--	--	2	-772	-114	-67	-111
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	-0.09	0.00	-0.01	0.00	0.00

McMullen County GCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	0	0	0	0	0	0	0	0
Stream Losses	0	0	0	0	0	0	0	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	868	824	2,073	2,432	32	0	3
Vertical Leakage from lower unit	768	597	9	1	1,518	631	176	0
Lateral inflows from adjacent county(s)	542	104	1,283	220	2,616	957	78	742
Vertical flow from younger units	1,067	0	0	0	0	0	0	0
Total inflows	*2,376*	*1,570*	*2,116*	*2,294*	*6,566*	*1,619*	*254*	*745*
Outflow								
Wells	100	0	150	0	2,000	0	0	0
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0	0	0
Stream Gains	0	0	0	0	0	0	0	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	768	597	9	1	1,518	631	176
Vertical Leakage to lower unit	868	824	2,073	2,432	32	0	3	0
Vertical flow to younger units	1,448	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	163	29	117	36	5,027	890	117	1,554
Total outflows	*2,579*	*1,622*	*2,937*	*2,477*	*7,059*	*2,408*	*750*	*1,730*
Inflows - outflows	-203	-52	-822	-183	-493	-788	-496	-985
change in storage	203	52	822	183	493	788	496	985
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

				Medina County GCD				
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	22	8,790	0	2,638	2,091
Stream Losses	--	--	--	0	1,478	0	929	113
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	17	1,265	729	3,420
Vertical Leakage from lower unit	--	--	--	0	812	612	175	0
Lateral inflows from adjacent county(s)	--	--	--	0	646	28	354	641
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*22*	*11,743*	*1,906*	*4,825*	*6,265*
Outflow	--	--	--					
Wells	--	--	--	0	400	0	1,248	886
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	354
Stream Gains	--	--	--	0	46	0	29	241
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	812	612	175
Vertical Leakage to lower unit	--	--	--	17	1,265	729	3,420	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	3	13,427	417	2,191	5,961
Total outflows	--	--	--	*20*	*15,138*	*1,958*	*7,501*	*7,617*
Inflows - outflows	--	--	--	1	-3,395	-53	-2,676	-1,352
change in storage	--	--	--	-1	3,395	53	2,676	1,352
Model Error (acre-feet)	--	--	--	0	0	0	1	0
Model Error (percent)	--	--	--	-0.03	0.00	0.00	0.01	0.00

Plum Creek CD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	118	0	2,976	2,750
Stream Losses	--	--	--	--	0	0	1,968	1,506
Reservoir Losses	--	--	--	--	0	0	0	0
Vertical Leakage from upper unit	--	--	--	--	0	13	1	1,968
Vertical Leakage from lower unit	--	--	--	--	0	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	0	0	1,909	3,617
Vertical flow from younger units	--	--	--	--	0	0	0	0
Total inflows	--	--	--	--	*118*	*13*	*6,855*	*9,842*
Outflow	--	--	--	--				
Wells	--	--	--	--	0	0	4,158	9,202
Springs	--	--	--	--	0	0	0	0
Evapotranspiration	--	--	--	--	0	0	0	213
Stream Gains	--	--	--	--	0	0	755	347
Reservoir Gains	--	--	--	--	0	0	0	0
Vertical Leakage to upper unit	--	--	--	--	0	0	0	0
Vertical Leakage to lower unit	--	--	--	--	13	1	1,968	0
Vertical flow to younger units	--	--	--	--	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	107	17	2,122	2,792
Total outflows	--	--	--	--	*120*	*18*	*9,003*	*12,554*
Inflows - outflows	--	--	--	--	-1	-5	-2,147	-2,712
change in storage	--	--	--	--	1	5	2,147	2,712
Model Error (acre-feet)	--	--	--	--	0	0	0	0
Model Error (percent)	--	--	--	--	0.00	-0.03	0.00	0.00

Uvalde County UWCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	--	1,370	1,188	1,205
Stream Losses	--	--	--	--	--	658	308	351
Reservoir Losses	--	--	--	--	--	0	0	0
Vertical Leakage from upper unit	--	--	--	--	--	0	0	1,445
Vertical Leakage from lower unit	--	--	--	--	--	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	--	5	22	321
Vertical flow from younger units	--	--	--	--	--	0	0	0
Total inflows	--	--	--	--	--	*2,033*	*1,517*	*3,323*
Outflow	--	--	--	--	--			
Wells	--	--	--	--	--	828	0	0
Springs	--	--	--	--	--	0	0	0
Evapotranspiration	--	--	--	--	--	0	0	6
Stream Gains	--	--	--	--	--	0	15	16
Reservoir Gains	--	--	--	--	--	0	0	0
Vertical Leakage to upper unit	--	--	--	--	--	0	0	0
Vertical Leakage to lower unit	--	--	--	--	--	0	1,445	0
Vertical flow to younger units	--	--	--	--	--	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	--	1,202	991	4,766
Total outflows	--	--	--	--	--	*2,031*	*2,451*	*4,787*
Inflows - outflows	--	--	--	--	--	2	-934	-1,465
change in storage	--	--	--	--	--	-2	934	1,465
Model Error (acre-feet)	--	--	--	--	--	0	0	0
Model Error (percent)	--	--	--	--	--	0.01	0.00	0.00

Webb County scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,201	382	10,802	283	529	82	82	15
Stream Losses	3,935	945	20,795	4,992	53	15	2,991	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	3,509	4,080	4,877	4,536	2,961	568	586
Vertical Leakage from lower unit	783	638	183	5	403	30	23	0
Lateral inflows from adjacent county(s)	248	32	722	288	127	720	475	1,710
Vertical flow from younger units	5,125	0	0	0	0	0	0	0
Total inflows	13,292	5,506	36,581	10,445	5,647	3,809	4,139	2,310
Outflow								
Wells	0	0	0	0	896	13	6	1
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	2,203	145	1,527	1,624	124	69	150	42
Stream Gains	2,159	32	7,180	3,009	0	205	2,816	135
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	783	638	183	5	403	30	23
Vertical Leakage to lower unit	3,509	4,080	4,877	4,536	2,961	568	586	0
Vertical flow to younger units	809	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	765	120	2,537	761	1,516	2,437	525	1,947
Total outflows	9,445	5,160	16,760	10,112	5,503	3,695	4,113	2,148
Inflows - outflows	3,847	346	19,821	333	145	114	27	162
change in storage	-3,849	-346	-19,825	-336	-145	-114	-27	-162
Model Error (acre-feet)	-2	-1	-4	-3	0	0	0	0
Model Error (percent)	-0.02	-0.01	-0.02	-0.03	-0.01	0.00	0.00	0.00

Wintergarden GCD scenario 1

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	9,588	691	21,854	1,069	11,967	649	1,678	804
Stream Losses	732	195	25,389	1,559	3,484	90	1,689	981
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	12,580	12,251	29,130	29,818	11,672	2,635	3,815
Vertical Leakage from lower unit	1,771	1,514	151	234	11,518	10,626	9,915	0
Lateral inflows from adjacent county(s)	2,493	208	4,678	879	4,669	2,919	2,021	8,244
Vertical flow from younger units	8,682	0	0	0	0	0	0	0
Total inflows	*23,265*	*15,189*	*64,324*	*32,872*	*61,456*	*25,955*	*17,937*	*13,843*
Outflow								
Wells	987	0	1	0	31,100	9,259	4,007	416
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	582	78	0	0	0	0	0	0
Stream Gains	2,843	104	6,640	0	0	121	6	86
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	1,771	1,514	151	234	11,518	10,626	9,915
Vertical Leakage to lower unit	12,580	12,251	29,130	29,818	11,672	2,635	3,815	0
Vertical flow to younger units	6,829	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	862	117	1,817	618	20,766	2,596	1,029	3,733
Total outflows	*24,682*	*14,321*	*39,102*	*30,587*	*63,771*	*26,128*	*19,482*	*14,151*
Inflows - outflows	-1,417	867	25,222	2,285	-2,316	-173	-1,545	-307
change in storage	1,417	-867	-25,222	-2,285	2,316	173	1,545	307
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Bexar County scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	96	4,277	434	2,989	5,284
Stream Losses	--	--	--	50	1,237	0	3,871	4,305
Reservoir Losses	--	--	--	0	0	0	1,801	0
Vertical Leakage from upper unit	--	--	--	0	131	322	318	9,489
Vertical Leakage from lower unit	--	--	--	0	345	24	0	0
Lateral inflows from adjacent county(s)	--	--	--	1	3,606	15	304	11,869
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*147*	*9,596*	*795*	*9,284*	*30,947*
Outflow	--	--	--					
Wells	--	--	--	0	9,107	0	0	17,000
Springs	--	--	--	0	0	0	62	135
Evapotranspiration	--	--	--	0	0	0	9	371
Stream Gains	--	--	--	0	0	0	11	762
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	345	24	0
Vertical Leakage to lower unit	--	--	--	131	322	318	9,489	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	88	4,964	105	2,306	21,010
Total outflows	--	--	--	*219*	*14,394*	*768*	*11,900*	*39,277*
Inflows - outflows	--	--	--	-72	-4,798	27	-2,616	-8,330
change in storage	--	--	--	72	4,798	-27	2,617	8,330
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	0.01	0.00	0.00	0.00	0.00

Caldwell County scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	1,145	904	5,420	0	4,358	4,657
Stream Losses	--	--	188	1,009	75	0	1,969	2,579
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	163	1,795	365	165	2,697
Vertical Leakage from lower unit	--	--	0	0	168	0	8	0
Lateral inflows from adjacent county(s)	--	--	18	9	4,423	6	3,756	4,922
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*1,351*	*2,085*	*11,881*	*371*	*10,256*	*14,855*
Outflow	--	--						
Wells	--	--	307	0	5,209	0	7,372	13,441
Springs	--	--	0	0	0	0	0	208
Evapotranspiration	--	--	0	0	0	0	0	383
Stream Gains	--	--	89	30	0	0	1,958	389
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	168	0	8
Vertical Leakage to lower unit	--	--	163	1,795	365	165	2,697	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	931	386	9,244	34	1,832	3,571
Total outflows	--	--	*1,490*	*2,211*	*14,818*	*367*	*13,859*	*18,000*
Inflows - outflows	--	--	-140	-126	-2,937	4	-3,603	-3,145
change in storage	--	--	140	126	2,937	-4	3,603	3,145
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	0.00	0.00	0.00	0.01	0.00	0.00

Evergreen UWCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	8,987	1,593	26,431	2,081	18,690	0	1,560	69
Stream Losses	707	730	12,576	1,489	14,137	0	1,535	207
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	14,570	16,410	35,754	44,796	2,988	1,937	9,868
Vertical Leakage from lower unit	2,828	2,333	0	0	14,224	10,612	5,548	0
Lateral inflows from adjacent county(s)	452	71	695	408	46,104	2,363	6,352	35,277
Vertical flow from younger units	12,913	0	0	0	0	0	0	0
Total inflows	*25,887*	*19,296*	*56,112*	*39,731*	*137,951*	*15,963*	*16,932*	*45,421*
Outflow								
Wells	1,735	0	9,030	0	157,769	375	371	34,000
Springs	137	47	0	0	0	0	0	0
Evapotranspiration	81	16	0	0	0	0	0	0
Stream Gains	1,109	229	4,283	5	102	0	450	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,828	2,333	0	0	14,224	10,612	5,548
Vertical Leakage to lower unit	14,570	16,410	35,754	44,796	2,988	1,937	9,868	0
Vertical flow to younger units	8,073	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	2,184	250	3,891	373	17,501	208	1,364	14,030
Total outflows	*27,888*	*19,779*	*55,291*	*45,174*	*178,360*	*16,744*	*22,665*	*53,578*
Inflows - outflows	-2,001	-483	821	-5,443	-40,409	-782	-5,733	-8,157
change in storage	2,001	483	-824	5,443	40,410	782	5,733	8,157
Model Error (acre-feet)	0	0	-2	0	1	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Gonzales County UWCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,082	803	7,239	2,139	6,819	0	972	0
Stream Losses	0	37	810	1,460	2,787	0	1,318	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	563	1,228	3,654	8,429	1,325	1,115	634
Vertical Leakage from lower unit	2,726	2,320	357	79	887	544	553	0
Lateral inflows from adjacent county(s)	733	263	2,059	457	31,623	121	9,580	20,457
Vertical flow from younger units	963	0	0	0	0	0	0	0
Total inflows	*7,503*	*3,986*	*11,693*	*7,789*	*50,546*	*1,990*	*13,538*	*21,091*
Outflow								
Wells	3,552	0	5,372	0	55,271	0	12,294	20,086
Springs	10	12	0	0	0	0	0	0
Evapotranspiration	1	51	27	1	0	0	0	0
Stream Gains	973	156	2,053	151	0	0	714	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,726	2,320	357	79	887	544	553
Vertical Leakage to lower unit	563	1,228	3,654	8,429	1,325	1,115	634	0
Vertical flow to younger units	2,818	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	66	20	145	92	1,359	26	2,062	1,676
Total outflows	*7,984*	*4,192*	*13,570*	*9,031*	*58,034*	*2,027*	*16,249*	*22,315*
Inflows - outflows	-480	-206	-1,877	-1,242	-7,488	-37	-2,711	-1,224
change in storage	480	206	1,877	1,242	7,487	38	2,711	1,224
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00

Guadalupe County GCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	78	454	7,210	0	5,607	4,546
Stream Losses	--	--	0	183	435	0	4,832	1,716
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	39	668	469	190	2,872
Vertical Leakage from lower unit	--	--	0	0	366	172	35	0
Lateral inflows from adjacent county(s)	--	--	1	10	1,438	9	388	2,198
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*79*	*686*	*10,118*	*650*	*11,053*	*11,332*
Outflow	--	--						
Wells	--	--	0	0	9,500	0	2,994	1,549
Springs	--	--	0	0	0	0	0	41
Evapotranspiration	--	--	0	0	0	0	0	67
Stream Gains	--	--	0	8	0	0	1,912	282
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	366	172	35
Vertical Leakage to lower unit	--	--	39	668	469	190	2,872	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	16	149	7,313	97	5,158	10,876
Total outflows	--	--	*55*	*825*	*17,282*	*653*	*13,108*	*12,850*
Inflows - outflows	--	--	24	-139	-7,164	-3	-2,055	-1,518
change in storage	--	--	-24	139	7,164	3	2,055	1,518
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	-0.02	0.00	0.00	0.00	0.00	0.00

Maverick County scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	49	2,069	85	591	1,353
Stream Losses	--	--	--	6	436	51	897	373
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	46	823	599	1,331
Vertical Leakage from lower unit	--	--	--	0	46	50	31	0
Lateral inflows from adjacent county(s)	--	--	--	0	7	24	469	14
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	55	2,604	1,033	2,588	3,071
Outflow	--	--	--					
Wells	--	--	--	0	143	136	259	992
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	195
Stream Gains	--	--	--	0	99	34	19	49
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	46	50	31
Vertical Leakage to lower unit	--	--	--	46	823	599	1,331	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	11	767	104	861	1,692
Total outflows	--	--	--	57	1,832	919	2,521	2,960
Inflows - outflows	--	--	--	-2	772	113	67	111
change in storage	--	--	--	2	-772	-114	-67	-111
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	-0.09	0.00	-0.01	0.00	0.00

McMullen County GCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	0	0	0	0	0	0	0	0
Stream Losses	0	0	0	0	0	0	0	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	875	831	2,097	2,457	32	0	2
Vertical Leakage from lower unit	761	590	8	1	1,522	635	177	0
Lateral inflows from adjacent county(s)	542	105	1,285	220	2,615	958	78	743
Vertical flow from younger units	1,071	0	0	0	0	0	0	0
Total inflows	*2,374*	*1,569*	*2,125*	*2,318*	*6,595*	*1,625*	*255*	*745*
Outflow								
Wells	100	0	150	0	2,000	0	0	0
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0	0	0
Stream Gains	0	0	0	0	0	0	0	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	761	590	8	1	1,522	635	177
Vertical Leakage to lower unit	875	831	2,097	2,457	32	0	2	0
Vertical flow to younger units	1,442	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	163	29	117	37	5,059	898	117	1,557
Total outflows	*2,579*	*1,621*	*2,955*	*2,502*	*7,092*	*2,421*	*755*	*1,734*
Inflows - outflows	-205	-52	-830	-184	-497	-796	-500	-989
change in storage	205	52	830	184	497	796	500	989
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Medina County GCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	22	8,790	0	2,638	2,091
Stream Losses	--	--	--	0	1,478	0	929	113
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	17	1,265	729	3,420
Vertical Leakage from lower unit	--	--	--	0	812	612	175	0
Lateral inflows from adjacent county(s)	--	--	--	0	646	28	354	641
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*22*	*11,743*	*1,906*	*4,825*	*6,265*
Outflow	--	--	--					
Wells	--	--	--	0	400	0	1,248	886
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	354
Stream Gains	--	--	--	0	46	0	29	241
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	812	612	175
Vertical Leakage to lower unit	--	--	--	17	1,265	729	3,420	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	3	13,436	417	2,192	5,962
Total outflows	--	--	--	*20*	*15,147*	*1,959*	*7,502*	*7,618*
Inflows - outflows	--	--	--	1	-3,403	-53	-2,677	-1,353
change in storage	--	--	--	-1	3,403	53	2,677	1,353
Model Error (acre-feet)	--	--	--	0	0	0	1	0
Model Error (percent)	--	--	--	-0.14	0.00	0.00	0.01	0.00

Plum Creek CD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	118	0	2,976	2,750
Stream Losses	--	--	--	--	0	0	1,969	1,506
Reservoir Losses	--	--	--	--	0	0	0	0
Vertical Leakage from upper unit	--	--	--	--	0	12	1	1,972
Vertical Leakage from lower unit	--	--	--	--	0	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	0	0	1,914	3,619
Vertical flow from younger units	--	--	--	--	0	0	0	0
Total inflows	--	--	--	--	*118*	*12*	*6,860*	*9,846*
Outflow	--	--	--	--				
Wells	--	--	--	--	0	0	4,158	9,202
Springs	--	--	--	--	0	0	0	0
Evapotranspiration	--	--	--	--	0	0	0	213
Stream Gains	--	--	--	--	0	0	746	347
Reservoir Gains	--	--	--	--	0	0	0	0
Vertical Leakage to upper unit	--	--	--	--	0	0	0	0
Vertical Leakage to lower unit	--	--	--	--	12	1	1,972	0
Vertical flow to younger units	--	--	--	--	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	108	17	2,139	2,801
Total outflows	--	--	--	--	*120*	*18*	*9,013*	*12,562*
Inflows - outflows	--	--	--	--	-1	-6	-2,153	-2,716
change in storage	--	--	--	--	1	6	2,154	2,716
Model Error (acre-feet)	--	--	--	--	0	0	0	0
Model Error (percent)	--	--	--	--	0.00	0.04	0.00	0.00

Uvalde County UWCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	--	1,370	1,188	1,205
Stream Losses	--	--	--	--	--	658	308	351
Reservoir Losses	--	--	--	--	--	0	0	0
Vertical Leakage from upper unit	--	--	--	--	--	0	0	1,445
Vertical Leakage from lower unit	--	--	--	--	--	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	--	5	22	321
Vertical flow from younger units	--	--	--	--	--	0	0	0
Total inflows	--	--	--	--	--	*2,033*	*1,517*	*3,323*
Outflow	--	--	--	--	--			
Wells	--	--	--	--	--	828	0	0
Springs	--	--	--	--	--	0	0	0
Evapotranspiration	--	--	--	--	--	0	0	6
Stream Gains	--	--	--	--	--	0	15	16
Reservoir Gains	--	--	--	--	--	0	0	0
Vertical Leakage to upper unit	--	--	--	--	--	0	0	0
Vertical Leakage to lower unit	--	--	--	--	--	0	1,445	0
Vertical flow to younger units	--	--	--	--	--	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	--	1,202	991	4,766
Total outflows	--	--	--	--	--	*2,031*	*2,451*	*4,787*
Inflows - outflows	--	--	--	--	--	2	-934	-1,465
change in storage	--	--	--	--	--	-2	934	1,465
Model Error (acre-feet)	--	--	--	--	--	0	0	0
Model Error (percent)	--	--	--	--	--	0.00	0.00	0.00

Webb County scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,201	382	10,802	283	529	82	82	15
Stream Losses	3,935	945	20,795	4,992	53	15	2,991	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	3,509	4,080	4,878	4,536	2,962	568	586
Vertical Leakage from lower unit	783	638	182	5	403	30	23	0
Lateral inflows from adjacent county(s)	248	32	722	288	127	720	475	1,710
Vertical flow from younger units	5,125	0	0	0	0	0	0	0
Total inflows	13,292	5,506	36,581	10,446	5,648	3,809	4,139	2,310
Outflow								
Wells	0	0	0	0	896	13	6	1
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	2,203	145	1,527	1,624	124	69	150	42
Stream Gains	2,159	32	7,180	3,009	0	205	2,816	135
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	783	638	182	5	403	30	23
Vertical Leakage to lower unit	3,509	4,080	4,878	4,536	2,962	568	586	0
Vertical flow to younger units	809	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	765	121	2,537	761	1,517	2,438	525	1,948
Total outflows	9,445	5,160	16,760	10,113	5,504	3,695	4,113	2,148
Inflows - outflows	3,847	346	19,821	333	144	114	27	162
change in storage	-3,849	-346	-19,824	-336	-145	-114	-27	-162
Model Error (acre-feet)	-2	-1	-4	-3	0	0	0	0
Model Error (percent)	-0.02	-0.01	-0.02	-0.03	-0.01	0.00	0.00	0.00

Wintergarden GCD scenario 2

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	9,588	691	21,854	1,069	11,967	649	1,678	804
Stream Losses	732	195	25,389	1,559	3,484	90	1,689	981
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	12,585	12,257	29,142	29,831	11,672	2,635	3,815
Vertical Leakage from lower unit	1,769	1,512	151	234	11,521	10,629	9,916	0
Lateral inflows from adjacent county(s)	2,493	208	4,679	879	4,669	2,919	2,021	8,244
Vertical flow from younger units	8,686	0	0	0	0	0	0	0
Total inflows	*23,267*	*15,192*	*64,330*	*32,883*	*61,472*	*25,958*	*17,938*	*13,844*
Outflow								
Wells	987	0	1	0	31,100	9,259	4,007	416
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	582	78	0	0	0	0	0	0
Stream Gains	2,843	104	6,640	0	0	121	6	86
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	1,769	1,512	151	234	11,521	10,629	9,916
Vertical Leakage to lower unit	12,585	12,257	29,142	29,831	11,672	2,635	3,815	0
Vertical flow to younger units	6,826	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	863	117	1,817	618	20,787	2,599	1,029	3,735
Total outflows	*24,685*	*14,325*	*39,113*	*30,600*	*63,792*	*26,134*	*19,486*	*14,153*
Inflows - outflows	-1,418	867	25,217	2,283	-2,320	-176	-1,548	-309
change in storage	1,418	-867	-25,218	-2,283	2,320	176	1,547	309
Model Error (acre-feet)	0	0	-1	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Bexar County scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	96	4,277	434	2,989	5,284
Stream Losses	--	--	--	50	1,235	0	3,868	4,305
Reservoir Losses	--	--	--	0	0	0	1,801	0
Vertical Leakage from upper unit	--	--	--	0	131	323	320	9,489
Vertical Leakage from lower unit	--	--	--	0	344	23	0	0
Lateral inflows from adjacent county(s)	--	--	--	1	3,643	15	304	11,870
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	147	9,629	795	9,282	30,947
Outflow	--	--	--					
Wells	--	--	--	0	9,107	0	0	17,000
Springs	--	--	--	0	0	0	62	135
Evapotranspiration	--	--	--	0	0	0	9	371
Stream Gains	--	--	--	0	0	0	11	762
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	344	23	0
Vertical Leakage to lower unit	--	--	--	131	323	320	9,489	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	88	4,946	104	2,298	20,995
Total outflows	--	--	--	219	14,376	768	11,892	39,263
Inflows - outflows	--	--	--	-72	-4,746	27	-2,610	-8,316
change in storage	--	--	--	72	4,746	-27	2,610	8,316
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	0.00	0.00	0.00	0.00	0.00

Caldwell County scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	1,145	904	5,271	149	4,358	4,657
Stream Losses	--	--	272	1,245	75	0	1,971	2,582
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	251	2,178	302	67	2,681
Vertical Leakage from lower unit	--	--	0	0	470	96	18	0
Lateral inflows from adjacent county(s)	--	--	0	17	15,032	21	3,790	4,935
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*1,417*	*2,417*	*23,026*	*568*	*10,203*	*14,855*
Outflow	--	--						
Wells	--	--	307	0	22,809	0	7,372	13,441
Springs	--	--	0	0	0	0	0	208
Evapotranspiration	--	--	0	0	0	0	0	383
Stream Gains	--	--	45	19	0	0	1,908	389
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	470	96	18
Vertical Leakage to lower unit	--	--	251	2,178	302	67	2,681	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	1,011	410	4,170	33	1,871	3,577
Total outflows	--	--	*1,614*	*2,608*	*27,281*	*570*	*13,927*	*18,016*
Inflows - outflows	--	--	-197	-190	-4,255	-2	-3,725	-3,161
change in storage	--	--	197	190	4,256	2	3,725	3,161
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	0.00	0.00	0.00	0.00	0.00	0.00

Evergreen UWCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	8,987	1,593	26,431	2,081	18,690	0	1,560	69
Stream Losses	701	722	12,573	1,480	14,089	0	1,535	207
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	14,485	16,306	35,339	44,324	3,009	1,965	9,933
Vertical Leakage from lower unit	2,921	2,429	0	0	14,081	10,490	5,538	0
Lateral inflows from adjacent county(s)	452	72	692	410	45,925	2,359	6,330	35,245
Vertical flow from younger units	12,851	0	0	0	0	0	0	0
Total inflows	*25,911*	*19,301*	*56,002*	*39,310*	*137,108*	*15,858*	*16,928*	*45,454*
Outflow								
Wells	1,735	0	9,030	0	157,769	375	371	34,000
Springs	137	47	0	0	0	0	0	0
Evapotranspiration	81	16	0	0	0	0	0	0
Stream Gains	1,111	233	4,319	5	103	0	460	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,921	2,429	0	0	14,081	10,490	5,538
Vertical Leakage to lower unit	14,485	16,306	35,339	44,324	3,009	1,965	9,933	0
Vertical flow to younger units	8,161	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	2,183	249	3,880	371	16,060	208	1,362	14,037
Total outflows	*27,893*	*19,772*	*54,997*	*44,700*	*176,940*	*16,630*	*22,617*	*53,575*
Inflows - outflows	-1,982	-471	1,005	-5,390	-39,832	-772	-5,689	-8,122
change in storage	1,981	471	-1,008	5,391	39,832	772	5,689	8,122
Model Error (acre-feet)	0	0	-3	0	1	0	0	0
Model Error (percent)	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00

Gonzales UWCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,082	803	7,239	2,139	6,670	149	972	0
Stream Losses	0	33	888	1,731	3,036	0	1,324	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	593	1,280	3,998	9,315	974	727	626
Vertical Leakage from lower unit	2,664	2,269	275	49	1,087	549	603	0
Lateral inflows from adjacent county(s)	729	260	2,017	467	40,964	129	9,810	20,516
Vertical flow from younger units	967	0	0	0	0	0	0	0
Total inflows	*7,442*	*3,957*	*11,698*	*8,385*	*61,072*	*1,801*	*13,437*	*21,142*
Outflow								
Wells	3,552	0	5,372	0	67,183	0	12,294	20,086
Springs	10	11	0	0	0	0	0	0
Evapotranspiration	1	53	31	1	0	0	0	0
Stream Gains	945	148	1,914	114	0	0	708	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,664	2,269	275	49	1,087	549	603
Vertical Leakage to lower unit	593	1,280	3,998	9,315	974	727	626	0
Vertical flow to younger units	2,795	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	67	19	163	91	2,114	32	2,082	1,683
Total outflows	*7,964*	*4,175*	*13,747*	*9,796*	*70,320*	*1,846*	*16,259*	*22,372*
Inflows - outflows	-522	-218	-2,048	-1,410	-9,248	-46	-2,822	-1,230
change in storage	522	218	2,048	1,410	9,248	46	2,823	1,229
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Guadalupe County GCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	78	454	7,210	0	5,607	4,546
Stream Losses	--	--	0	183	396	0	4,819	1,714
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	39	674	462	192	2,875
Vertical Leakage from lower unit	--	--	0	0	345	157	31	0
Lateral inflows from adjacent county(s)	--	--	1	10	1,417	9	385	2,200
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*79*	*686*	*10,042*	*627*	*11,035*	*11,336*
Outflow	--	--						
Wells	--	--	0	0	9,500	0	2,994	1,549
Springs	--	--	0	0	0	0	0	41
Evapotranspiration	--	--	0	0	0	0	0	67
Stream Gains	--	--	0	8	0	0	1,913	281
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	345	157	31
Vertical Leakage to lower unit	--	--	39	674	462	192	2,875	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	16	147	7,034	93	5,136	10,879
Total outflows	--	--	*55*	*828*	*16,995*	*630*	*13,075*	*12,848*
Inflows - outflows	--	--	24	-143	-6,954	-3	-2,040	-1,512
change in storage	--	--	-24	143	6,954	3	2,039	1,513
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	-0.05	0.00	0.00	0.00	0.00	0.00

Maverick County scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	49	2,069	85	591	1,353
Stream Losses	--	--	--	6	436	51	897	373
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	46	823	599	1,331
Vertical Leakage from lower unit	--	--	--	0	46	50	31	0
Lateral inflows from adjacent county(s)	--	--	--	0	7	24	469	14
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*55*	*2,604*	*1,033*	*2,588*	*3,071*
Outflow	--	--	--					
Wells	--	--	--	0	143	136	259	992
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	195
Stream Gains	--	--	--	0	99	34	19	49
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	46	50	31
Vertical Leakage to lower unit	--	--	--	46	823	599	1,331	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	11	767	104	861	1,692
Total outflows	--	--	--	57	1,832	919	2,521	2,960
Inflows - outflows	--	--	--	-2	772	113	67	111
change in storage	--	--	--	*2*	*-772*	*-114*	*-67*	*-111*
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	-0.09	0.00	-0.01	0.00	0.00

McMullen County GCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	0	0	0	0	0	0	0	0
Stream Losses	0	0	0	0	0	0	0	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	869	825	2,078	2,437	32	0	3
Vertical Leakage from lower unit	767	596	9	1	1,519	631	176	0
Lateral inflows from adjacent county(s)	542	105	1,283	220	2,615	957	78	742
Vertical flow from younger units	1,067	0	0	0	0	0	0	0
Total inflows	*2,376*	*1,570*	*2,117*	*2,298*	*6,571*	*1,620*	*254*	*745*
Outflow								
Wells	100	0	150	0	2,000	0	0	0
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0	0	0
Stream Gains	0	0	0	0	0	0	0	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	767	596	9	1	1,519	631	176
Vertical Leakage to lower unit	869	825	2,078	2,437	32	0	3	0
Vertical flow to younger units	1,447	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	163	29	117	36	5,033	891	117	1,554
Total outflows	*2,579*	*1,622*	*2,941*	*2,481*	*7,065*	*2,411*	*751*	*1,730*
Inflows - outflows	-203	-52	-824	-183	-494	-790	-497	-985
change in storage	203	52	824	183	494	790	497	985
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Medina County GCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	22	8,790	0	2,638	2,091
Stream Losses	--	--	--	0	1,478	0	929	113
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	17	1,265	729	3,420
Vertical Leakage from lower unit	--	--	--	0	812	612	175	0
Lateral inflows from adjacent county(s)	--	--	--	0	646	28	354	641
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*22*	*11,743*	*1,906*	*4,825*	*6,265*
Outflow	--	--	--					
Wells	--	--	--	0	400	0	1,248	886
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	354
Stream Gains	--	--	--	0	46	0	29	241
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	812	612	175
Vertical Leakage to lower unit	--	--	--	17	1,265	729	3,420	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	3	13,429	417	2,192	5,961
Total outflows	--	--	--	*20*	*15,139*	*1,958*	*7,501*	*7,617*
Inflows - outflows	--	--	--	1	-3,396	-53	-2,676	-1,352
change in storage	--	--	--	-1	3,396	53	2,676	1,352
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	0.06	0.00	0.00	0.01	0.00

Plum Creek CD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	118	0	2,976	2,750
Stream Losses	--	--	--	--	0	0	1,971	1,506
Reservoir Losses	--	--	--	--	0	0	0	0
Vertical Leakage from upper unit	--	--	--	--	0	10	1	1,966
Vertical Leakage from lower unit	--	--	--	--	0	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	0	0	1,922	3,625
Vertical flow from younger units	--	--	--	--	0	0	0	0
Total inflows	--	--	--	--	*118*	*10*	*6,871*	*9,847*
Outflow	--	--	--	--				
Wells	--	--	--	--	0	0	4,158	9,202
Springs	--	--	--	--	0	0	0	0
Evapotranspiration	--	--	--	--	0	0	0	213
Stream Gains	--	--	--	--	0	0	709	347
Reservoir Gains	--	--	--	--	0	0	0	0
Vertical Leakage to upper unit	--	--	--	--	0	0	0	0
Vertical Leakage to lower unit	--	--	--	--	10	1	1,966	0
Vertical flow to younger units	--	--	--	--	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	108	20	2,246	2,814
Total outflows	--	--	--	--	*119*	*21*	*9,079*	*12,576*
Inflows - outflows	--	--	--	--	-1	-11	-2,209	-2,729
change in storage	--	--	--	--	1	11	2,209	2,729
Model Error (acre-feet)	--	--	--	--	0	0	0	0
Model Error (percent)	--	--	--	--	0.00	0.07	0.00	0.00

Uvalde County GCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	--	1,370	1,188	1,205
Stream Losses	--	--	--	--	--	658	308	351
Reservoir Losses	--	--	--	--	--	0	0	0
Vertical Leakage from upper unit	--	--	--	--	--	0	0	1,445
Vertical Leakage from lower unit	--	--	--	--	--	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	--	5	22	321
Vertical flow from younger units	--	--	--	--	--	0	0	0
Total inflows	--	--	--	--	--	*2,033*	*1,517*	*3,323*
Outflow	--	--	--	--	--			
Wells	--	--	--	--	--	828	0	0
Springs	--	--	--	--	--	0	0	0
Evapotranspiration	--	--	--	--	--	0	0	6
Stream Gains	--	--	--	--	--	0	15	16
Reservoir Gains	--	--	--	--	--	0	0	0
Vertical Leakage to upper unit	--	--	--	--	--	0	0	0
Vertical Leakage to lower unit	--	--	--	--	--	0	1,445	0
Vertical flow to younger units	--	--	--	--	--	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	--	1,202	991	4,766
Total outflows	--	--	--	--	--	*2,031*	*2,451*	*4,787*
Inflows - outflows	--	--	--	--	--	2	-934	-1,465
change in storage	--	--	--	--	--	-2	934	1,464
Model Error (acre-feet)	--	--	--	--	--	0	0	0
Model Error (percent)	--	--	--	--	--	0.00	0.00	0.00

Webb County scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,201	382	10,802	283	529	82	82	15
Stream Losses	3,935	945	20,795	4,992	53	15	2,991	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	3,509	4,080	4,877	4,536	2,961	568	586
Vertical Leakage from lower unit	783	638	183	5	403	30	23	0
Lateral inflows from adjacent county(s)	248	32	722	288	127	720	475	1,710
Vertical flow from younger units	5,125	0	0	0	0	0	0	0
Total inflows	*13,292*	*5,506*	*36,581*	*10,445*	*5,647*	*3,809*	*4,139*	*2,310*
Outflow								
Wells	0	0	0	0	896	13	6	1
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	2,203	145	1,527	1,624	124	69	150	42
Stream Gains	2,159	32	7,180	3,009	0	205	2,816	135
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	783	638	183	5	403	30	23
Vertical Leakage to lower unit	3,509	4,080	4,877	4,536	2,961	568	586	0
Vertical flow to younger units	809	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	765	120	2,537	761	1,516	2,437	525	1,947
Total outflows	*9,445*	*5,160*	*16,760*	*10,112*	*5,503*	*3,695*	*4,113*	*2,148*
Inflows - outflows	3,847	346	19,821	333	145	114	27	162
change in storage	-3,849	-346	-19,825	-336	-145	-114	-27	-162
Model Error (acre-feet)	-2	-1	-4	-3	0	0	0	0
Model Error (percent)	-0.02	-0.01	-0.02	-0.03	-0.01	0.00	0.00	0.00

Wintergarden GCD scenario 3

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	9,588	691	21,854	1,069	11,967	649	1,678	804
Stream Losses	732	195	25,389	1,559	3,484	90	1,689	981
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	12,580	12,252	29,132	29,820	11,671	2,635	3,815
Vertical Leakage from lower unit	1,770	1,514	151	234	11,518	10,626	9,915	0
Lateral inflows from adjacent county(s)	2,493	208	4,678	879	4,669	2,919	2,021	8,244
Vertical flow from younger units	8,683	0	0	0	0	0	0	0
Total inflows	*23,265*	*15,189*	*64,325*	*32,873*	*61,458*	*25,955*	*17,937*	*13,843*
Outflow								
Wells	987	0	1	0	31,100	9,259	4,007	416
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	582	78	0	0	0	0	0	0
Stream Gains	2,843	104	6,640	0	0	121	6	86
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	1,770	1,514	151	234	11,518	10,626	9,915
Vertical Leakage to lower unit	12,580	12,252	29,132	29,820	11,671	2,635	3,815	0
Vertical flow to younger units	6,828	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	862	117	1,817	618	20,769	2,597	1,029	3,734
Total outflows	*24,682*	*14,322*	*39,104*	*30,589*	*63,775*	*26,129*	*19,483*	*14,151*
Inflows - outflows	-1,417	867	25,221	2,284	-2,316	-174	-1,546	-307
change in storage	1,417	-867	-25,221	-2,284	2,317	174	1,546	308
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Bexar County scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	96	4,277	434	2,989	5,284
Stream Losses	--	--	--	50	1,237	0	3,871	4,305
Reservoir Losses	--	--	--	0	0	0	1,802	0
Vertical Leakage from upper unit	--	--	--	0	131	322	318	9,489
Vertical Leakage from lower unit	--	--	--	0	346	24	0	0
Lateral inflows from adjacent county(s)	--	--	--	1	3,594	15	304	11,869
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*147*	*9,585*	*795*	*9,284*	*30,947*
Outflow	--	--	--					
Wells	--	--	--	0	9,107	0	0	17,000
Springs	--	--	--	0	0	0	62	135
Evapotranspiration	--	--	--	0	0	0	9	371
Stream Gains	--	--	--	0	0	0	11	762
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	346	24	0
Vertical Leakage to lower unit	--	--	--	131	322	318	9,489	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	88	4,970	105	2,307	21,013
Total outflows	--	--	--	*219*	*14,400*	*768*	*11,902*	*39,281*
Inflows - outflows	--	--	--	-72	-4,815	27	-2,618	-8,334
change in storage	--	--	--	72	4,815	-27	2,618	8,334
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	0.01	0.00	0.00	0.00	0.00

Caldwell County scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	1,145	904	5,271	149	4,358	4,657
Stream Losses	--	--	275	1,253	75	0	1,971	2,585
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	254	2,190	305	63	2,685
Vertical Leakage from lower unit	--	--	0	0	481	99	18	0
Lateral inflows from adjacent county(s)	--	--	0	17	15,019	22	3,793	4,938
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*1,419*	*2,429*	*23,036*	*576*	*10,203*	*14,865*
Outflow	--	--						
Wells	--	--	307	0	22,809	0	7,372	13,441
Springs	--	--	0	0	0	0	0	208
Evapotranspiration	--	--	0	0	0	0	0	383
Stream Gains	--	--	43	18	0	0	1,890	389
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	481	99	18
Vertical Leakage to lower unit	--	--	254	2,190	305	63	2,685	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	1,017	415	4,386	34	1,895	3,593
Total outflows	--	--	*1,620*	*2,623*	*27,501*	*578*	*13,941*	*18,032*
Inflows - outflows	--	--	-201	-194	-4,464	-2	-3,738	-3,168
change in storage	--	--	201	194	4,464	2	3,738	3,167
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	0.01	0.00	0.00	0.00	0.00	0.00

Evergreen UWCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	8,987	1,593	26,431	2,081	18,690	0	1,560	69
Stream Losses	708	731	12,577	1,491	14,143	0	1,535	207
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	14,591	16,437	35,875	44,944	2,983	1,930	9,853
Vertical Leakage from lower unit	2,805	2,310	0	0	14,270	10,647	5,551	0
Lateral inflows from adjacent county(s)	452	71	696	406	46,183	2,364	6,359	35,284
Vertical flow from younger units	12,928	0	0	0	0	0	0	0
Total inflows	*25,880*	*19,296*	*56,141*	*39,853*	*138,230*	*15,994*	*16,935*	*45,414*
Outflow								
Wells	1,735	0	9,030	0	157,769	375	371	34,000
Springs	137	47	0	0	0	0	0	0
Evapotranspiration	81	16	0	0	0	0	0	0
Stream Gains	1,108	228	4,275	5	102	0	448	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,805	2,310	0	0	14,270	10,647	5,551
Vertical Leakage to lower unit	14,591	16,437	35,875	44,944	2,983	1,930	9,853	0
Vertical flow to younger units	8,054	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	2,184	250	3,897	375	18,116	209	1,373	14,037
Total outflows	*27,889*	*19,783*	*55,387*	*45,324*	*178,970*	*16,785*	*22,692*	*53,588*
Inflows - outflows	-2,009	-487	754	-5,471	-40,740	-791	-5,757	-8,174
change in storage	-2,009	-487	757	-5,471	-40,740	-791	-5,757	-8,174
Model Error (acre-feet)	0	0	3	0	-1	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Gonzales County UWCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,082	803	7,239	2,139	6,670	149	972	0
Stream Losses	0	38	914	1,781	3,036	0	1,331	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	620	1,353	4,659	10,217	909	651	619
Vertical Leakage from lower unit	2,438	2,054	199	17	1,289	715	651	0
Lateral inflows from adjacent county(s)	728	259	2,034	495	44,459	145	9,914	20,555
Vertical flow from younger units	1,037	0	0	0	0	0	0	0
Total inflows	*7,284*	*3,774*	*11,739*	*9,092*	*65,670*	*1,918*	*13,519*	*21,174*
Outflow								
Wells	3,552	0	5,372	0	72,871	0	12,294	20,086
Springs	9	11	0	0	0	0	0	0
Evapotranspiration	1	50	24	0	0	0	0	0
Stream Gains	925	141	1,757	96	0	0	703	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	2,438	2,054	199	17	1,289	715	651
Vertical Leakage to lower unit	620	1,353	4,659	10,217	909	651	619	0
Vertical flow to younger units	2,667	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	69	21	170	95	2,173	33	2,073	1,680
Total outflows	*7,843*	*4,013*	*14,036*	*10,607*	*75,970*	*1,973*	*16,404*	*22,417*
Inflows - outflows	-559	-238	-2,297	-1,515	-10,300	-55	-2,885	-1,243
change in storage	559	239	2,298	1,515	10,300	55	2,885	1,243
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Guadalupe County GCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	78	454	7,210	0	5,607	4,546
Stream Losses	--	--	0	183	463	0	4,856	1,719
Reservoir Losses	--	--	0	0	0	0	0	0
Vertical Leakage from upper unit	--	--	0	39	667	472	190	2,879
Vertical Leakage from lower unit	--	--	0	0	372	177	36	0
Lateral inflows from adjacent county(s)	--	--	1	10	1,431	9	388	2,206
Vertical flow from younger units	--	--	0	0	0	0	0	0
Total inflows	--	--	*79*	*686*	*10,142*	*658*	*11,078*	*11,350*
Outflow	--	--						
Wells	--	--	0	0	9,500	0	2,994	1,549
Springs	--	--	0	0	0	0	0	41
Evapotranspiration	--	--	0	0	0	0	0	67
Stream Gains	--	--	0	8	0	0	1,904	281
Reservoir Gains	--	--	0	0	0	0	0	0
Vertical Leakage to upper unit	--	--	0	0	0	372	177	36
Vertical Leakage to lower unit	--	--	39	667	472	190	2,879	0
Vertical flow to younger units	--	--	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	16	150	7,612	100	5,198	10,903
Total outflows	--	--	*55*	*825*	*17,584*	*662*	*13,151*	*12,877*
Inflows - outflows	--	--	24	-139	-7,442	-3	-2,074	-1,527
change in storage	--	--	-24	139	7,442	3	2,073	1,528
Model Error (acre-feet)	--	--	0	0	0	0	0	0
Model Error (percent)	--	--	-0.05	0.01	0.00	0.00	0.00	0.00

Maverick County scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	49	2,069	85	591	1,353
Stream Losses	--	--	--	6	436	51	897	373
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	46	823	599	1,331
Vertical Leakage from lower unit	--	--	--	0	46	50	31	0
Lateral inflows from adjacent county(s)	--	--	--	0	7	24	469	14
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*55*	*2,604*	*1,033*	*2,588*	*3,071*
Outflow	--	--	--					
Wells	--	--	--	0	143	136	259	992
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	195
Stream Gains	--	--	--	0	99	34	19	49
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	46	50	31
Vertical Leakage to lower unit	--	--	--	46	823	599	1,331	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	11	767	104	861	1,692
Total outflows	--	--	--	*57*	*1,832*	*919*	*2,521*	*2,960*
Inflows - outflows	--	--	--	-2	772	113	67	111
change in storage	--	--	--	2	-772	-114	-67	-111
Model Error (acre-feet)	--	--	--	0	0	0	0	0
Model Error (percent)	--	--	--	-0.09	0.00	-0.01	0.00	0.00

McMullen County GCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	0	0	0	0	0	0	0	0
Stream Losses	0	0	0	0	0	0	0	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	876	832	2,102	2,462	32	0	2
Vertical Leakage from lower unit	760	589	8	1	1,524	636	177	0
Lateral inflows from adjacent county(s)	542	105	1,285	220	2,615	958	78	743
Vertical flow from younger units	1,072	0	0	0	0	0	0	0
Total inflows	*2,374*	*1,569*	*2,126*	*2,322*	*6,600*	*1,626*	*255*	*745*
Outflow								
Wells	100	0	150	0	2,000	0	0	0
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0	0	0
Stream Gains	0	0	0	0	0	0	0	0
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	760	589	8	1	1,524	636	177
Vertical Leakage to lower unit	876	832	2,102	2,462	32	0	2	0
Vertical flow to younger units	1,441	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	163	29	117	37	5,066	900	117	1,558
Total outflows	*2,579*	*1,622*	*2,958*	*2,507*	*7,098*	*2,424*	*756*	*1,734*
Inflows - outflows	-205	-53	-832	-185	-498	-798	-501	-989
change in storage	205	53	832	185	498	798	501	989
Model Error (acre-feet)	0	0	0	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Medina County GCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	22	8,790	0	2,638	2,091
Stream Losses	--	--	--	0	1,478	0	929	113
Reservoir Losses	--	--	--	0	0	0	0	0
Vertical Leakage from upper unit	--	--	--	0	17	1,265	729	3,421
Vertical Leakage from lower unit	--	--	--	0	812	612	175	0
Lateral inflows from adjacent county(s)	--	--	--	0	646	28	354	641
Vertical flow from younger units	--	--	--	0	0	0	0	0
Total inflows	--	--	--	*22*	*11,743*	*1,906*	*4,825*	*6,265*
Outflow	--	--	--					
Wells	--	--	--	0	400	0	1,248	886
Springs	--	--	--	0	0	0	0	0
Evapotranspiration	--	--	--	0	0	0	0	354
Stream Gains	--	--	--	0	46	0	29	241
Reservoir Gains	--	--	--	0	0	0	0	0
Vertical Leakage to upper unit	--	--	--	0	0	812	612	175
Vertical Leakage to lower unit	--	--	--	17	1,265	729	3,421	0
Vertical flow to younger units	--	--	--	0	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	3	13,437	417	2,192	5,962
Total outflows	--	--	--	*20*	*15,148*	*1,959*	*7,502*	*7,618*
Inflows - outflows	--	--	--	1	-3,405	-53	-2,677	-1,353
change in storage	--	--	--	-1	3,405	53	2,677	1,353
Model Error (acre-feet)	--	--	--	0	0	0	1	0
Model Error (percent)	--	--	--	-0.13	0.00	0.00	0.01	0.00

Plum Creek CD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	118	0	2,976	2,750
Stream Losses	--	--	--	--	0	0	1,971	1,506
Reservoir Losses	--	--	--	--	0	0	0	0
Vertical Leakage from upper unit	--	--	--	--	0	10	1	1,970
Vertical Leakage from lower unit	--	--	--	--	0	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	0	0	1,927	3,627
Vertical flow from younger units	--	--	--	--	0	0	0	0
Total inflows	--	--	--	--	*118*	*10*	*6,876*	*9,852*
Outflow	--	--	--	--				
Wells	--	--	--	--	0	0	4,158	9,202
Springs	--	--	--	--	0	0	0	0
Evapotranspiration	--	--	--	--	0	0	0	213
Stream Gains	--	--	--	--	0	0	699	347
Reservoir Gains	--	--	--	--	0	0	0	0
Vertical Leakage to upper unit	--	--	--	--	0	0	0	0
Vertical Leakage to lower unit	--	--	--	--	10	1	1,970	0
Vertical flow to younger units	--	--	--	--	0	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	109	21	2,265	2,823
Total outflows	--	--	--	--	*119*	*22*	*9,091*	*12,585*
Inflows - outflows	--	--	--	--	-1	-11	-2,215	-2,733
change in storage	--	--	--	--	1	11	2,216	2,733
Model Error (acre-feet)	--	--	--	--	0	0	0	0
Model Error (percent)	--	--	--	--	-0.01	0.01	0.00	0.00

Uvalde County UWCD scenario 4

Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	--	--	--	--	--	1,370	1,188	1,205
Stream Losses	--	--	--	--	--	658	308	351
Reservoir Losses	--	--	--	--	--	0	0	0
Vertical Leakage from upper unit	--	--	--	--	--	0	0	1,445
Vertical Leakage from lower unit	--	--	--	--	--	0	0	0
Lateral inflows from adjacent county(s)	--	--	--	--	--	5	22	321
Vertical flow from younger units	--	--	--	--	--	0	0	0
Total inflows	--	--	--	--	--	*2,033*	*1,517*	*3,323*
Outflow	--	--	--	--	--			
Wells	--	--	--	--	--	828	0	0
Springs	--	--	--	--	--	0	0	0
Evapotranspiration	--	--	--	--	--	0	0	6
Stream Gains	--	--	--	--	--	0	15	16
Reservoir Gains	--	--	--	--	--	0	0	0
Vertical Leakage to upper unit	--	--	--	--	--	0	0	0
Vertical Leakage to lower unit	--	--	--	--	--	0	1,445	0
Vertical flow to younger units	--	--	--	--	--	0	0	0
Lateral outflows to adjacent county(s)	--	--	--	--	--	1,202	991	4,766
Total outflows	--	--	--	--	--	*2,031*	*2,451*	*4,787*
Inflows - outflows	--	--	--	--	--	2	-934	-1,465
change in storage	--	--	--	--	--	-2	934	1,465
Model Error (acre-feet)	--	--	--	--	--	0	0	0
Model Error (percent)	--	--	--	--	--	0.00	0.00	0.00

Webb County scenario 4

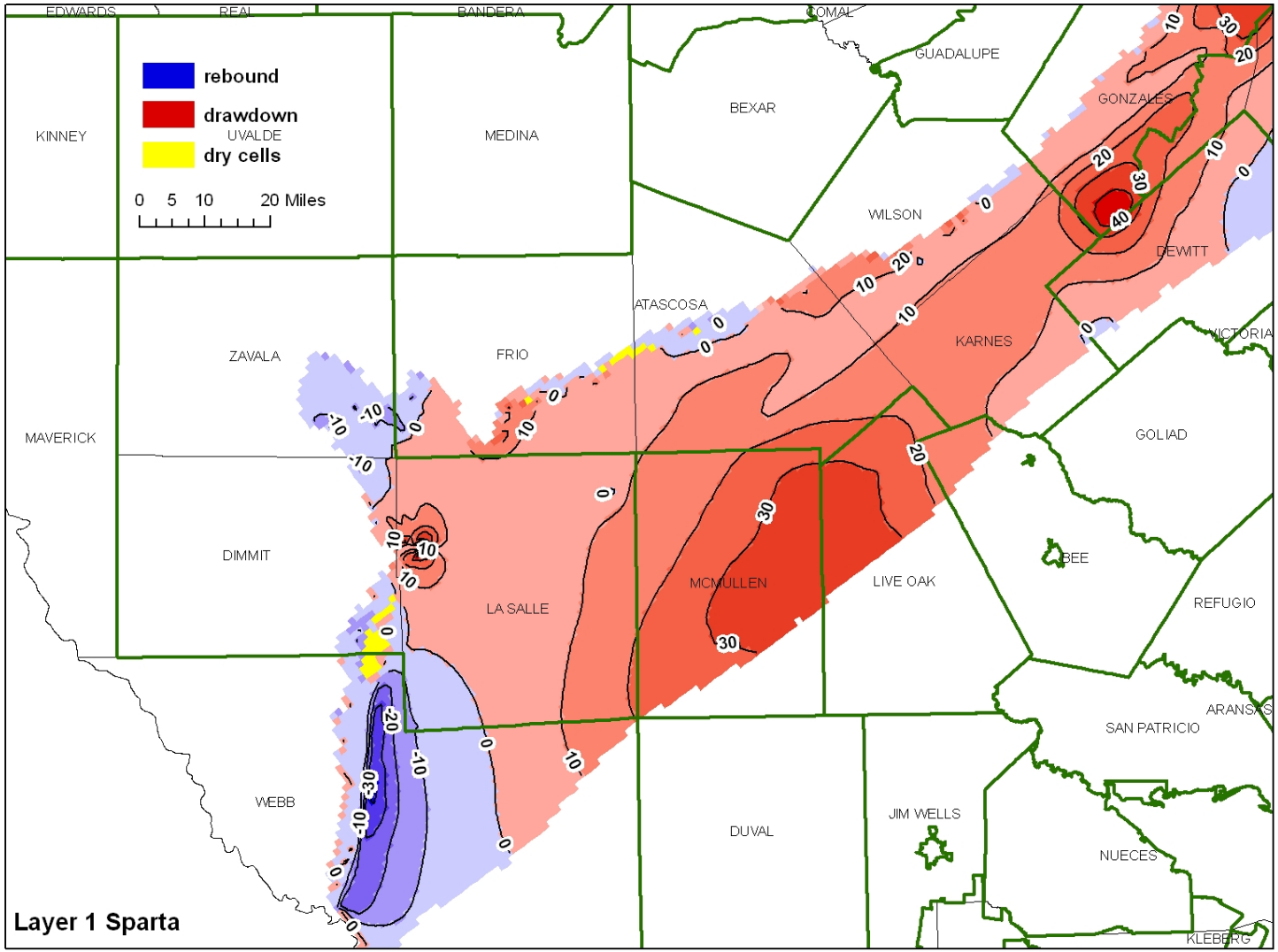
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	3,201	382	10,802	283	529	82	82	15
Stream Losses	3,935	945	20,795	4,992	53	15	2,991	0
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	3,509	4,080	4,878	4,536	2,962	568	586
Vertical Leakage from lower unit	783	638	182	5	403	30	23	0
Lateral inflows from adjacent county(s)	248	32	722	288	127	720	475	1,710
Vertical flow from younger units	5,125	0	0	0	0	0	0	0
Total inflows	*13,292*	*5,506*	*36,581*	*10,446*	*5,648*	*3,809*	*4,139*	*2,310*
Outflow								
Wells	0	0	0	0	896	13	6	1
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	2,203	145	1,527	1,624	124	69	150	42
Stream Gains	2,159	32	7,180	3,009	0	205	2,816	135
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	783	638	182	5	403	30	23
Vertical Leakage to lower unit	3,509	4,080	4,878	4,536	2,962	568	586	0
Vertical flow to younger units	809	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	765	121	2,537	761	1,517	2,438	525	1,948
Total outflows	*9,445*	*5,160*	*16,760*	*10,113*	*5,504*	*3,696*	*4,113*	*2,148*
Inflows - outflows	3,847	346	19,821	333	144	114	27	162
change in storage	-3,849	-346	-19,824	-336	-145	-114	-27	-162
Model Error (acre-feet)	-2	-1	-4	-3	0	0	0	0
Model Error (percent)	-0.02	-0.01	-0.02	-0.03	-0.01	0.00	0.00	0.00

Wintergarden GCD scenario 4

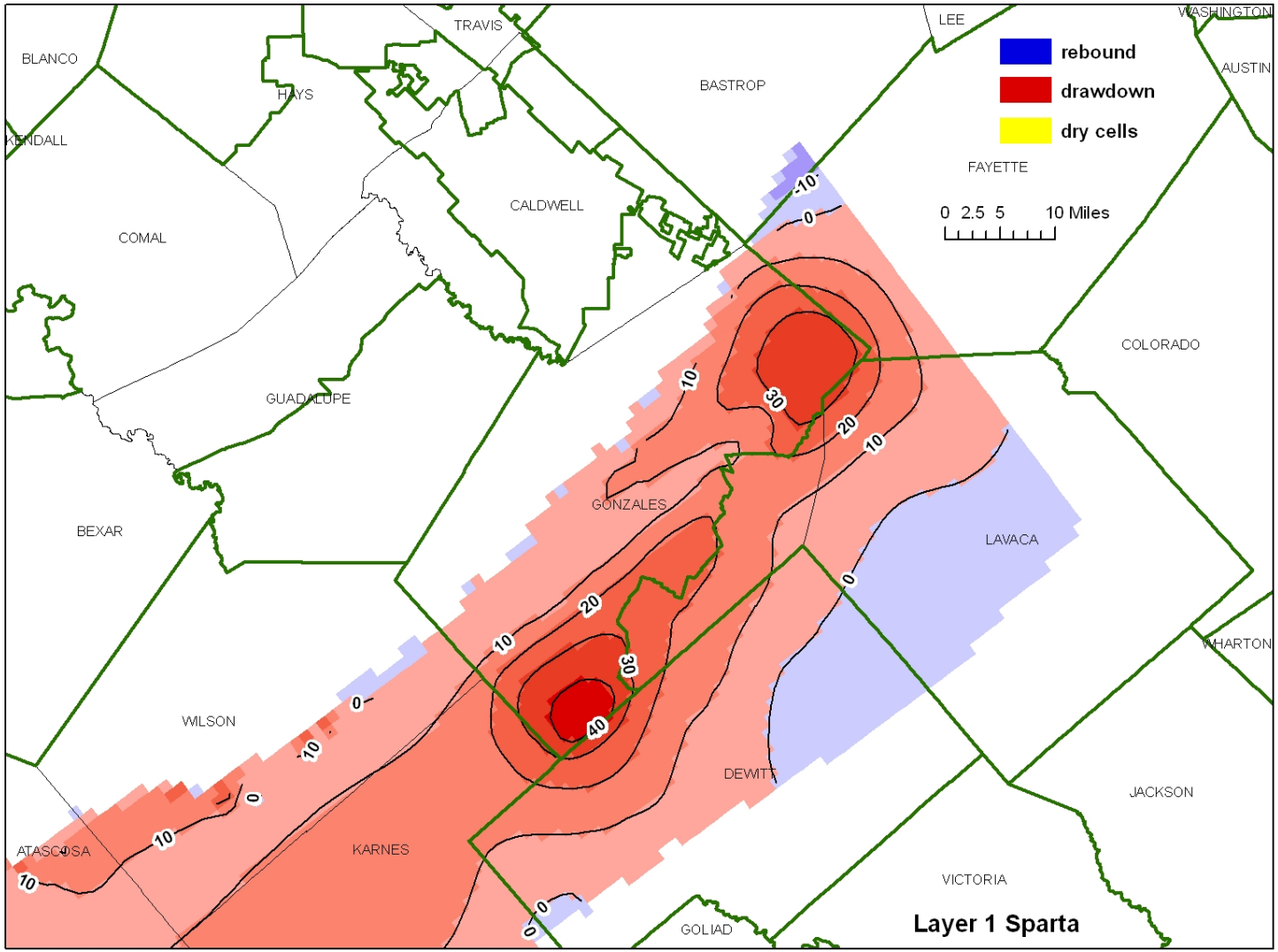
Inflows	**Sparta**	**Weches**	**Queen City**	**Reklaw**	**Carrizo**	**Layer 6**	**Layer 7**	**Layer 8**
Recharge	9,588	691	21,854	1,069	11,967	649	1,678	804
Stream Losses	732	195	25,389	1,559	3,484	90	1,689	981
Reservoir Losses	0	0	0	0	0	0	0	0
Vertical Leakage from upper unit	0	12,585	12,257	29,143	29,833	11,672	2,635	3,815
Vertical Leakage from lower unit	1,768	1,512	151	234	11,521	10,629	9,916	0
Lateral inflows from adjacent county(s)	2,493	208	4,679	879	4,669	2,919	2,021	8,244
Vertical flow from younger units	8,686	0	0	0	0	0	0	0
Total inflows	*23,267*	*15,192*	*64,330*	*32,885*	*61,475*	*25,958*	*17,938*	*13,844*
Outflow								
Wells	987	0	1	0	31,100	9,259	4,007	416
Springs	0	0	0	0	0	0	0	0
Evapotranspiration	582	78	0	0	0	0	0	0
Stream Gains	2,843	104	6,640	0	0	121	6	86
Reservoir Gains	0	0	0	0	0	0	0	0
Vertical Leakage to upper unit	0	1,768	1,512	151	234	11,521	10,629	9,916
Vertical Leakage to lower unit	12,585	12,257	29,143	29,833	11,672	2,635	3,815	0
Vertical flow to younger units	6,826	0	0	0	0	0	0	0
Lateral outflows to adjacent county(s)	863	117	1,818	618	20,790	2,600	1,029	3,735
Total outflows	*24,685*	*14,325*	*39,114*	*30,602*	*63,796*	*26,135*	*19,486*	*14,153*
Inflows - outflows	-1,418	867	25,216	2,283	-2,321	-177	-1,548	-309
change in storage	1,418	-867	-25,217	-2,283	2,321	177	1,548	310
Model Error (acre-feet)	0	0	-1	0	0	0	0	0
Model Error (percent)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix E

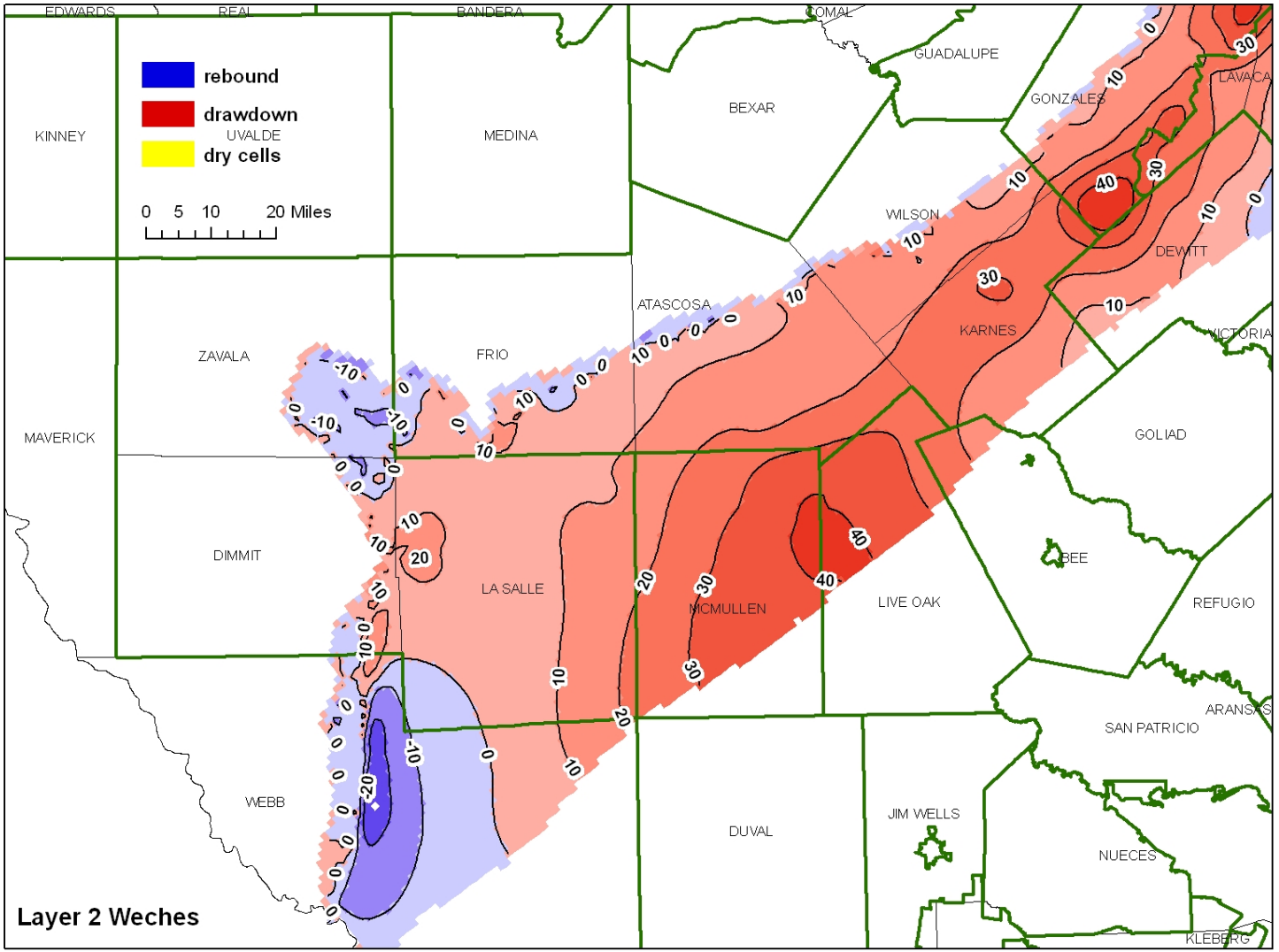
Drawdown Maps



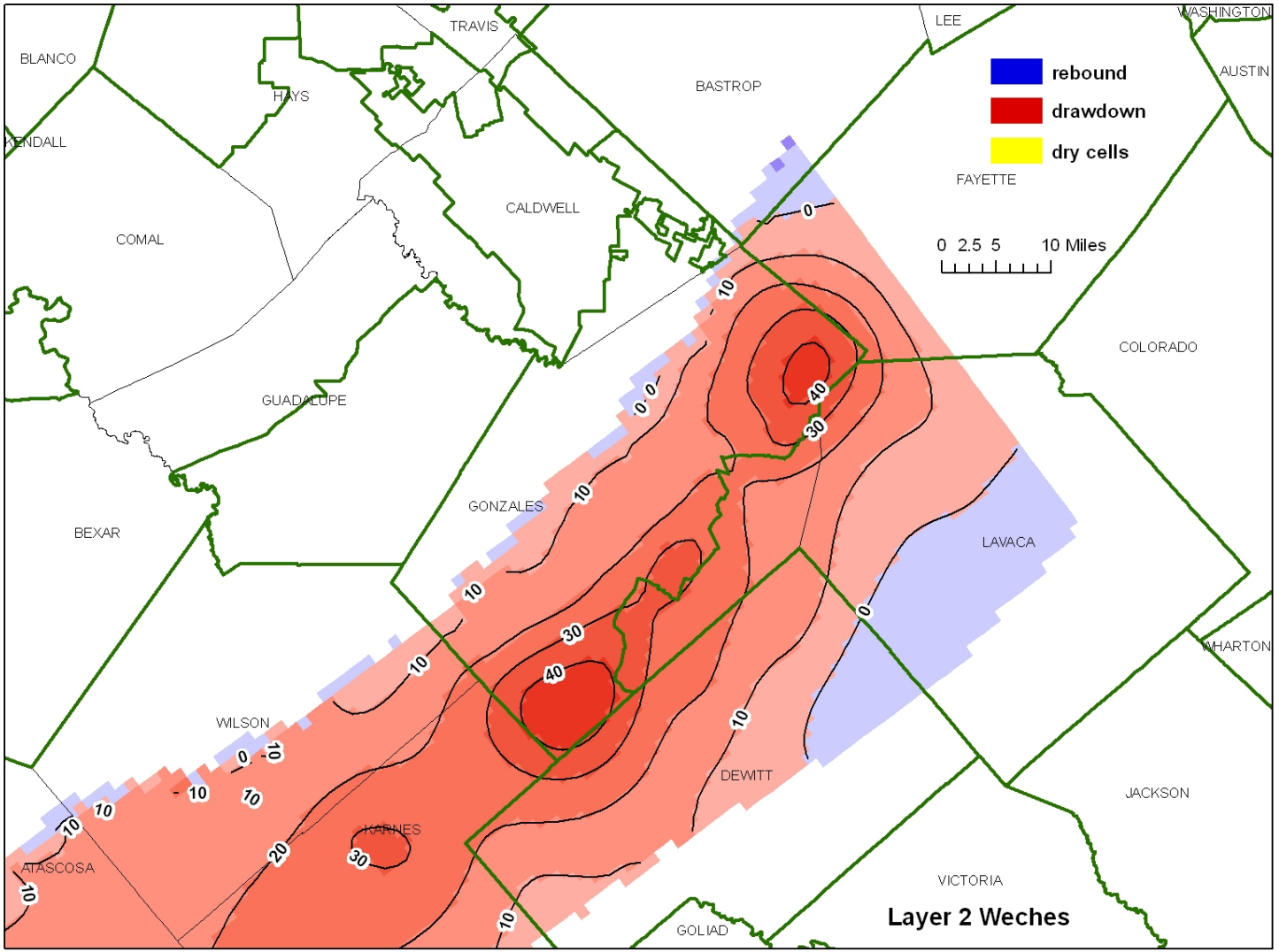
GAM Run 09-034 Scenario 1



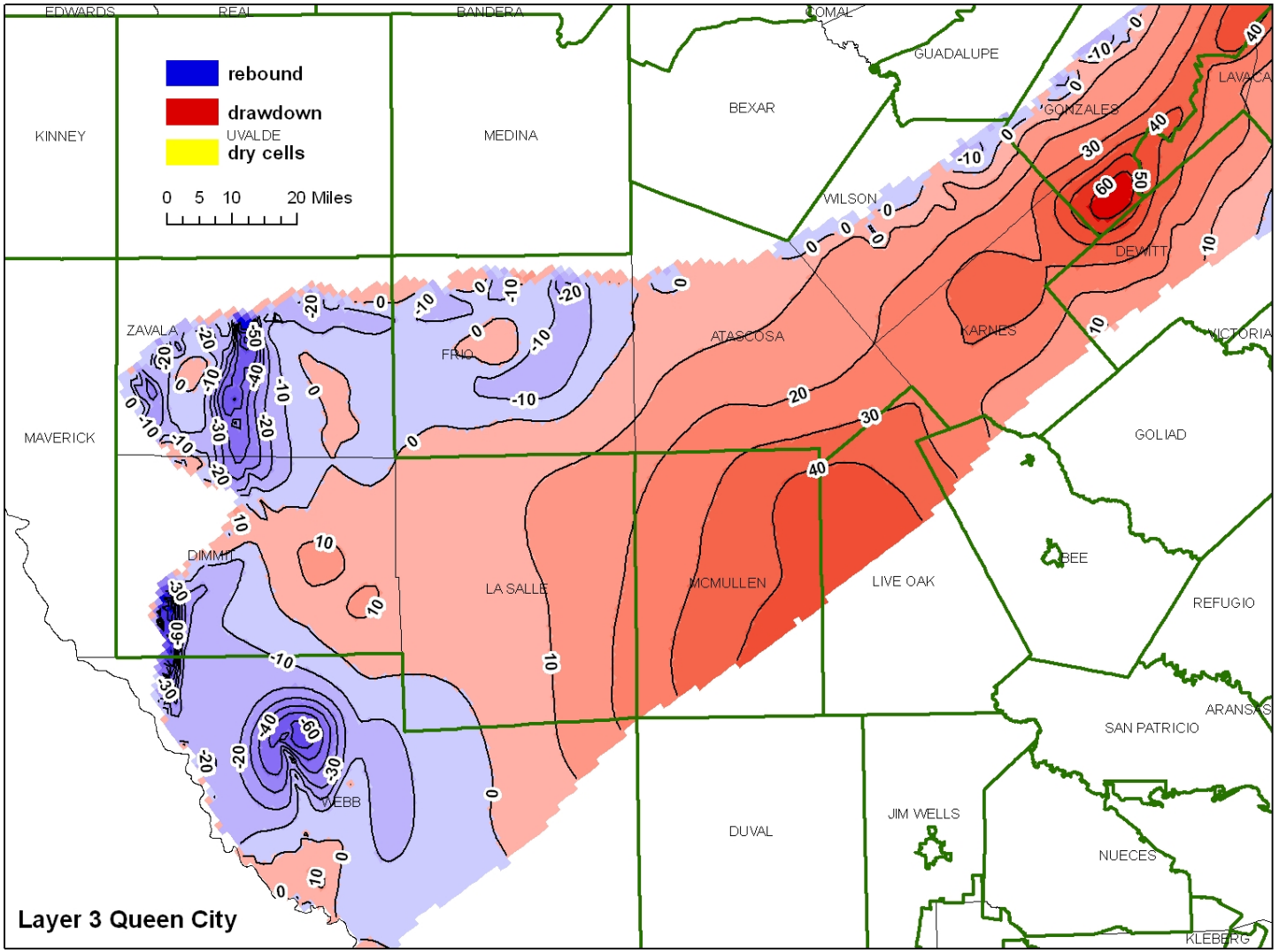
GAM Run 09-034 Scenario 1 With focus on northeast part of GMA 13



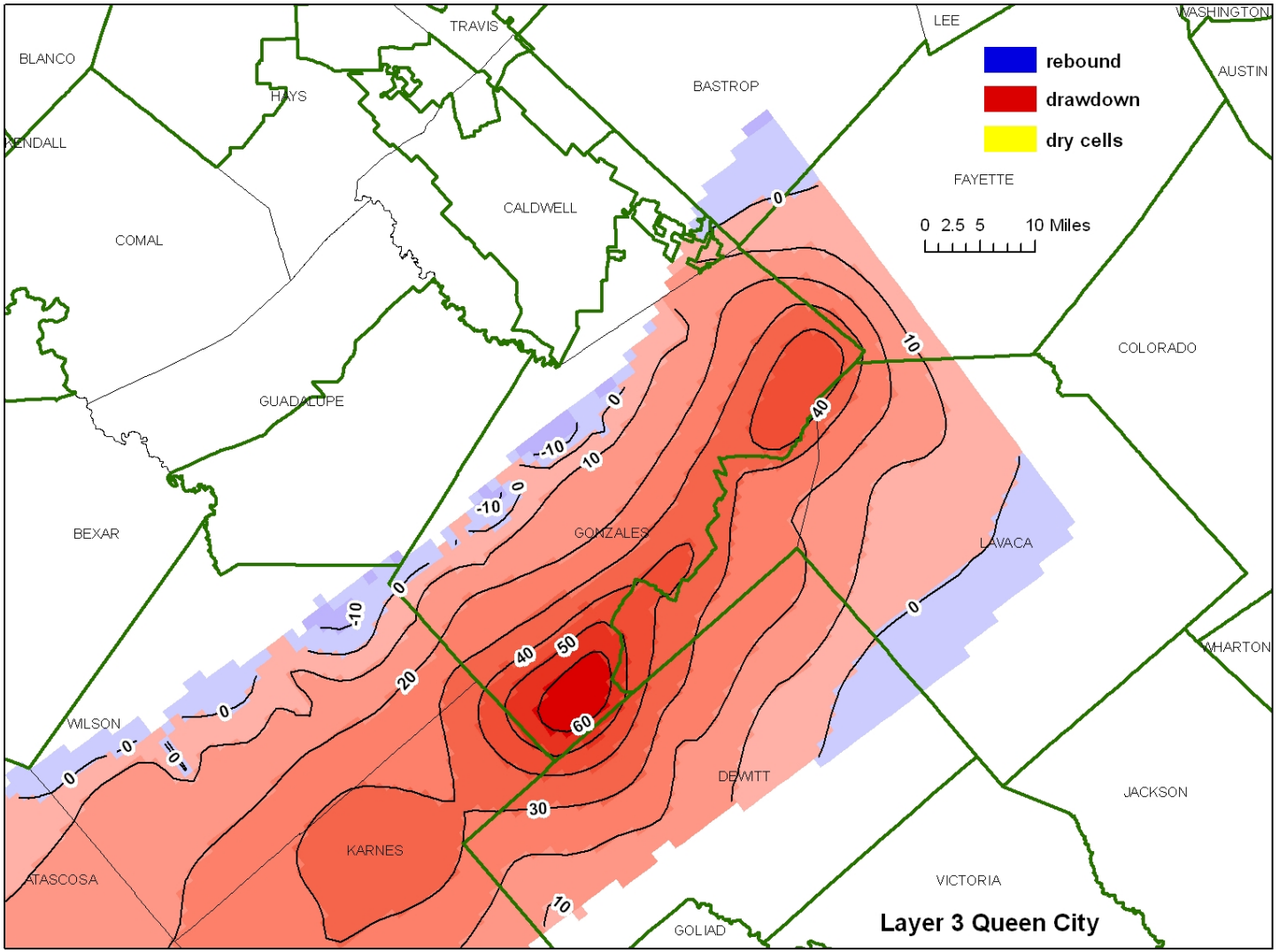
GAM Run 09-034 Scenario 1



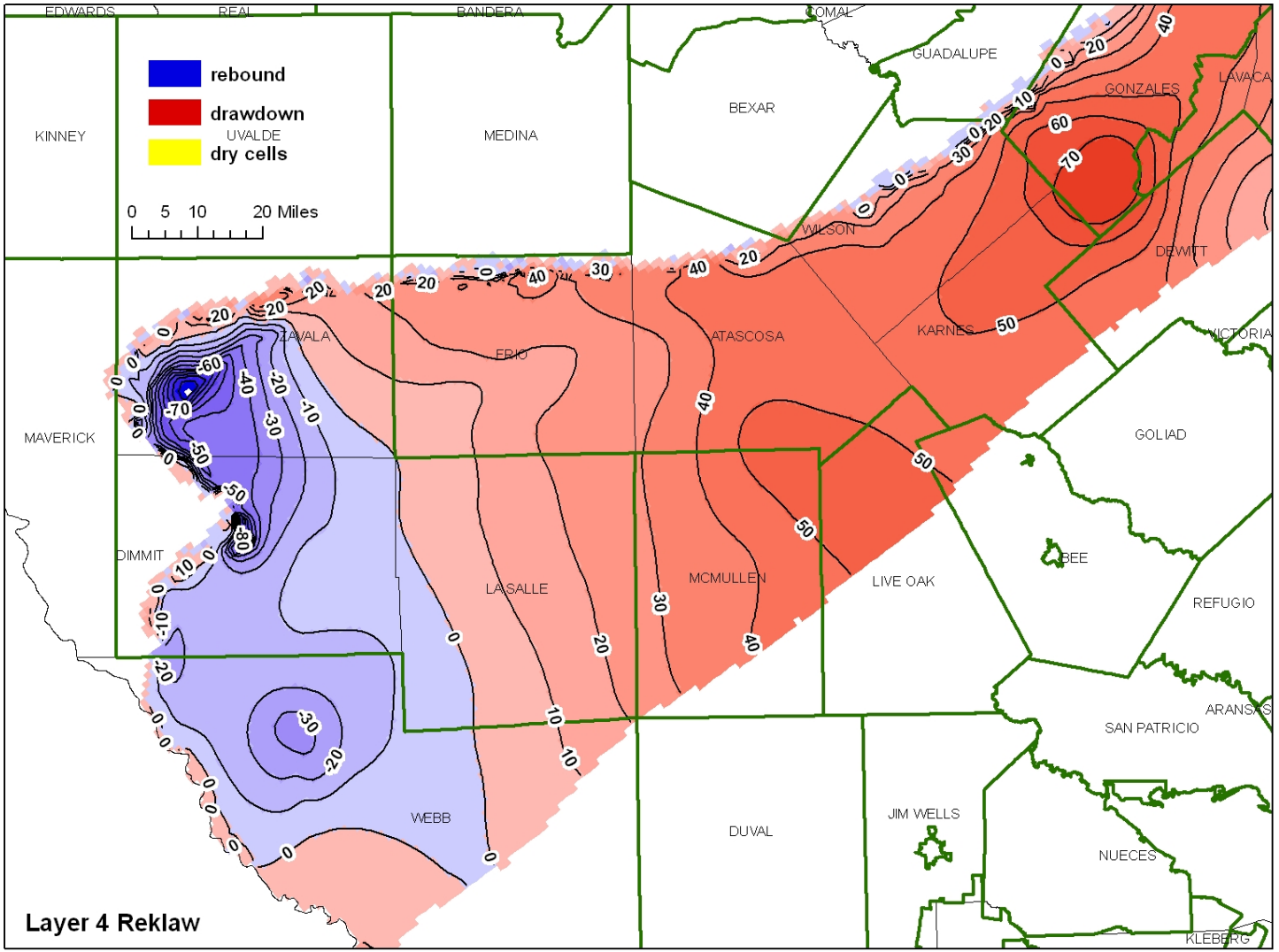
GAM Run 09-034 Scenario 1. With focus on northeast part of GMA 13



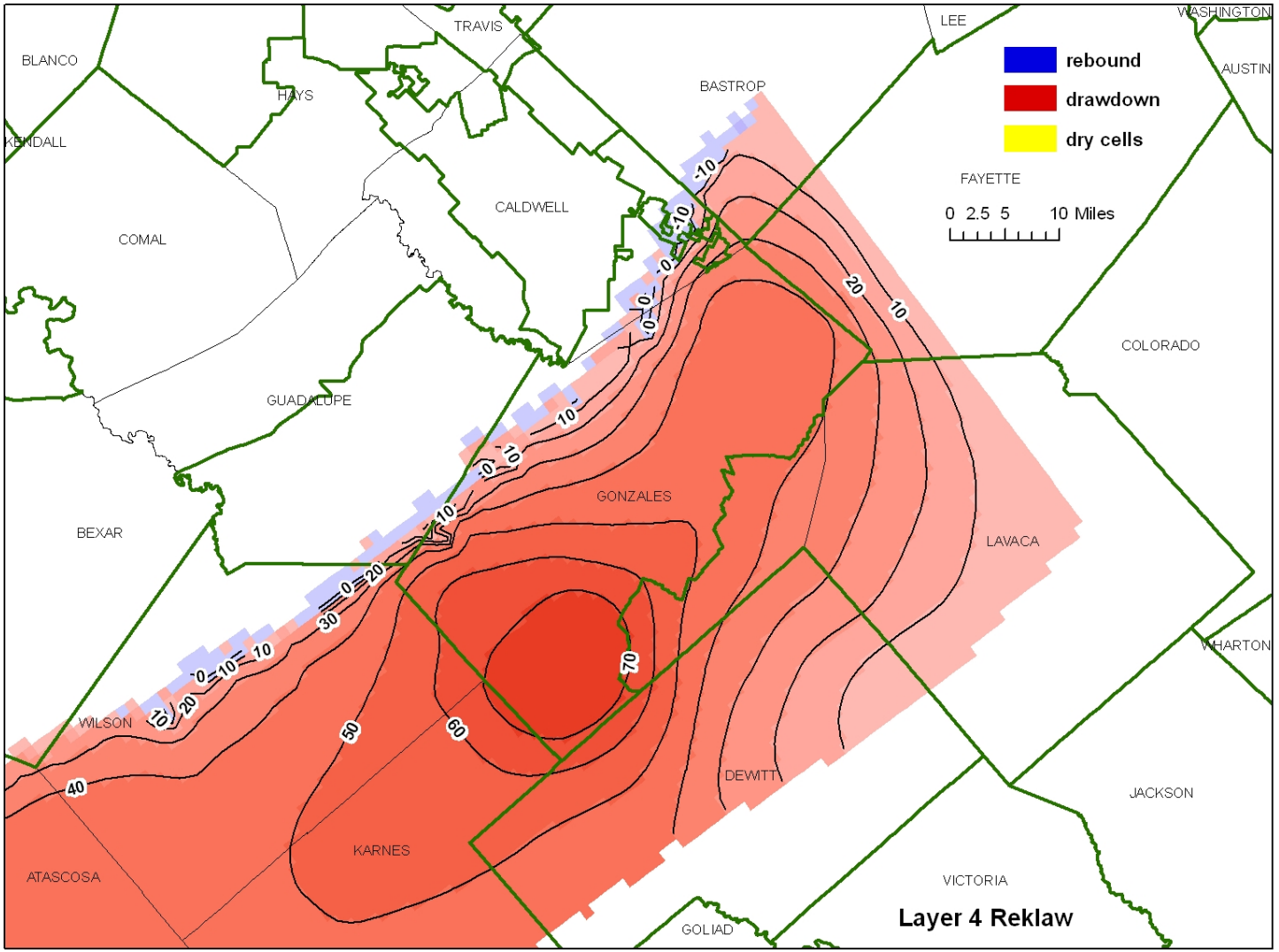
GAM Run 09-034 Scenario 1



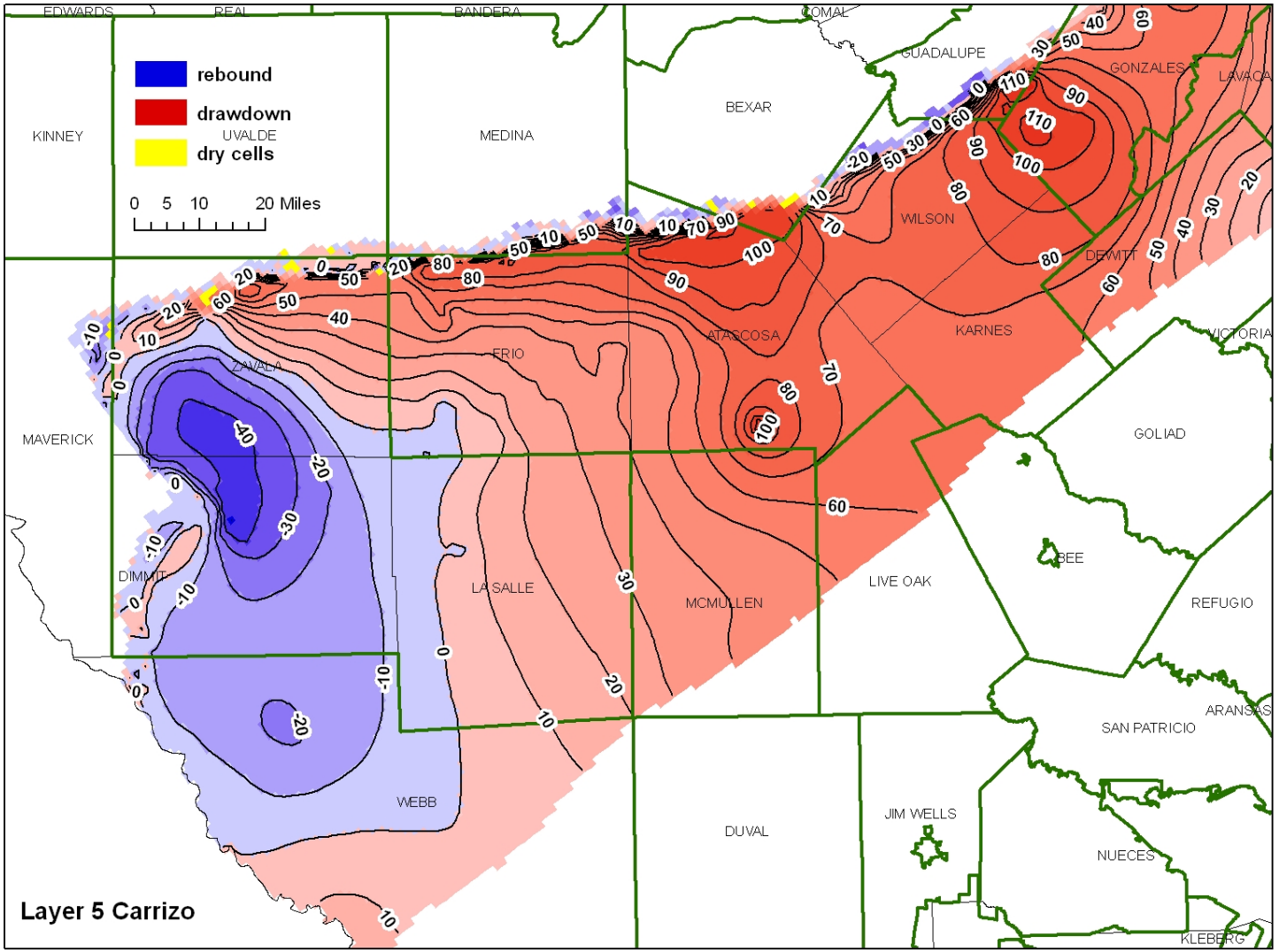
GAM Run 09-034 Scenario 1. With focus on northeast part of GMA 13



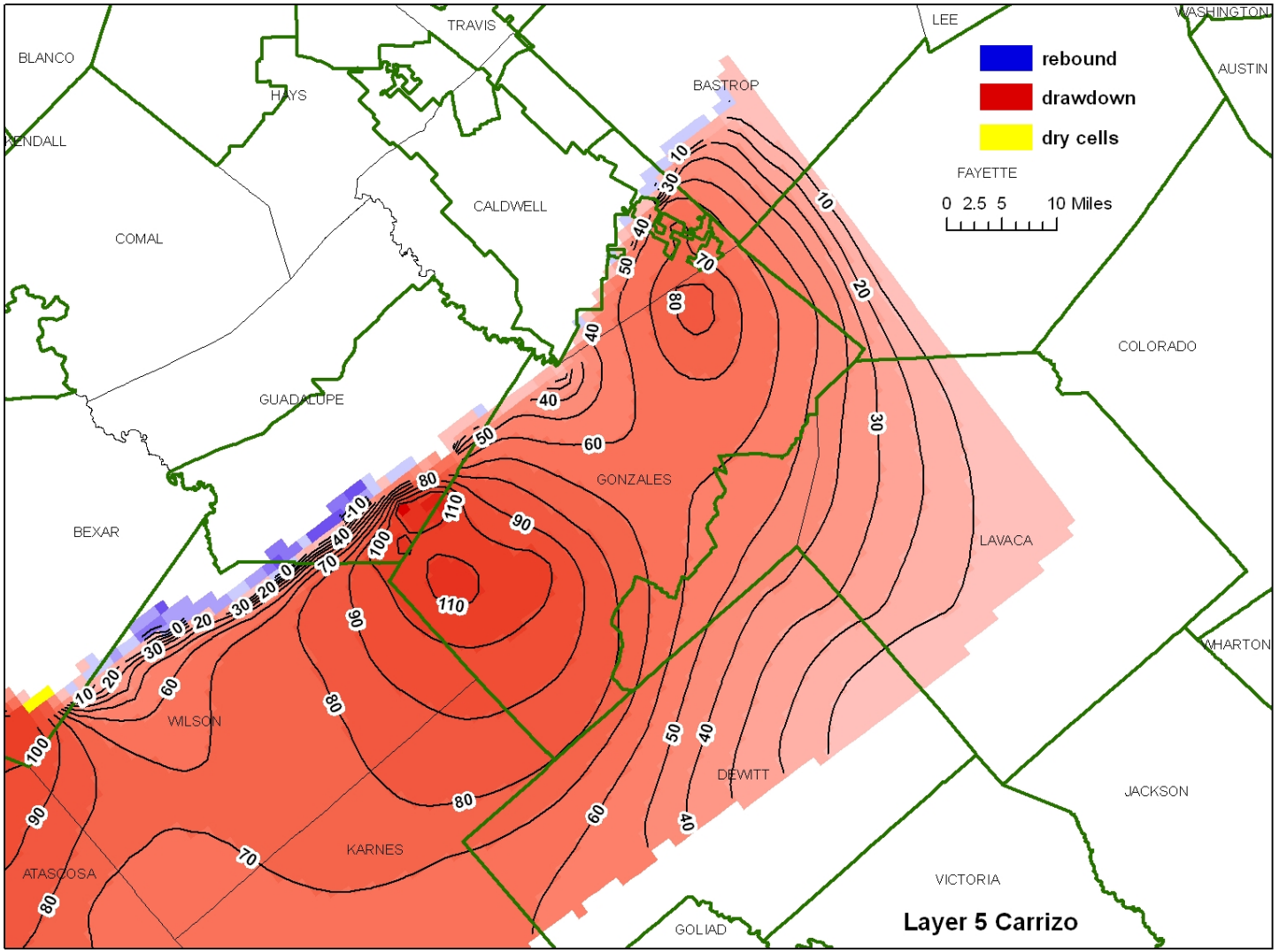
GAM Run 09-034 Scenario 1



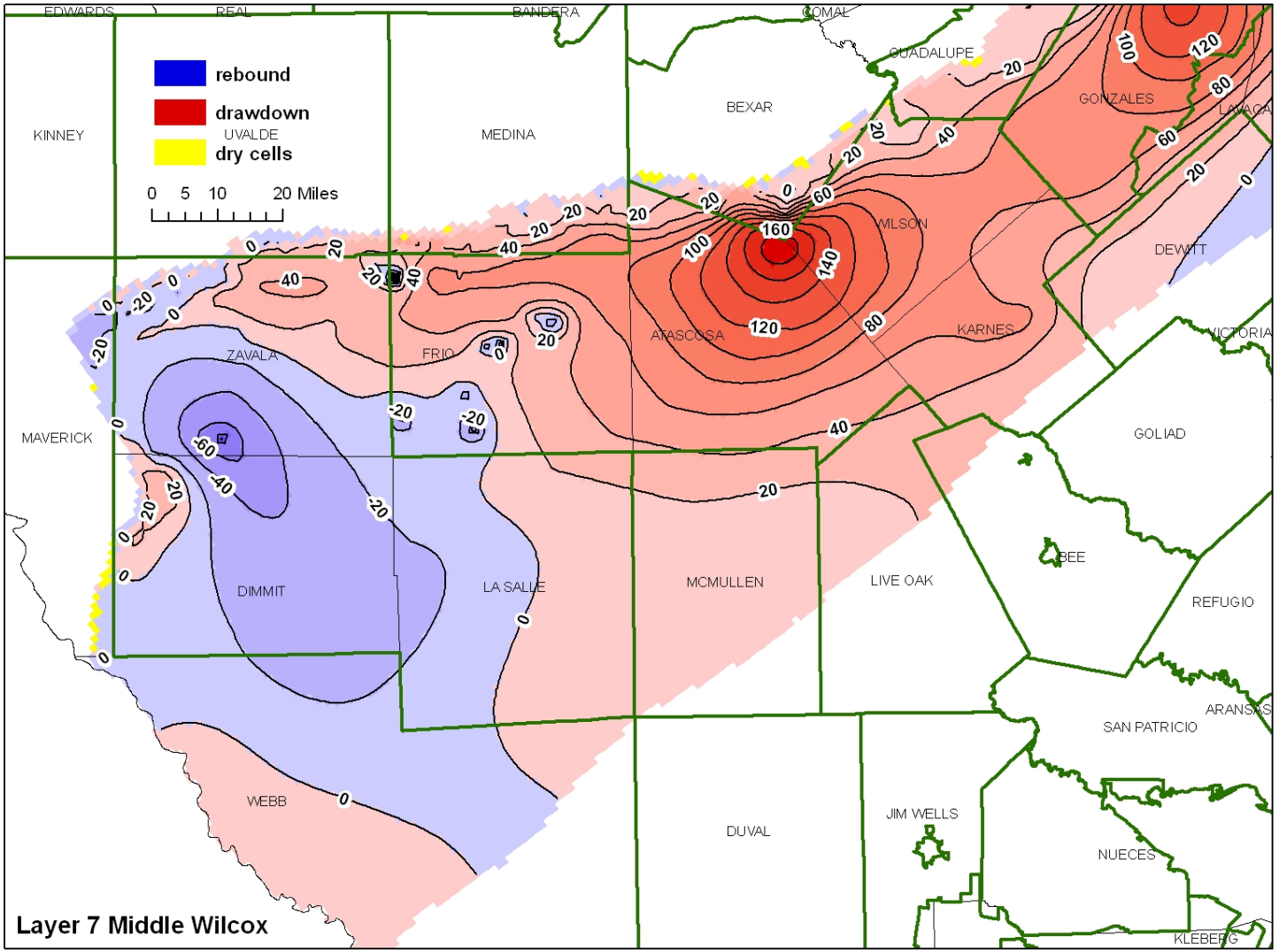
GAM Run 09-034 Scenario 1
With focus on northeast part of GMA 13.



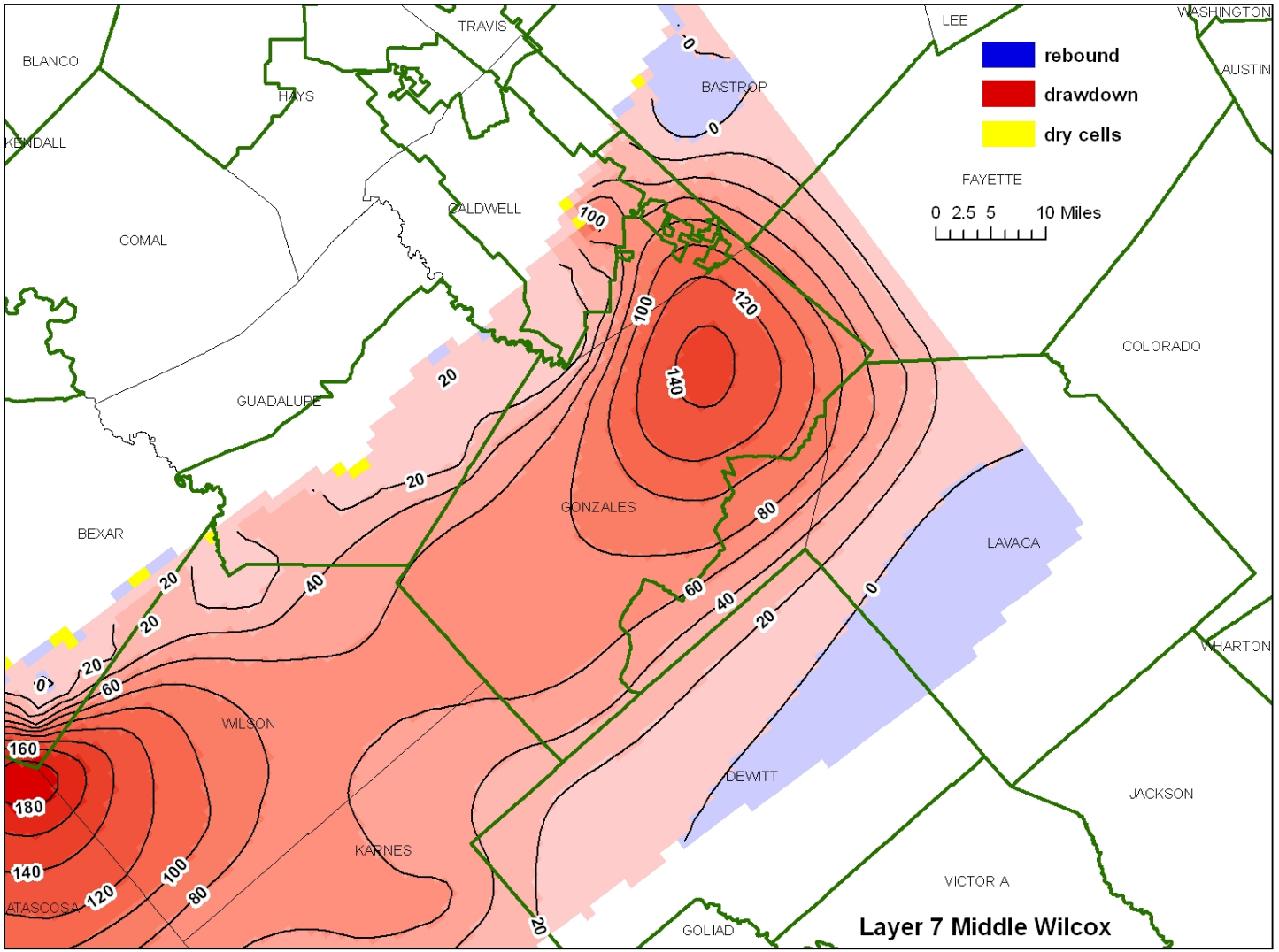
GAM Run 09-034 Scenario 1



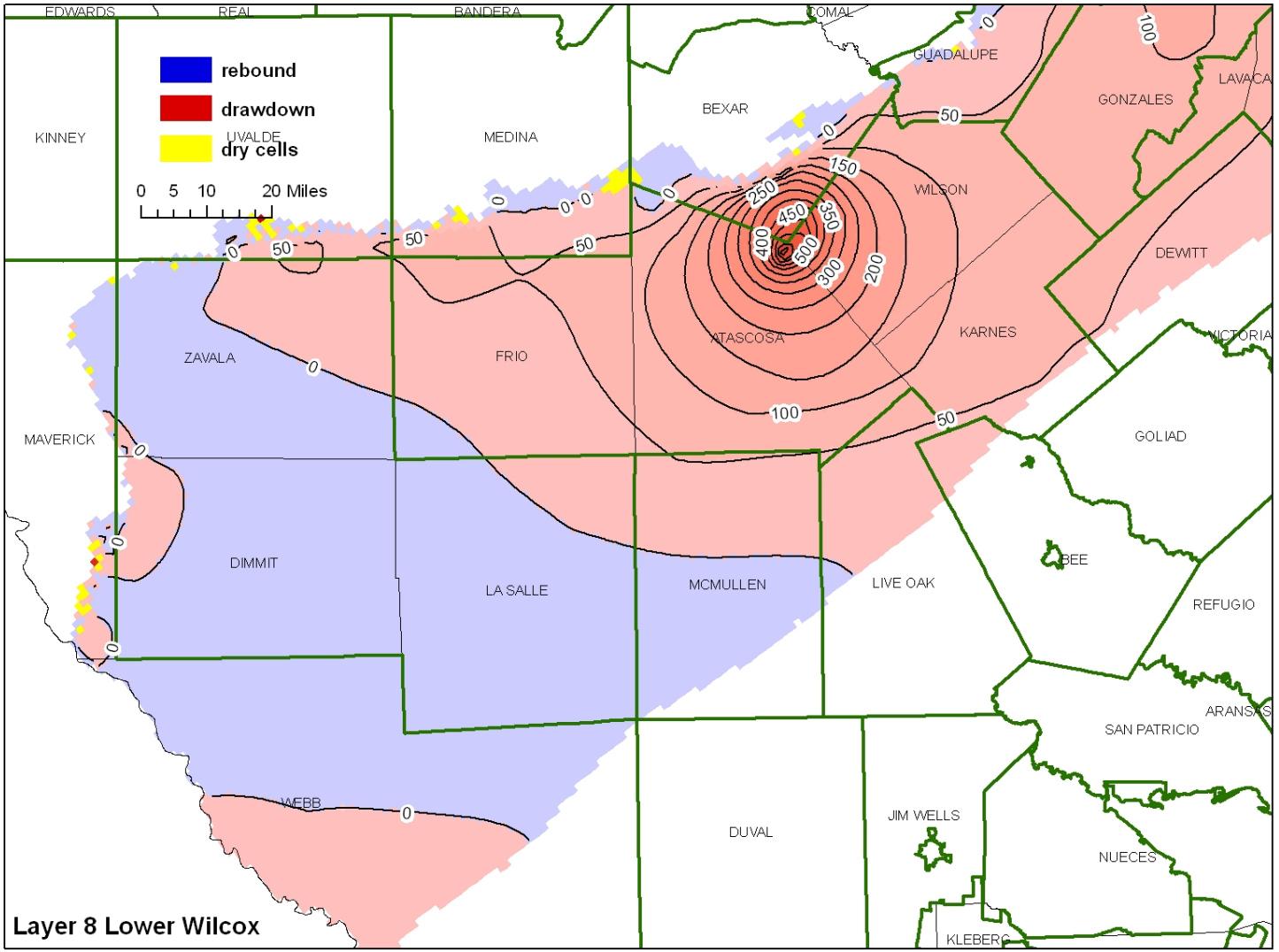
GAM Run 09-034 Scenario 1. With focus on northeast part of GMA 13.



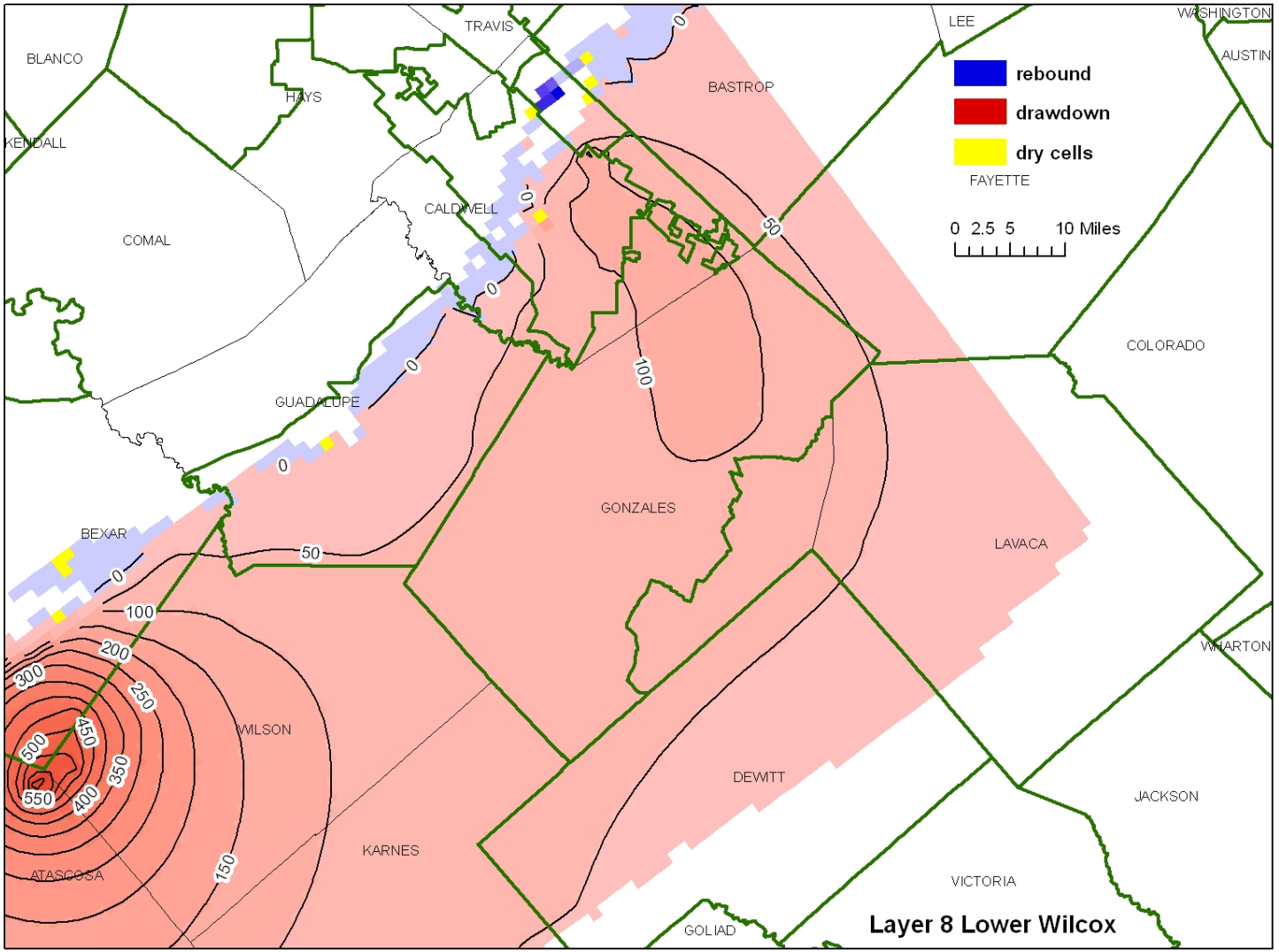
GAM Run 09-034 Scenario 1



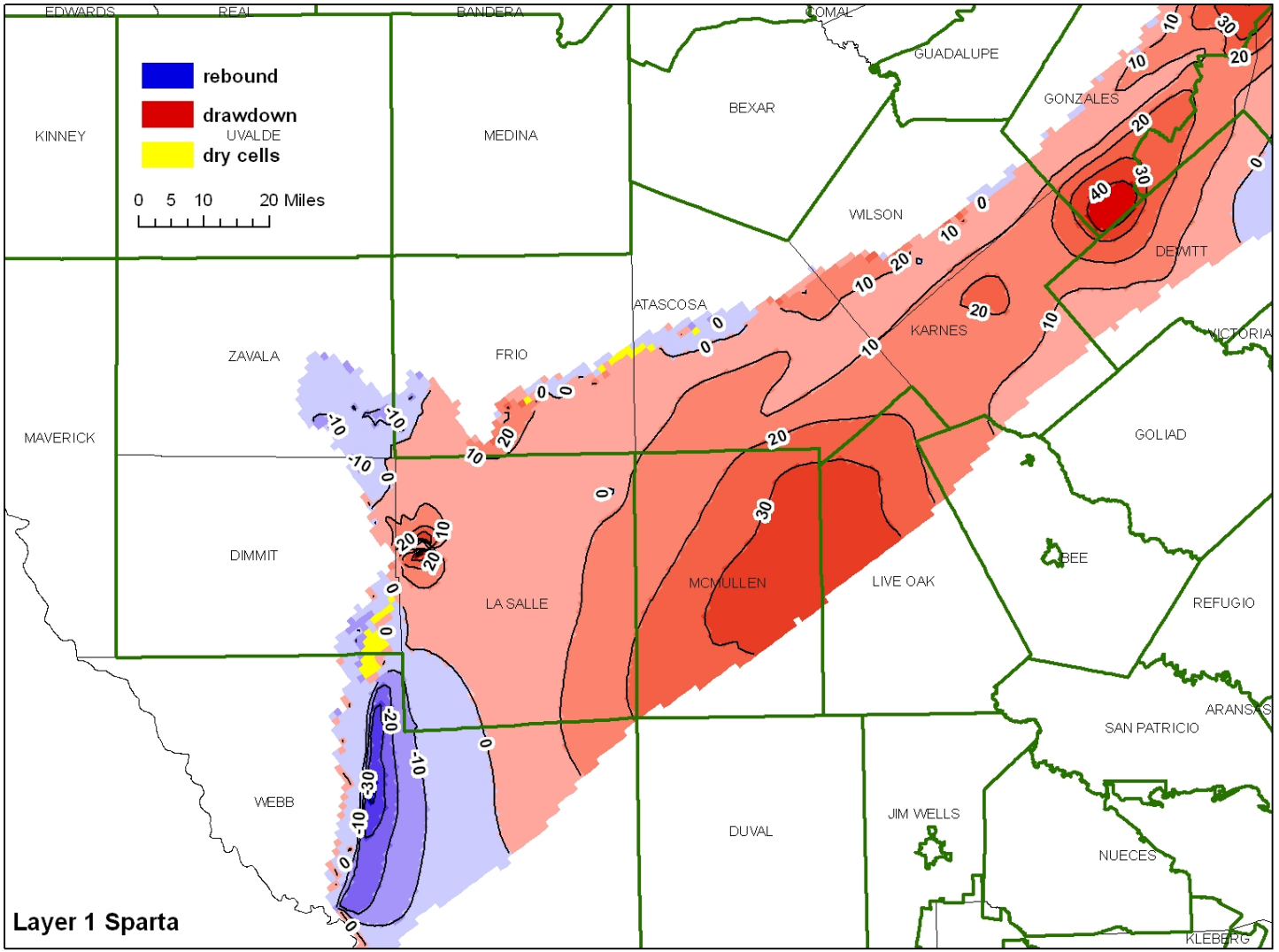
GAM Run 09-034 Scenario 1. With focus on northeast part of GMA 13.



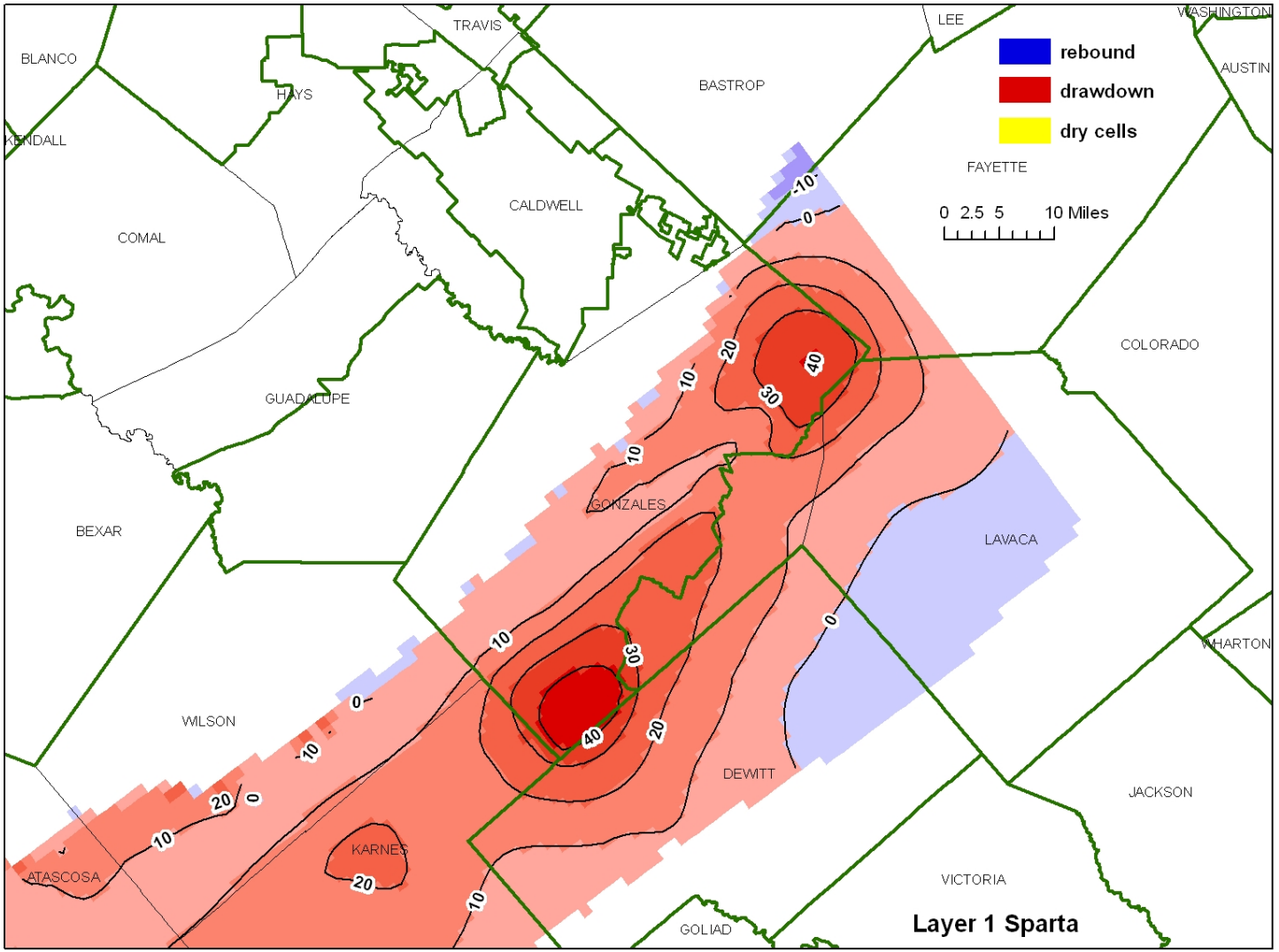
GAM Run 09-034 Scenario 1



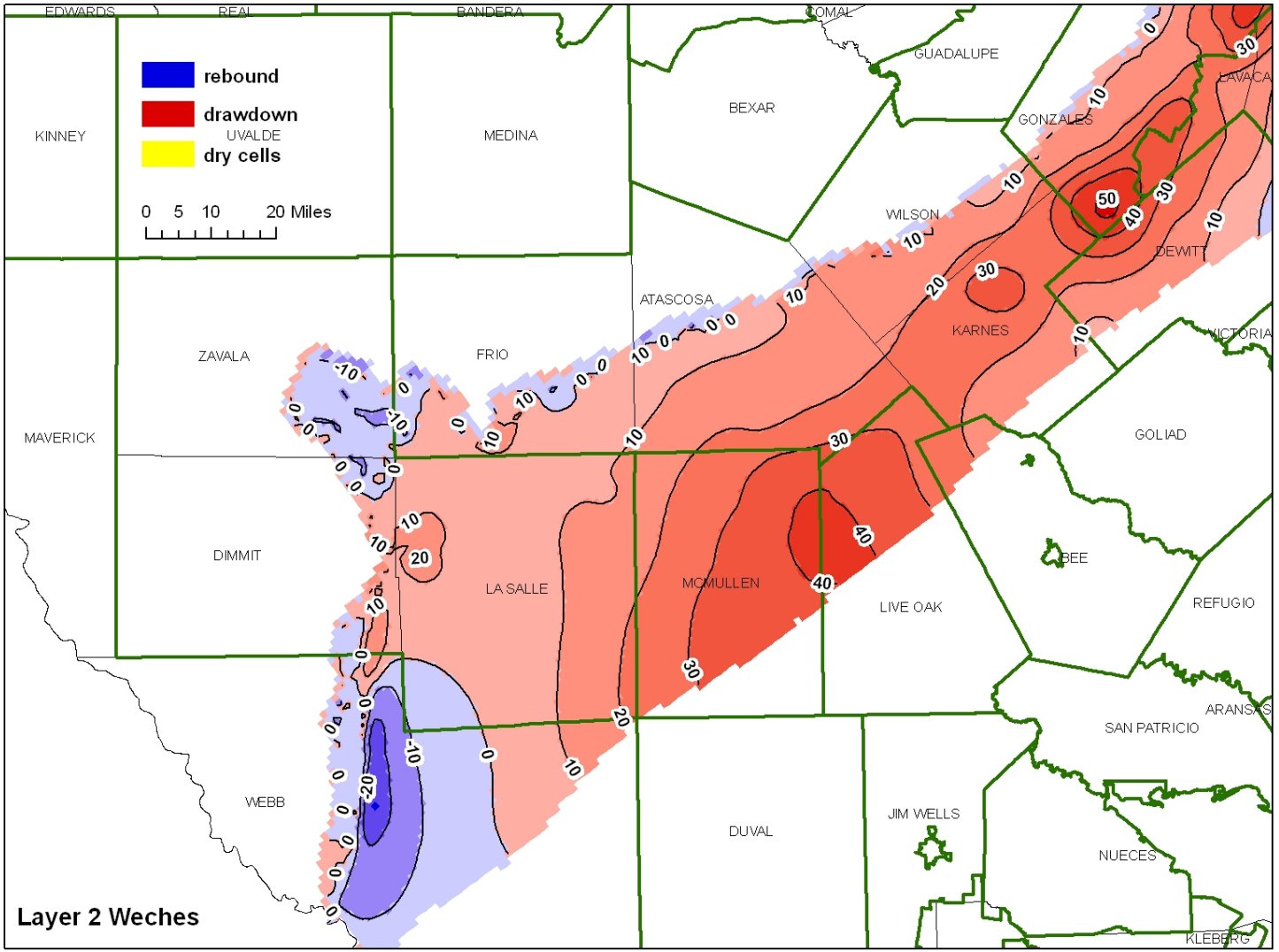
GAM Run 09-034 Scenario 1. With focus on northeast part of GMA 13.



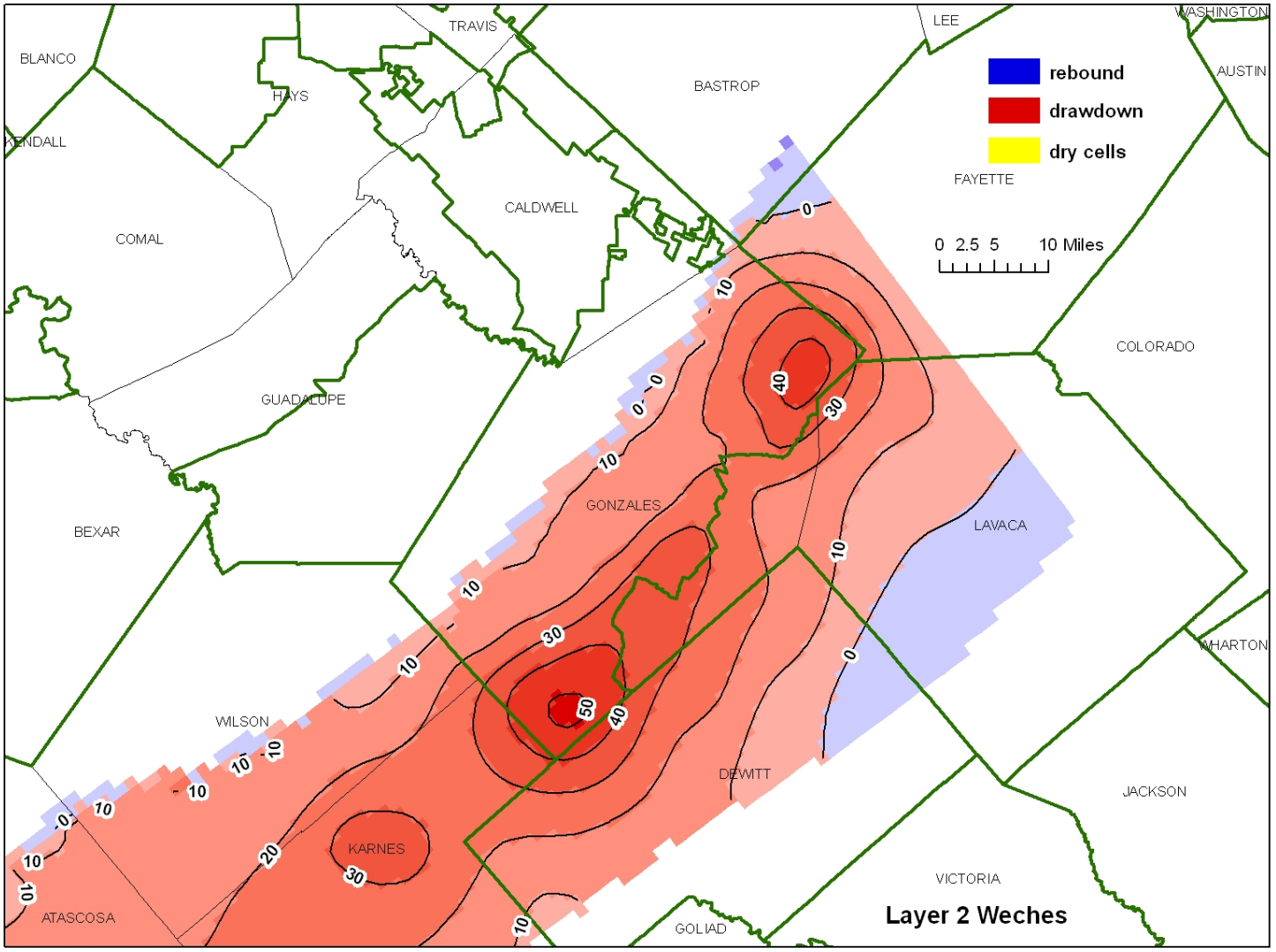
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



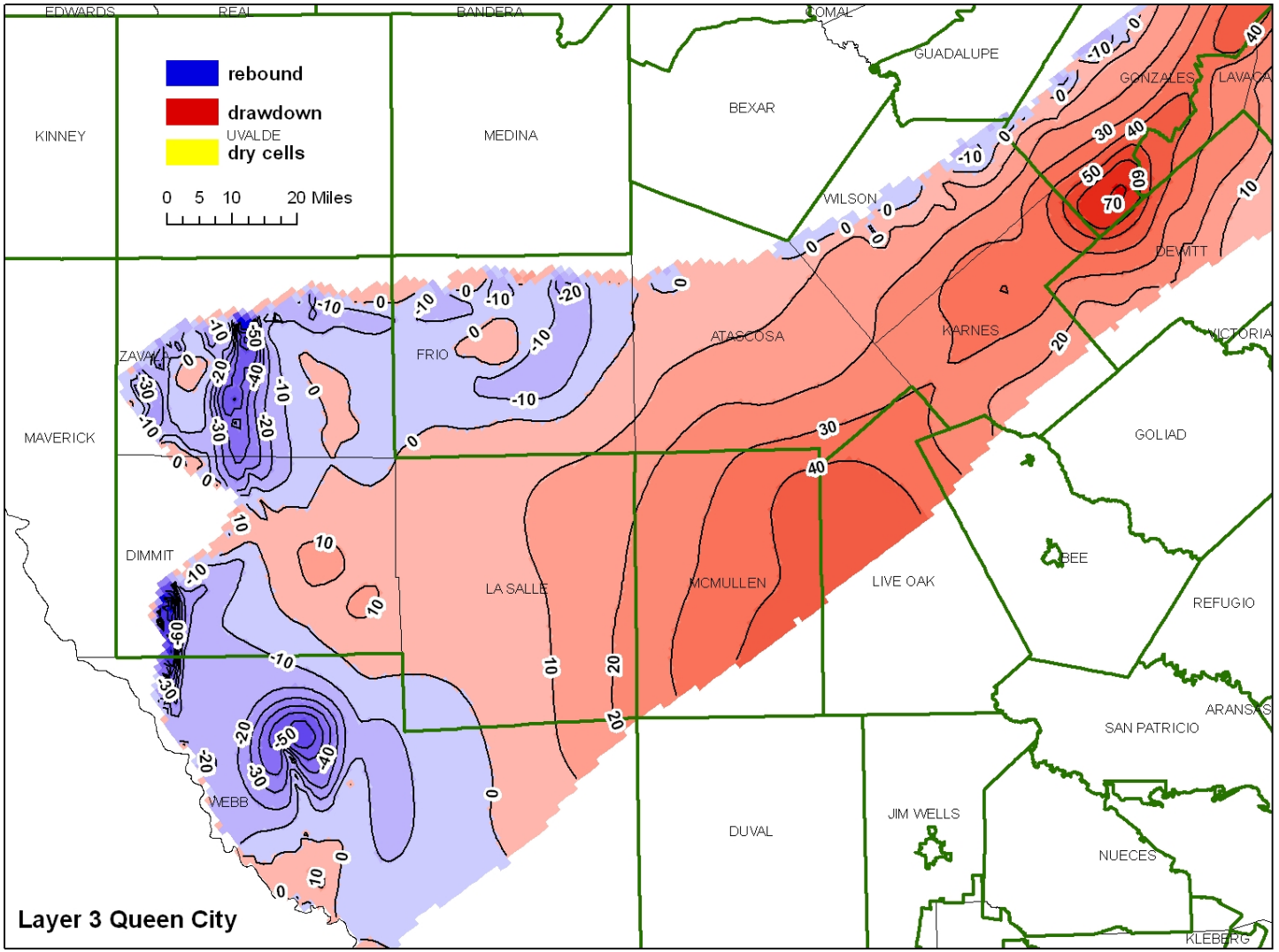
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13



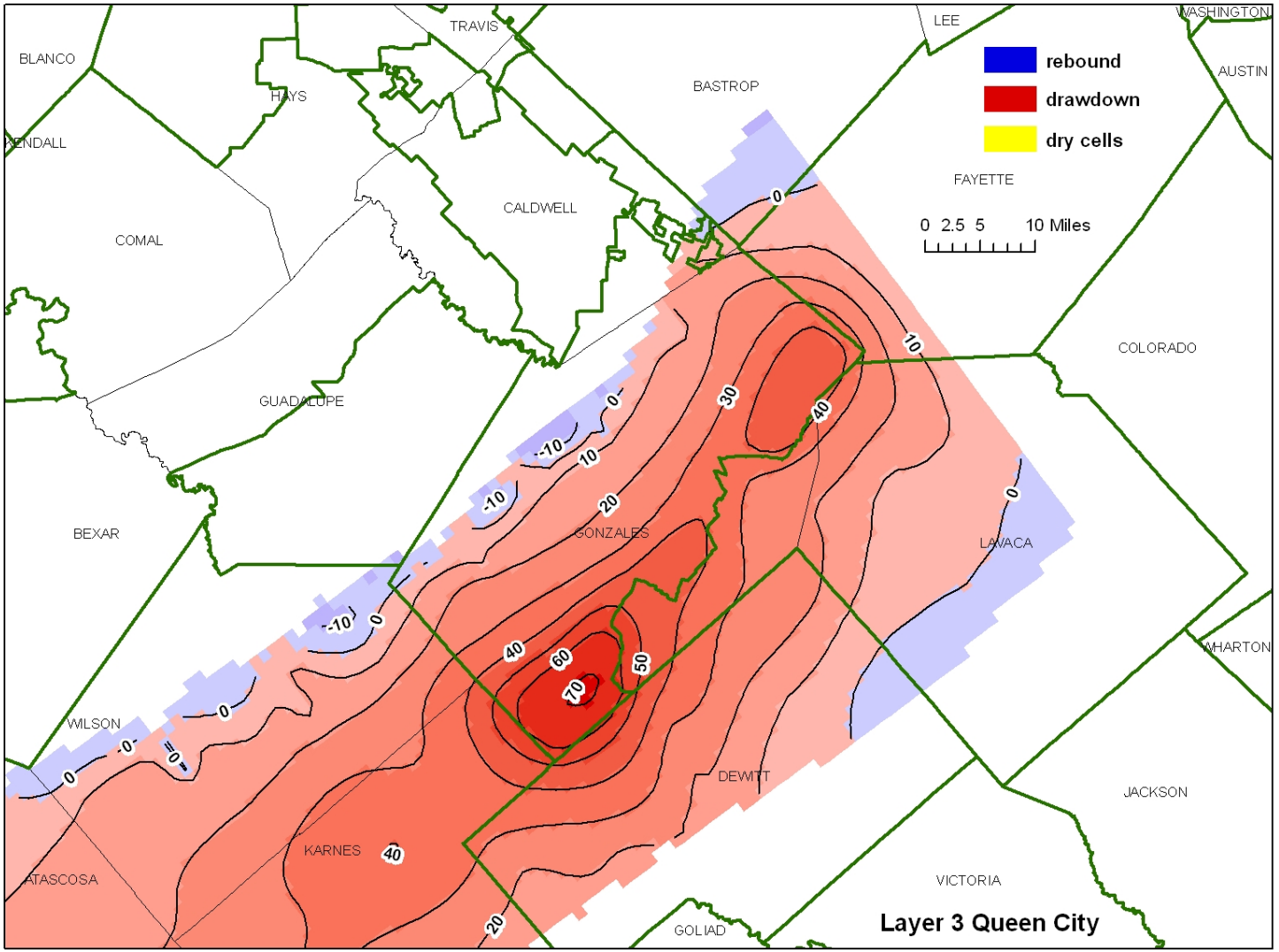
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



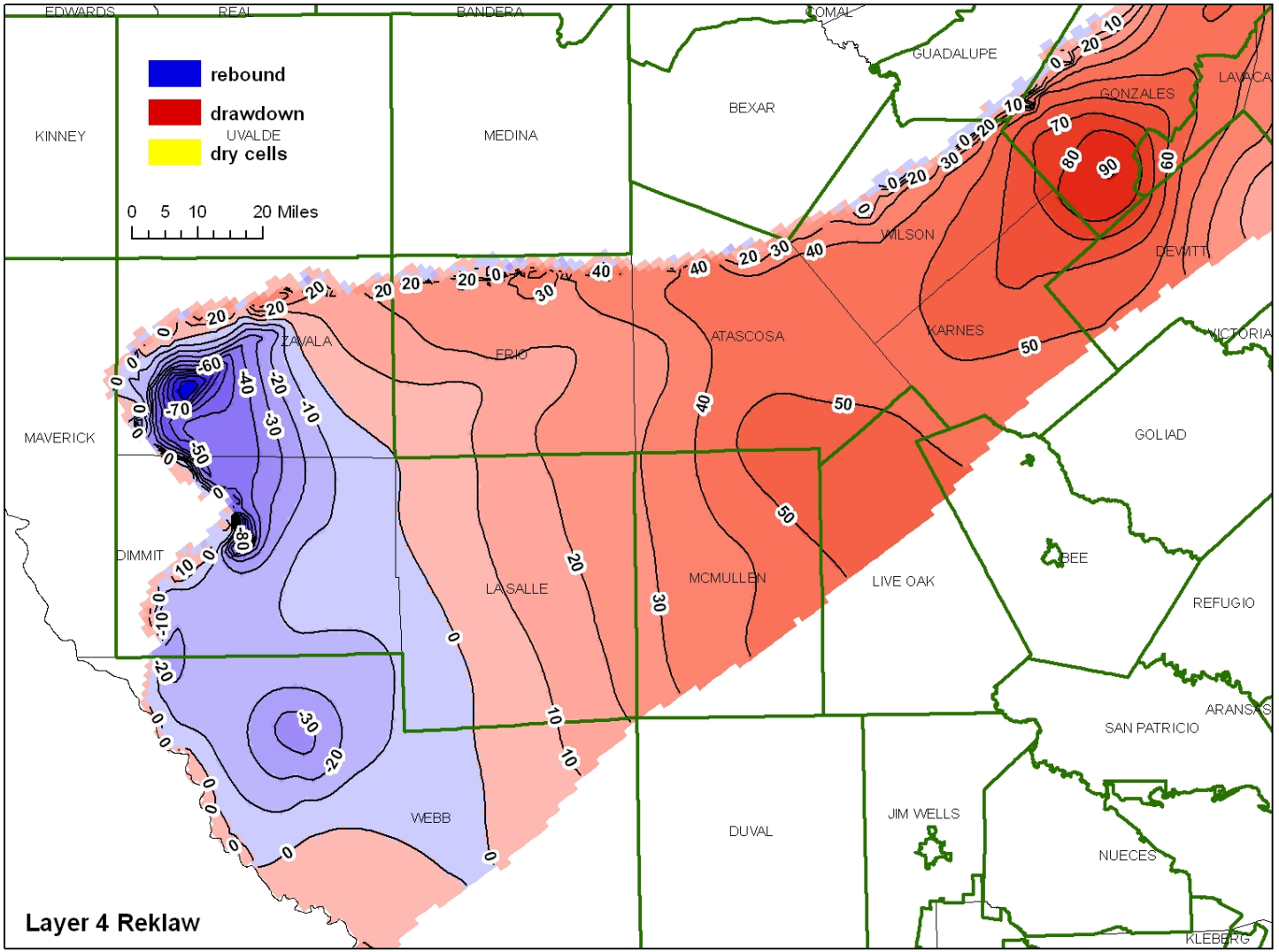
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2
With focus on northeast part of GMA 13



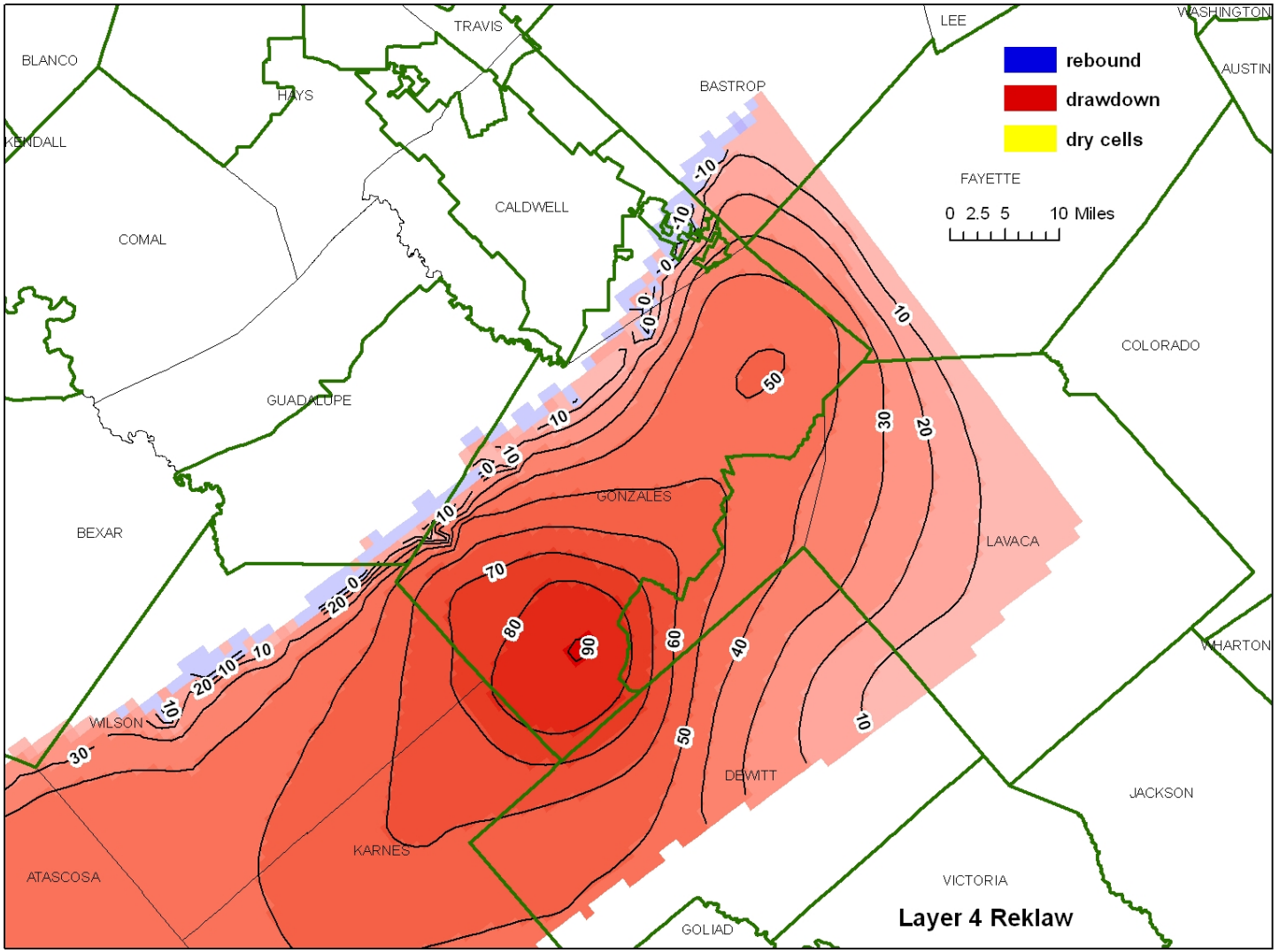
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



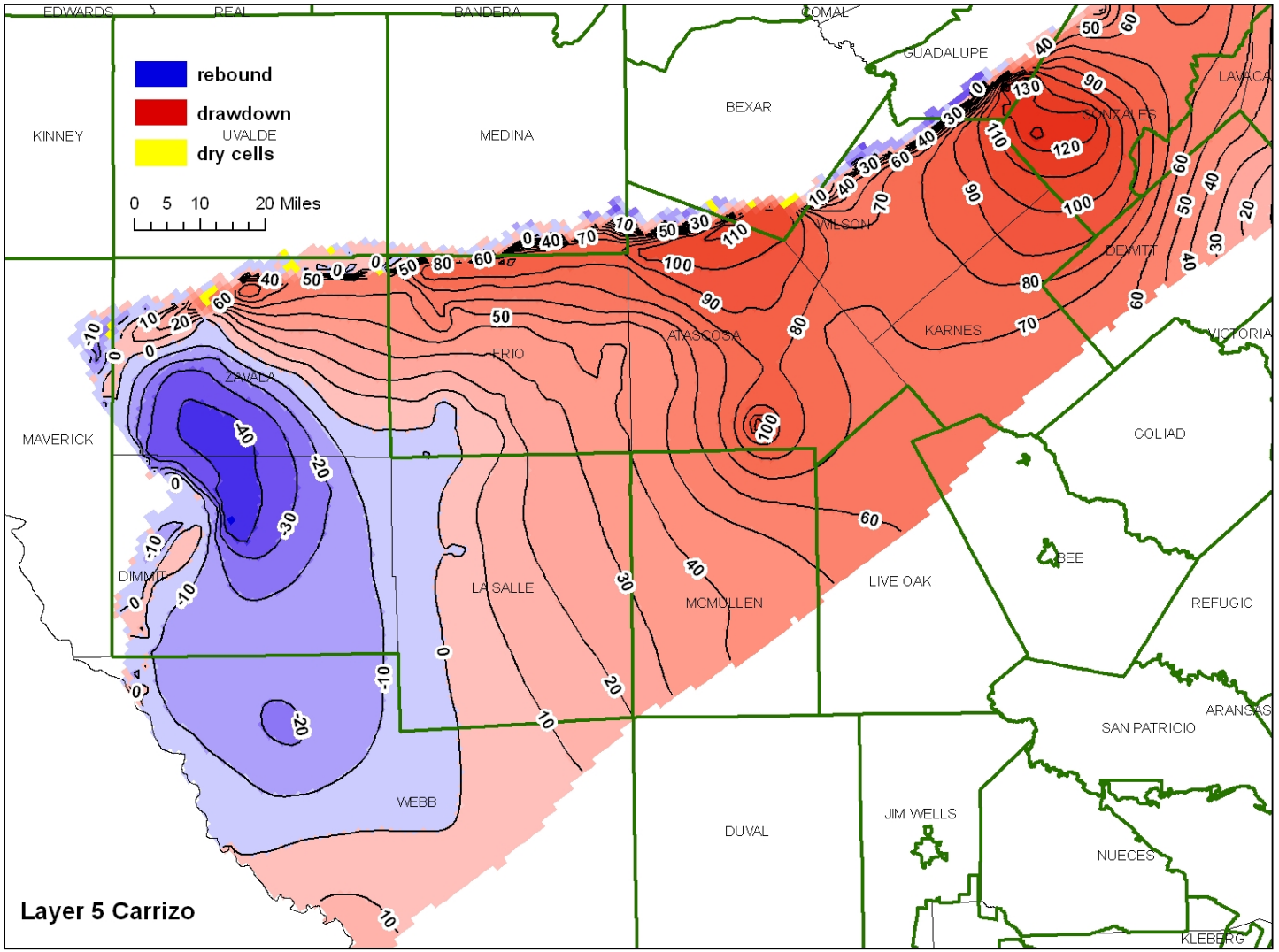
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13



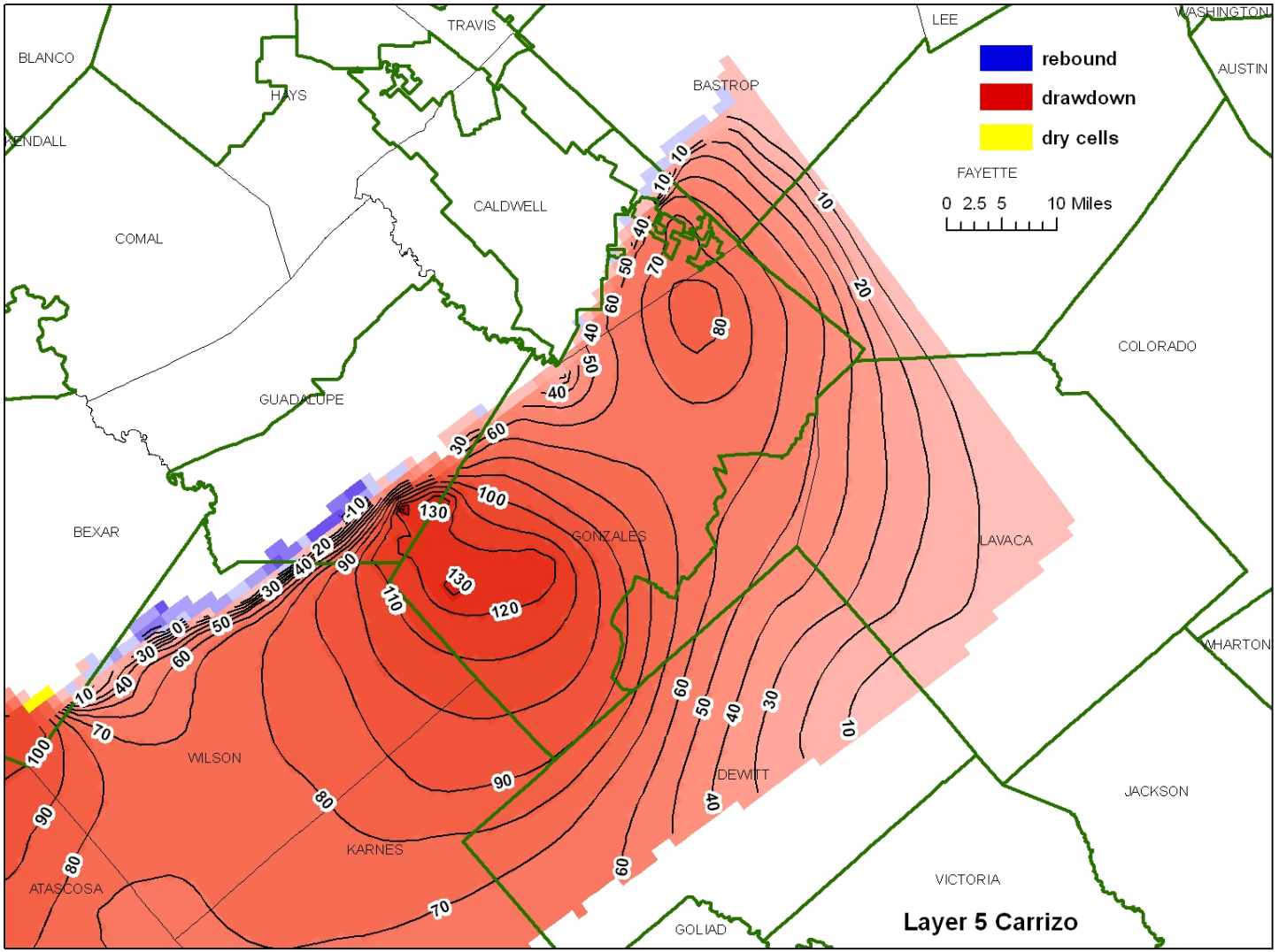
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



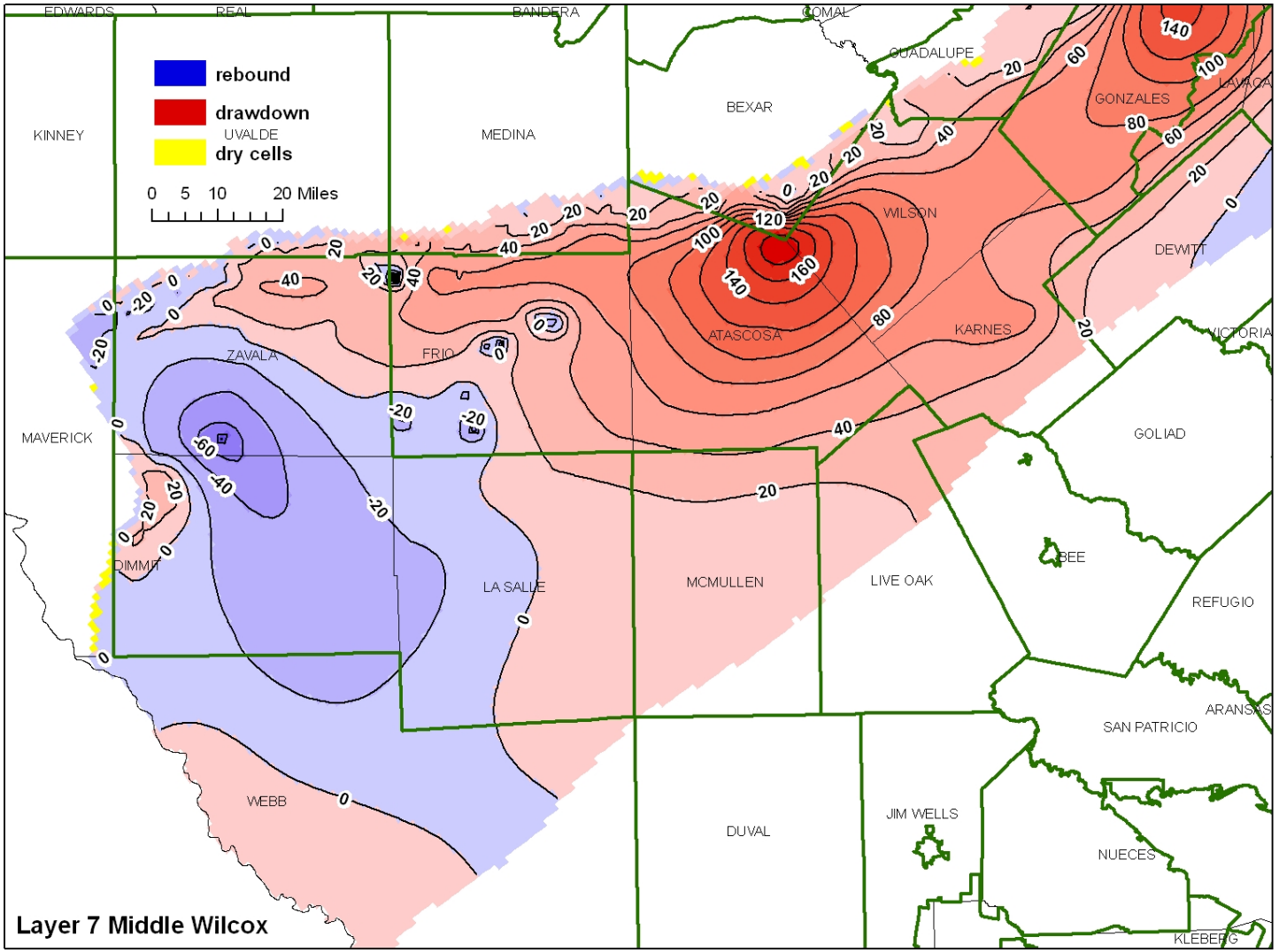
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13.



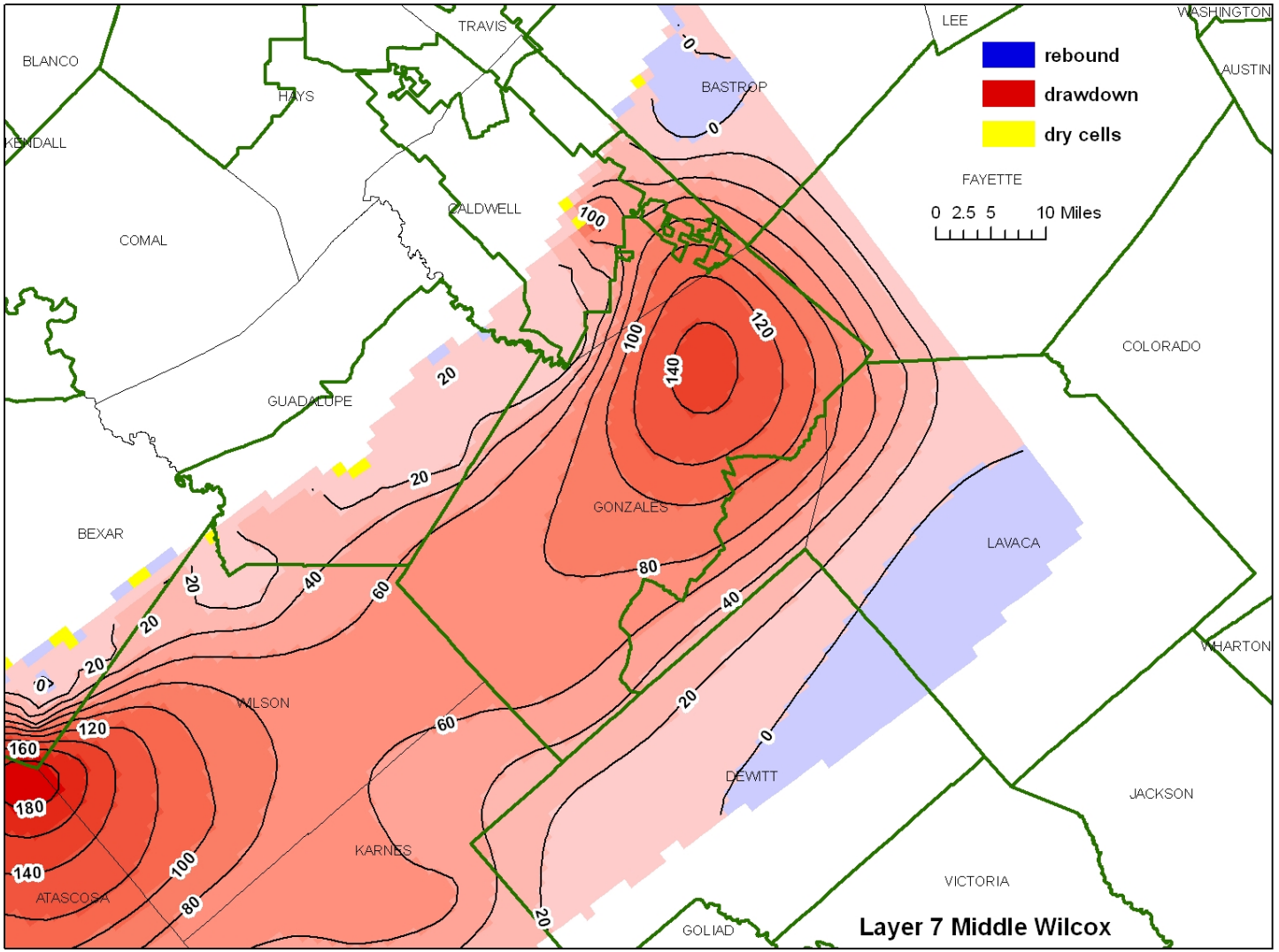
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



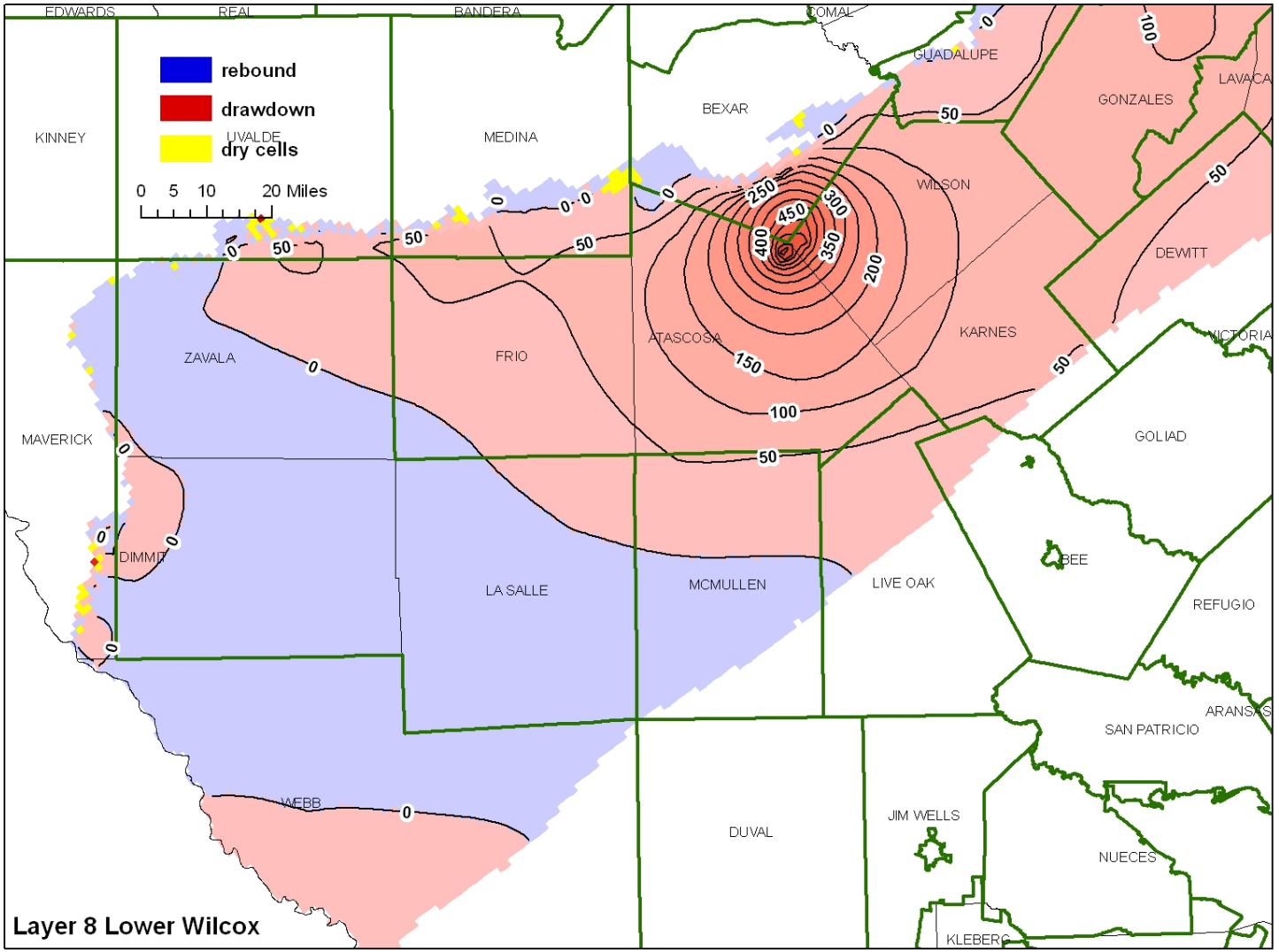
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13.



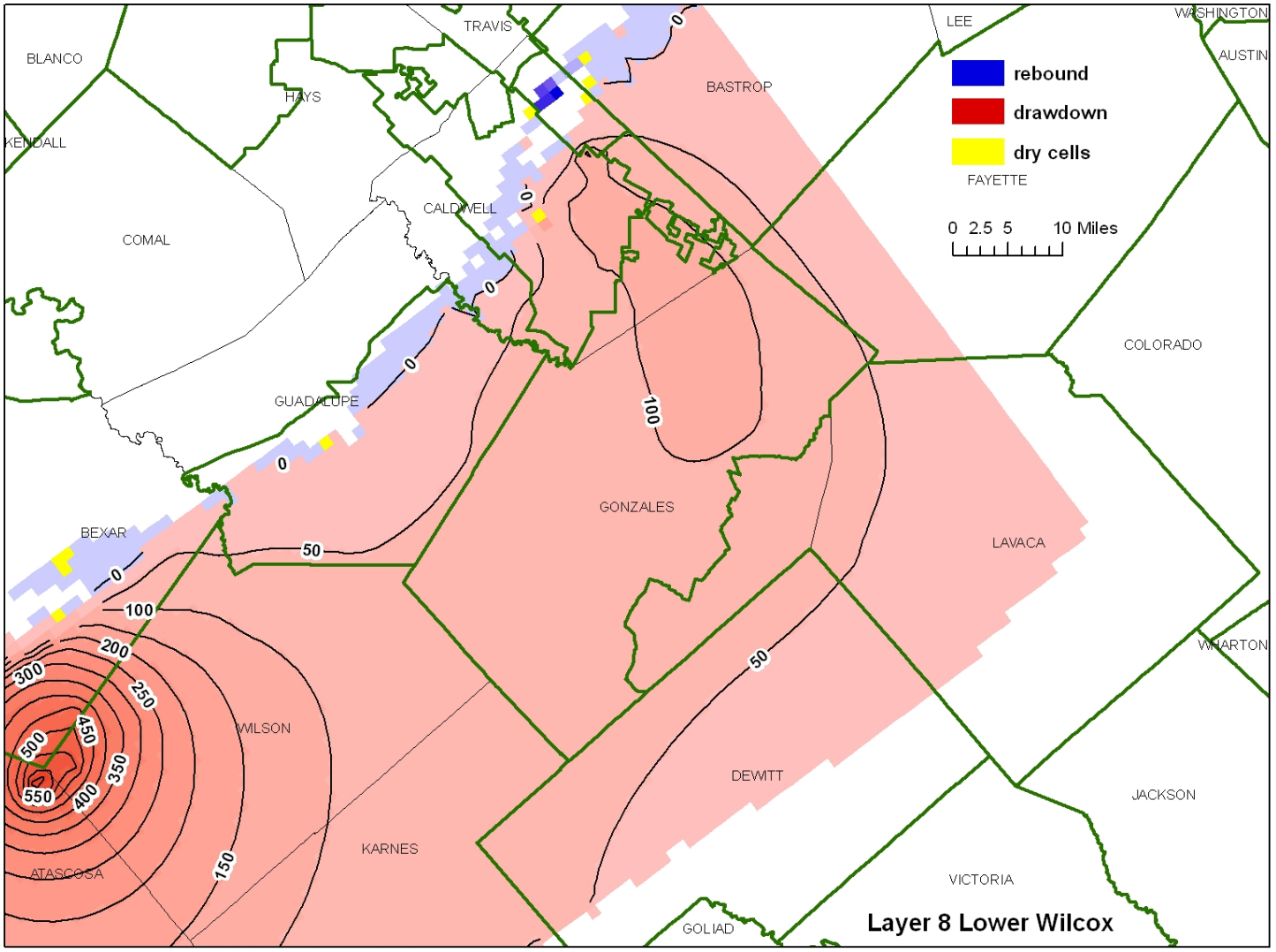
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



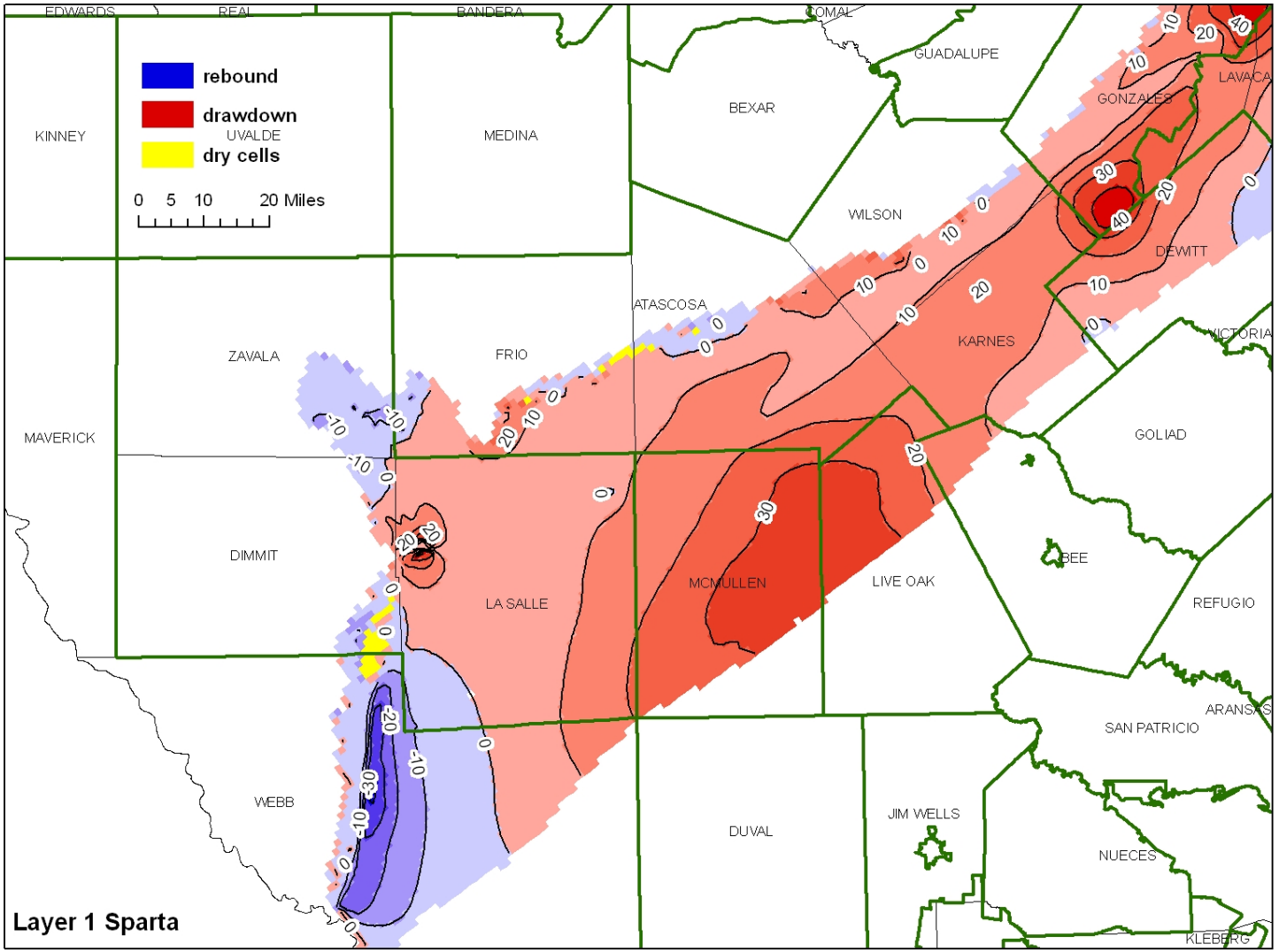
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13.



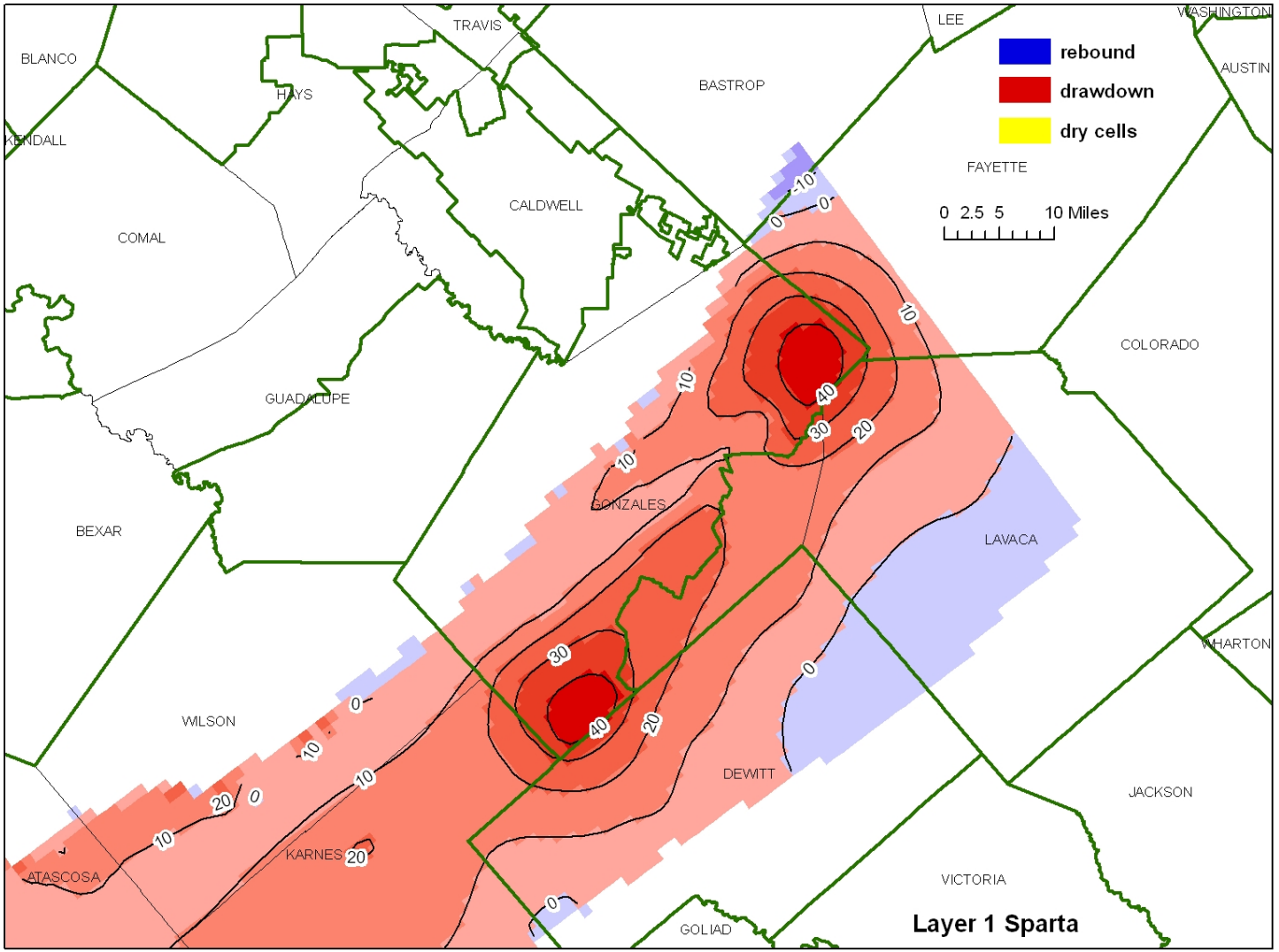
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2



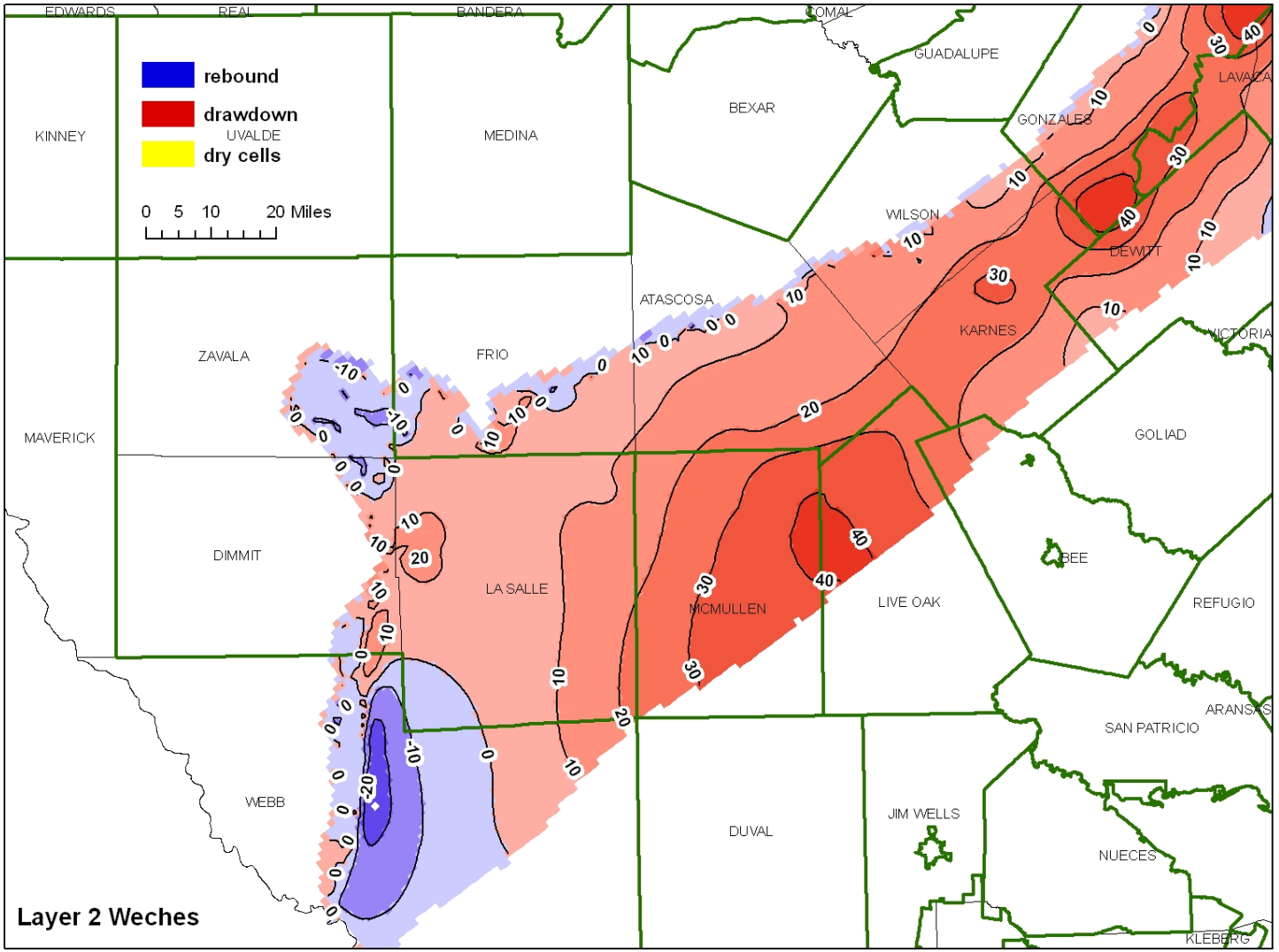
GAM Run 09-034 with additional pumping in Gonzales County Scenario 2.
With focus on northeast part of GMA 13.



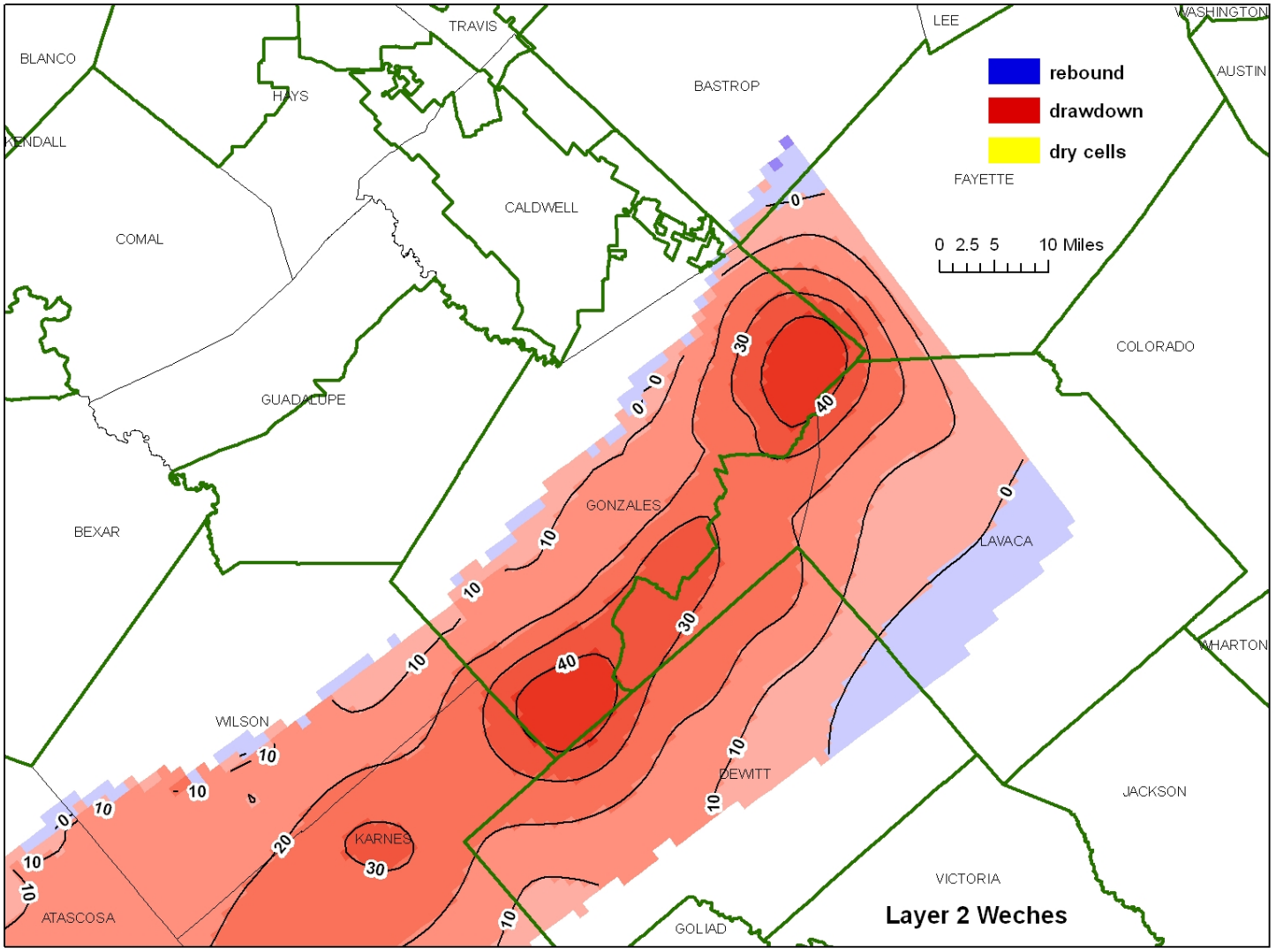
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



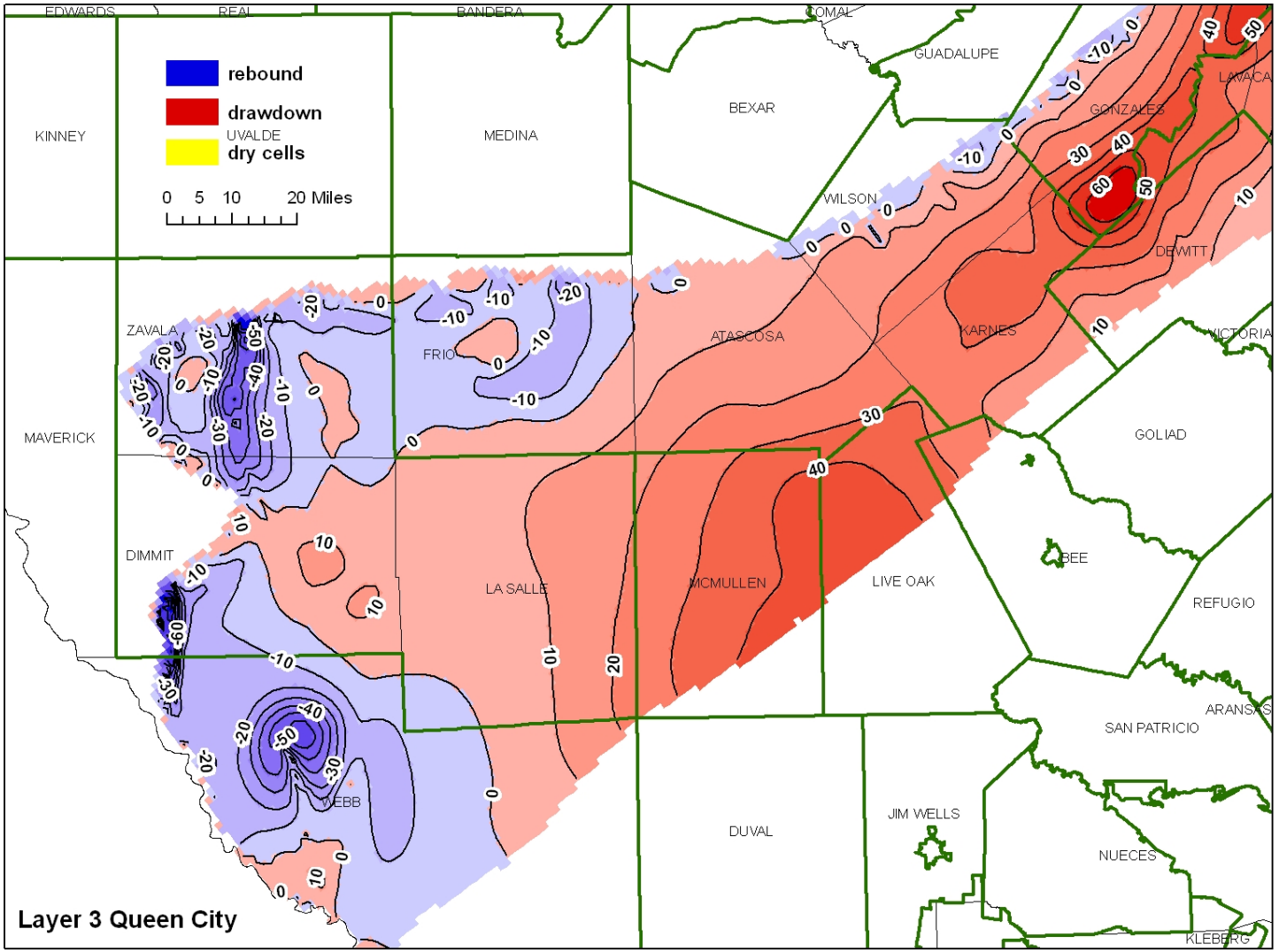
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13



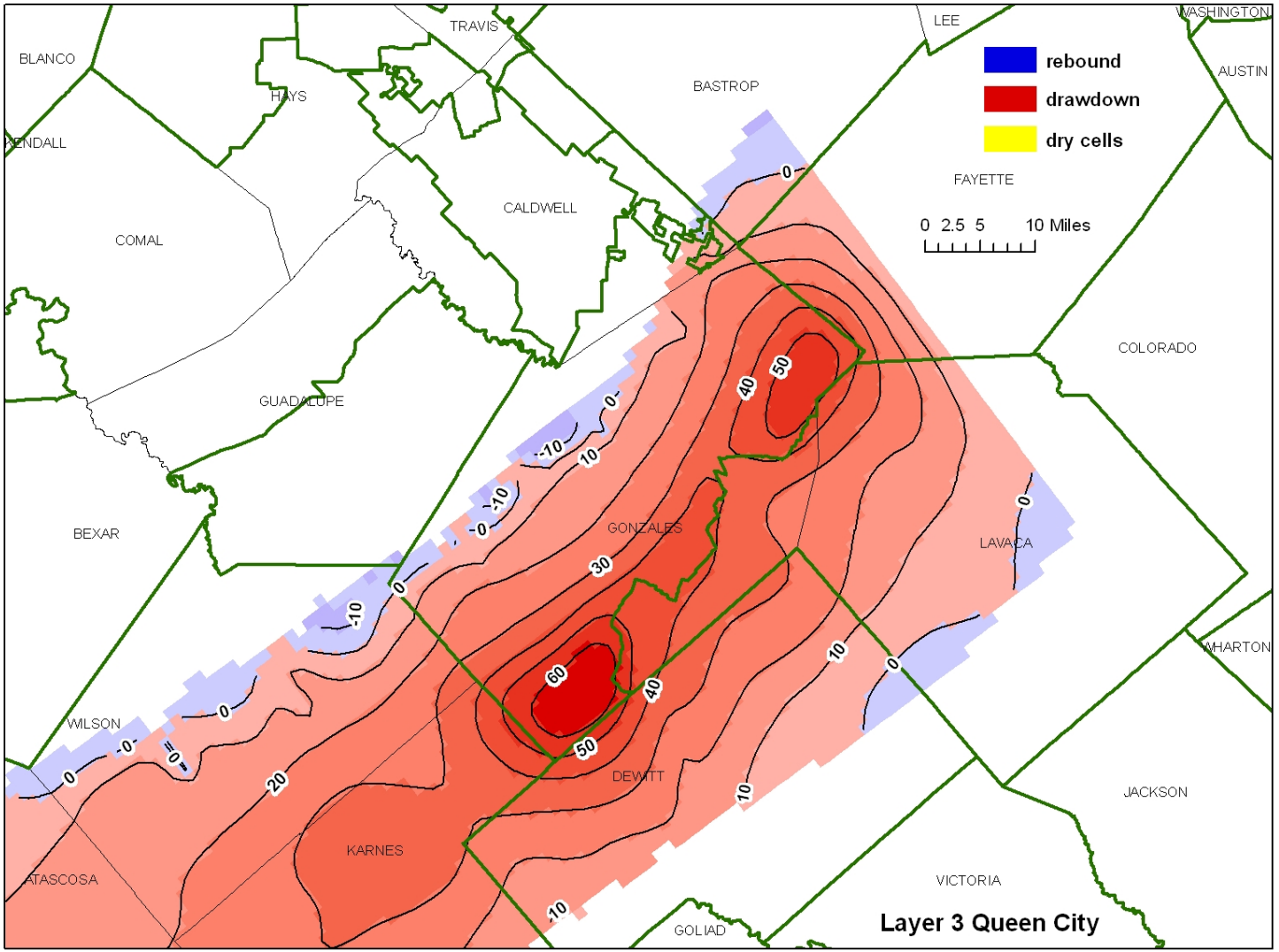
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



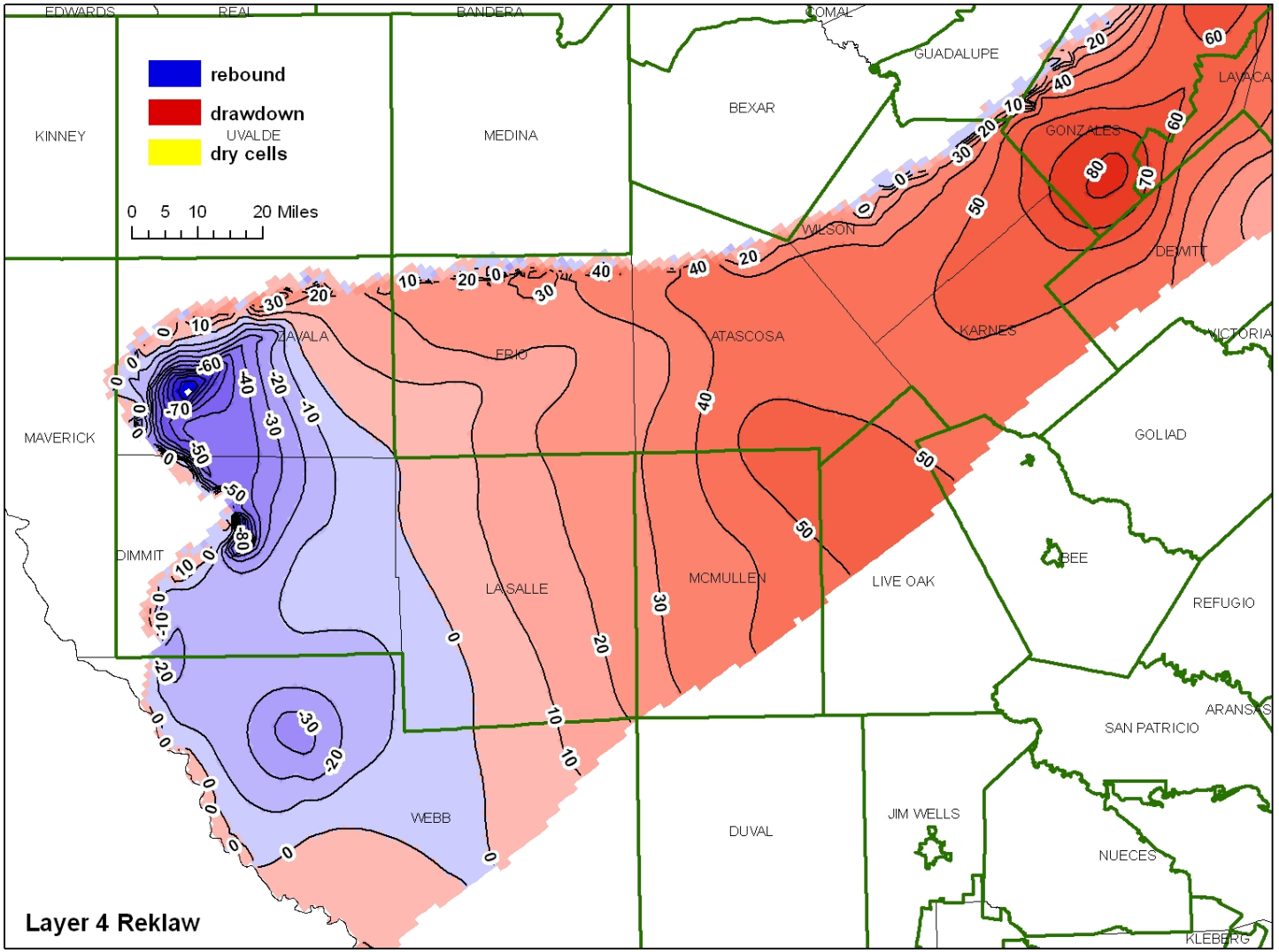
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3
With focus on northeast part of GMA 13



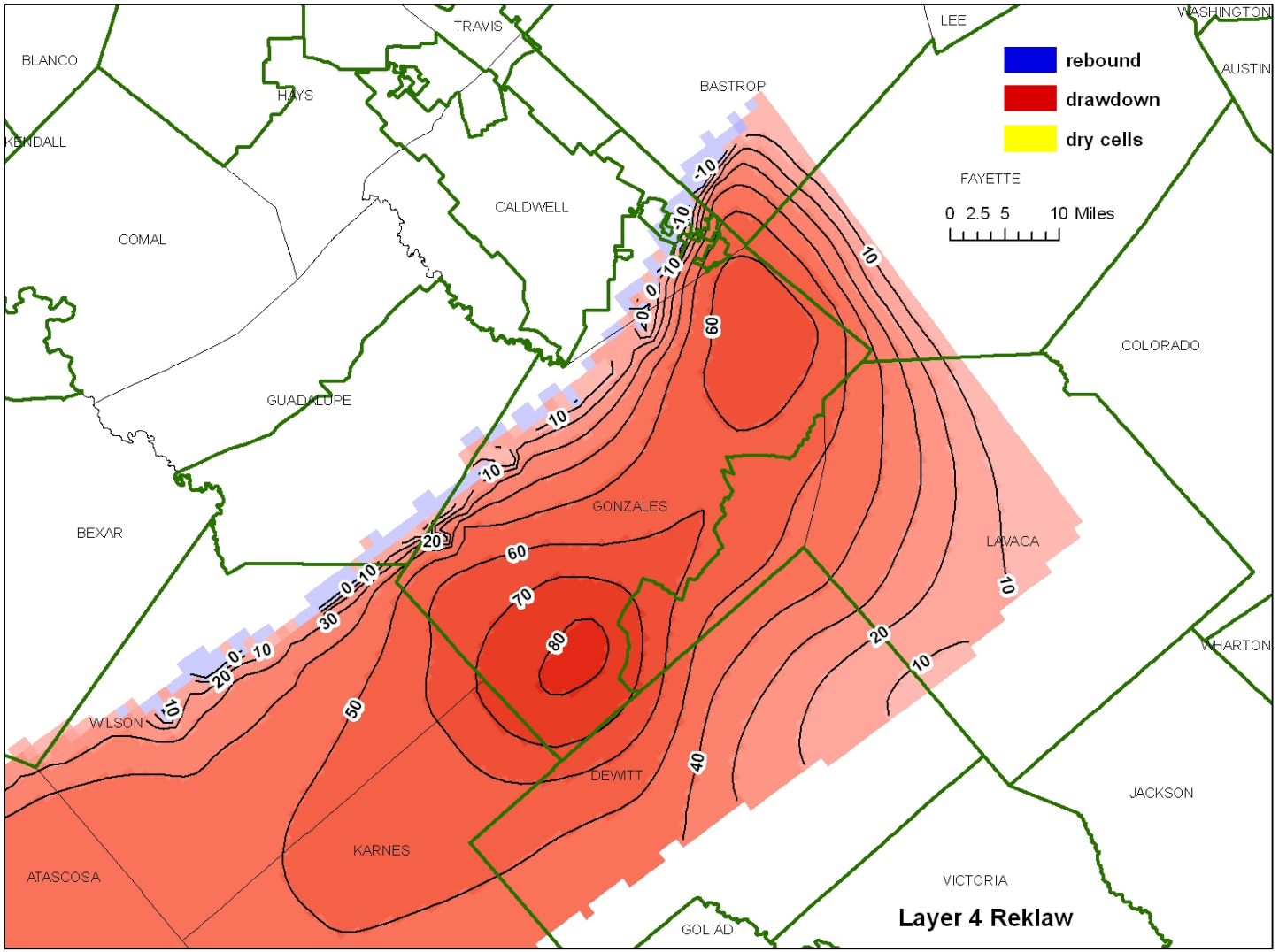
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



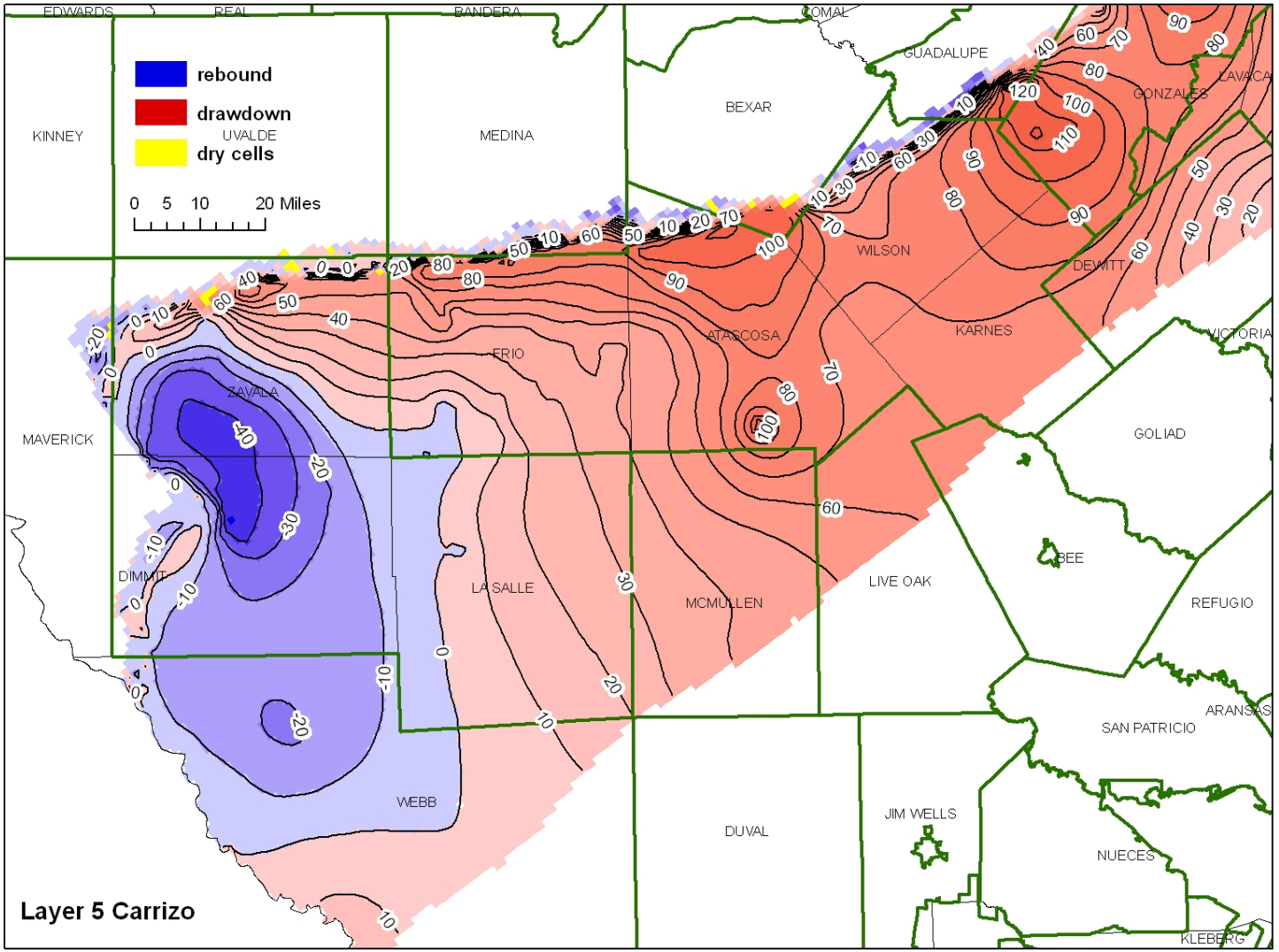
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13



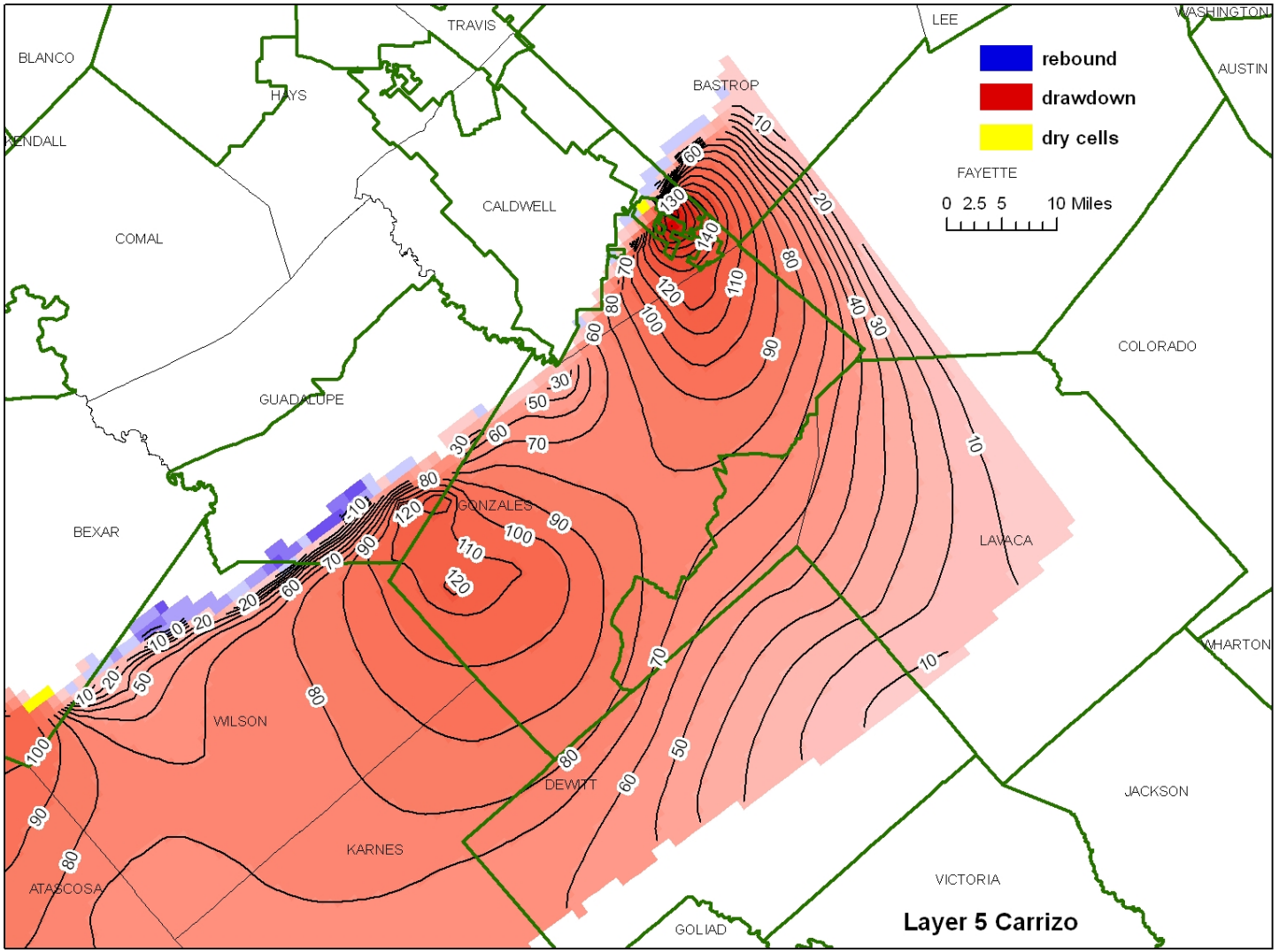
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



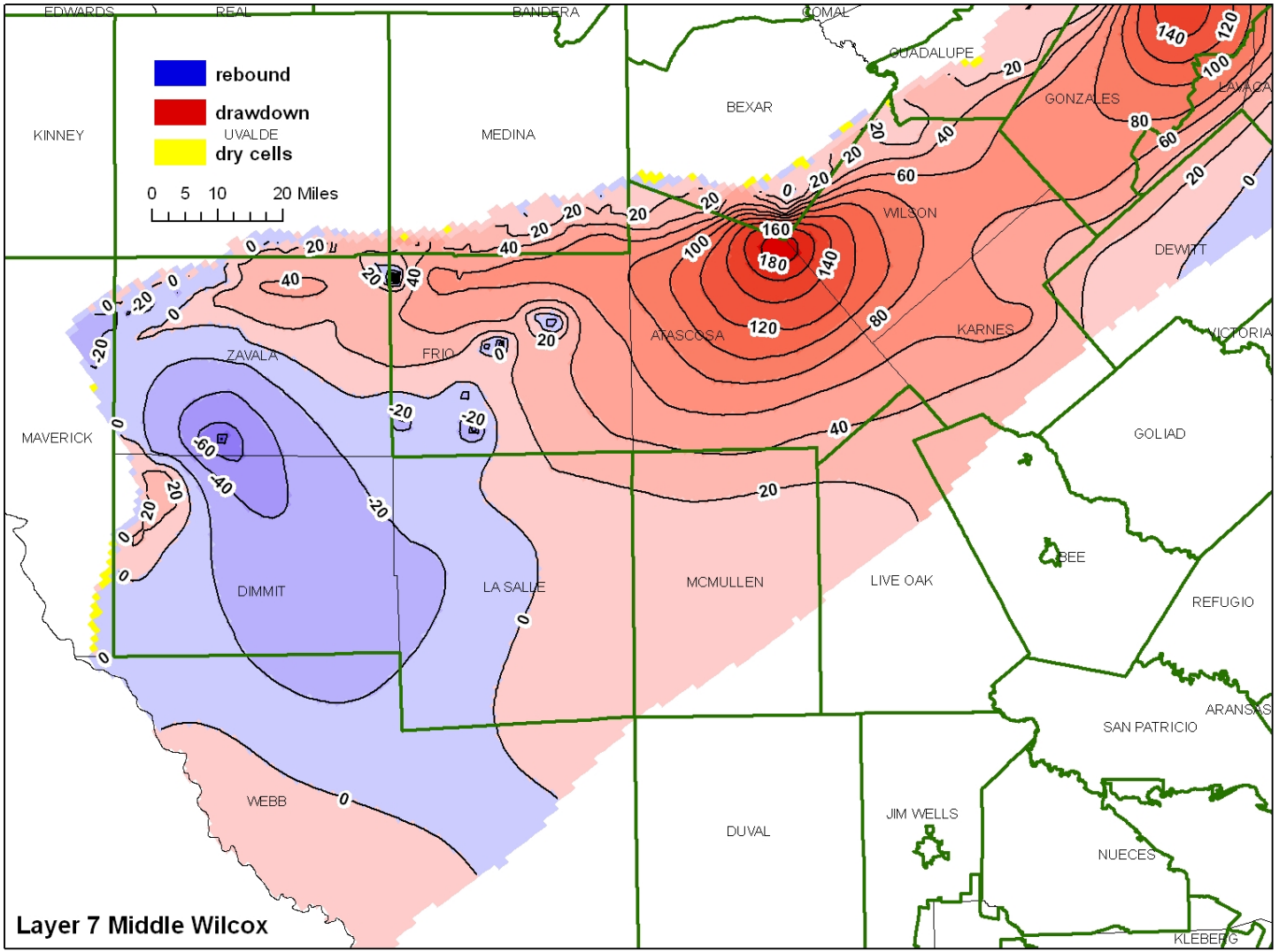
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13.



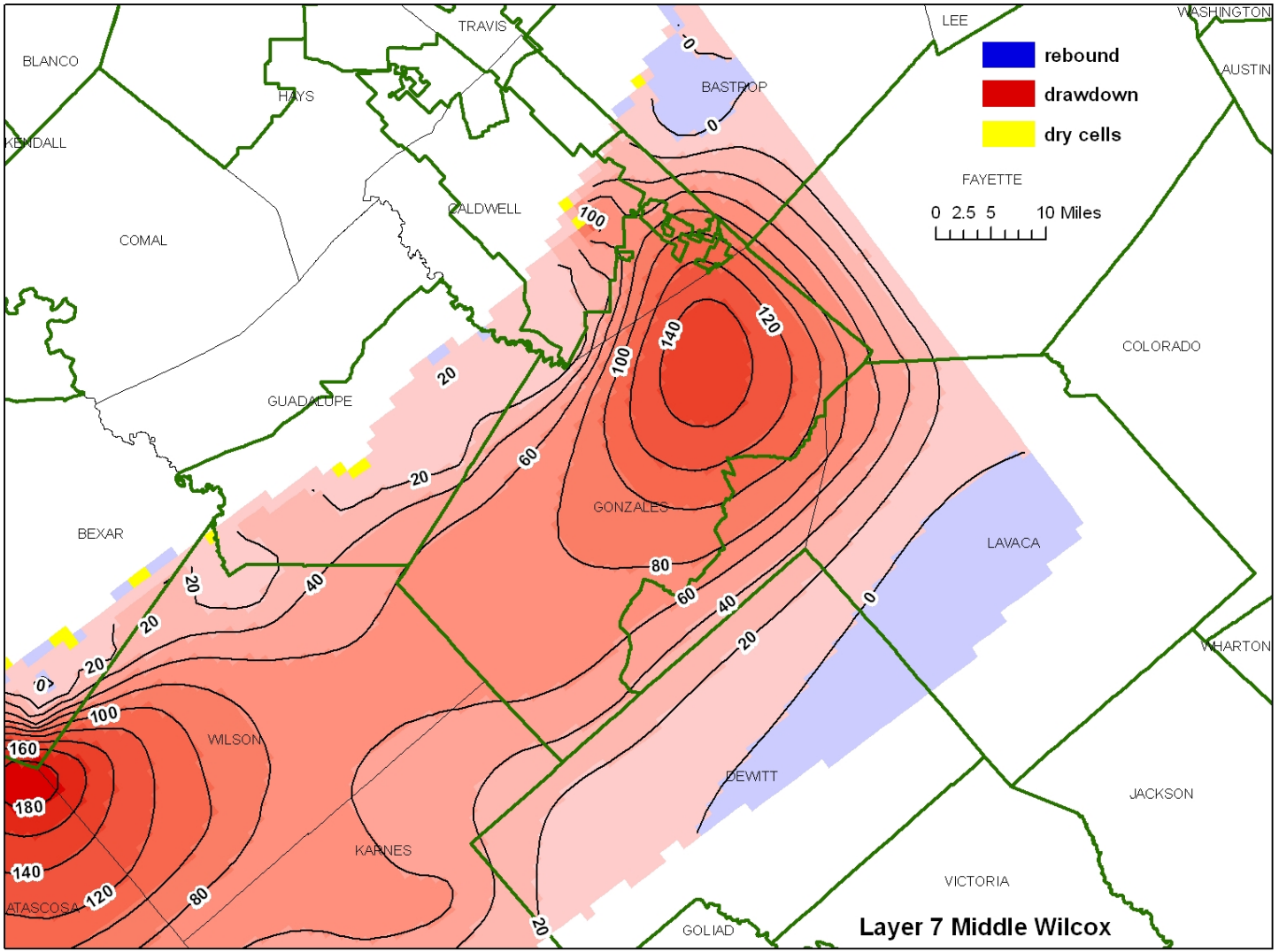
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



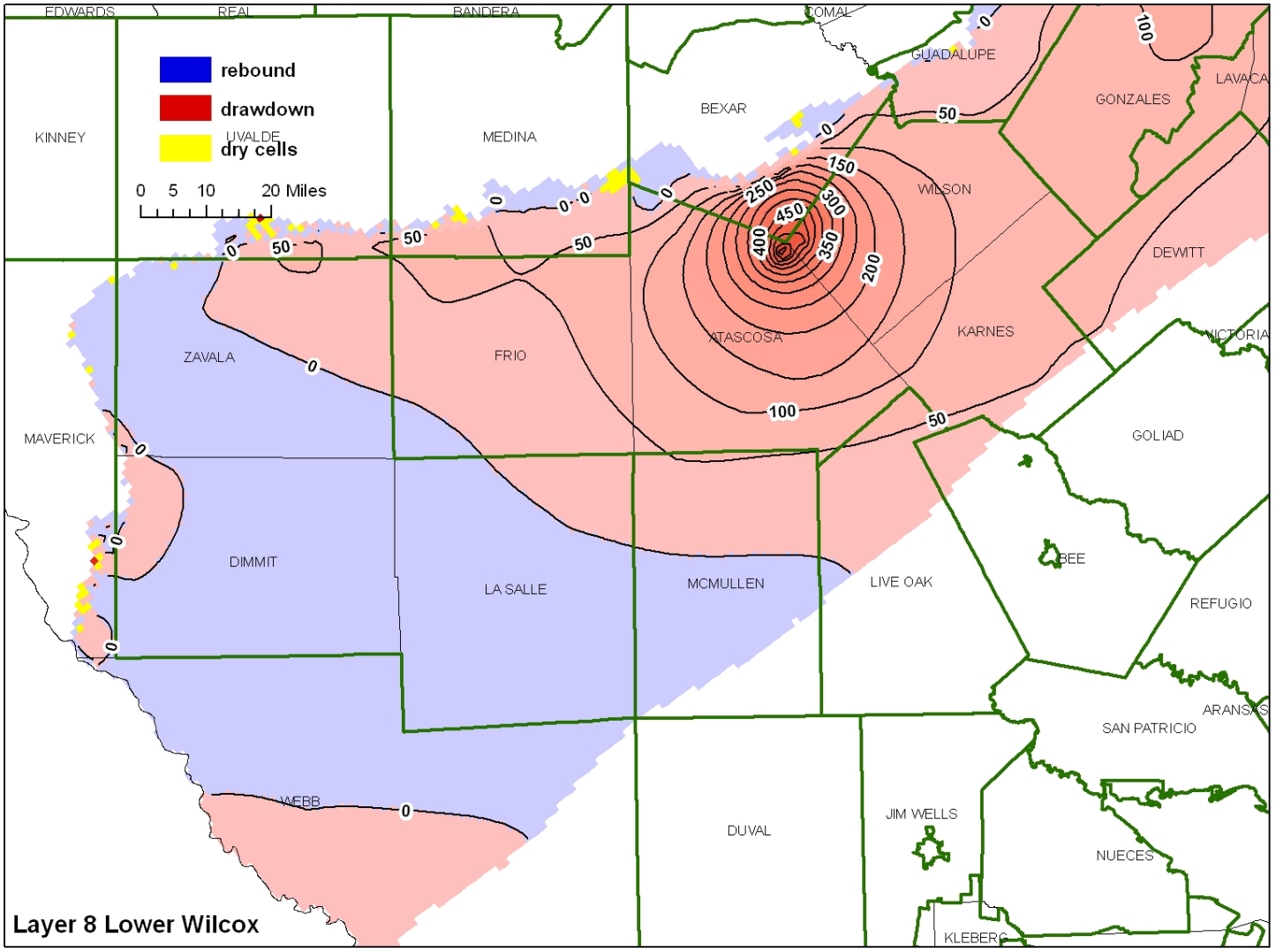
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13.



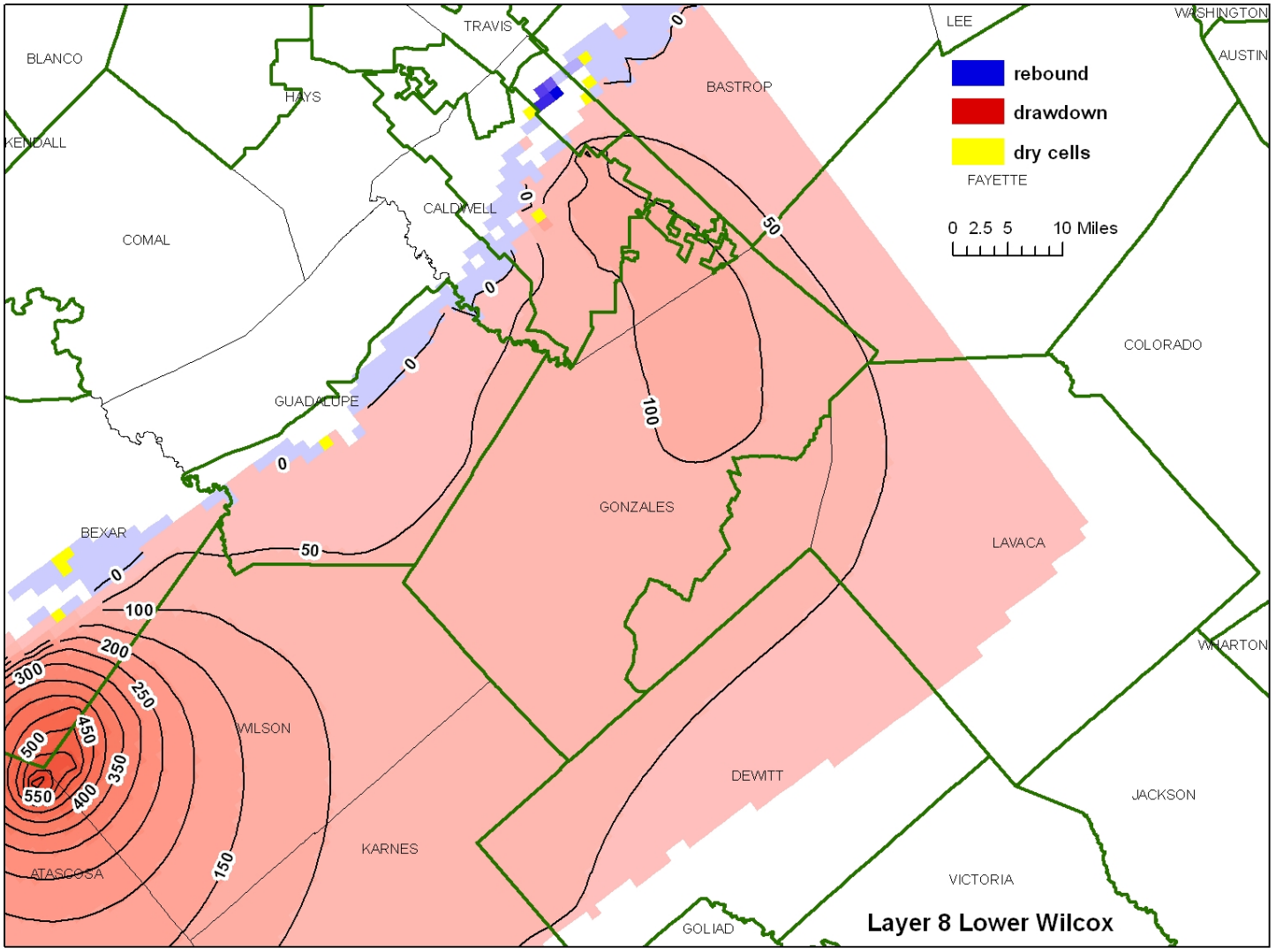
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



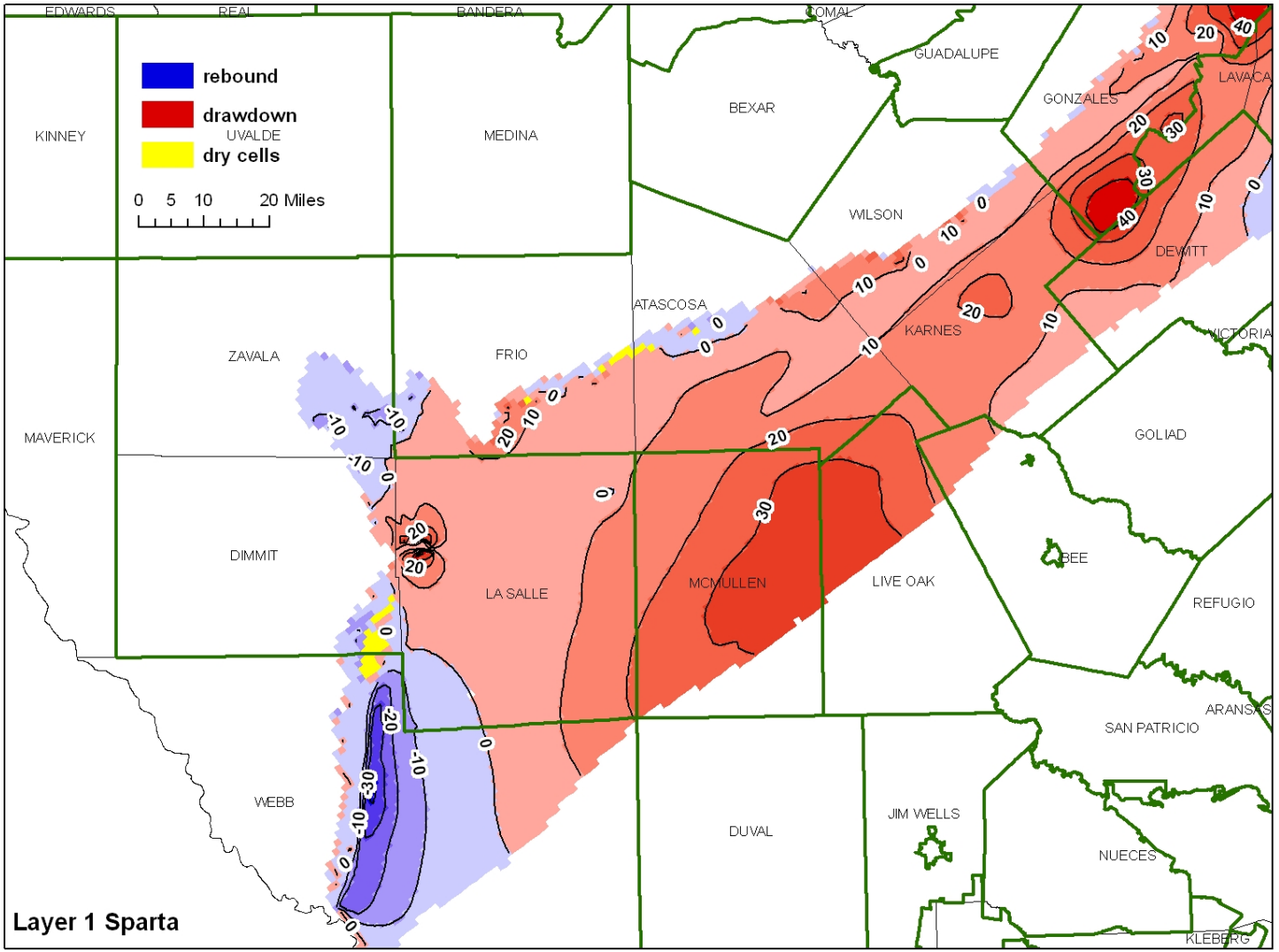
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13.



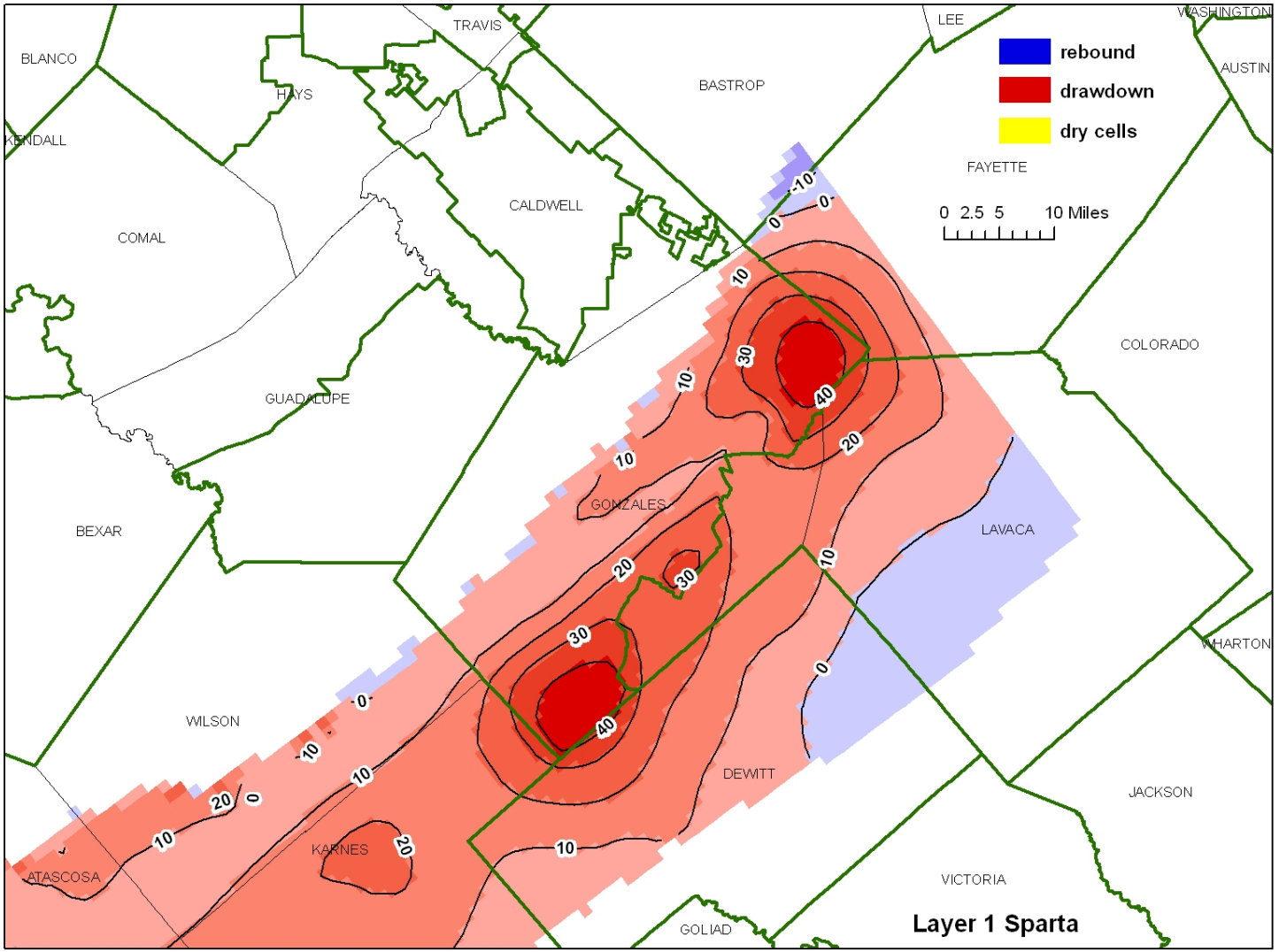
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3



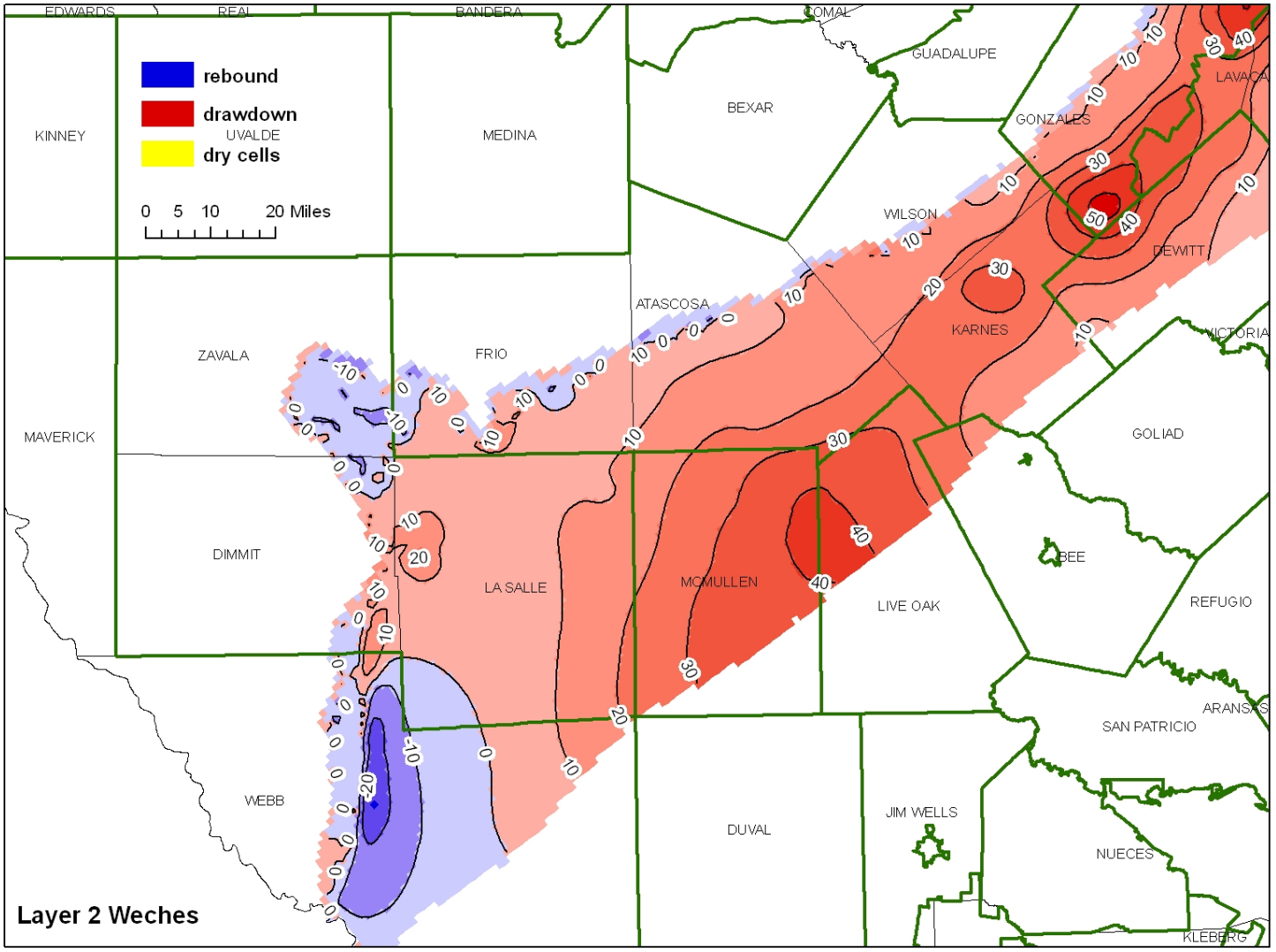
GAM Run 09-034 with additional pumping in southeast Caldwell County Scenario 3.
With focus on northeast part of GMA 13.



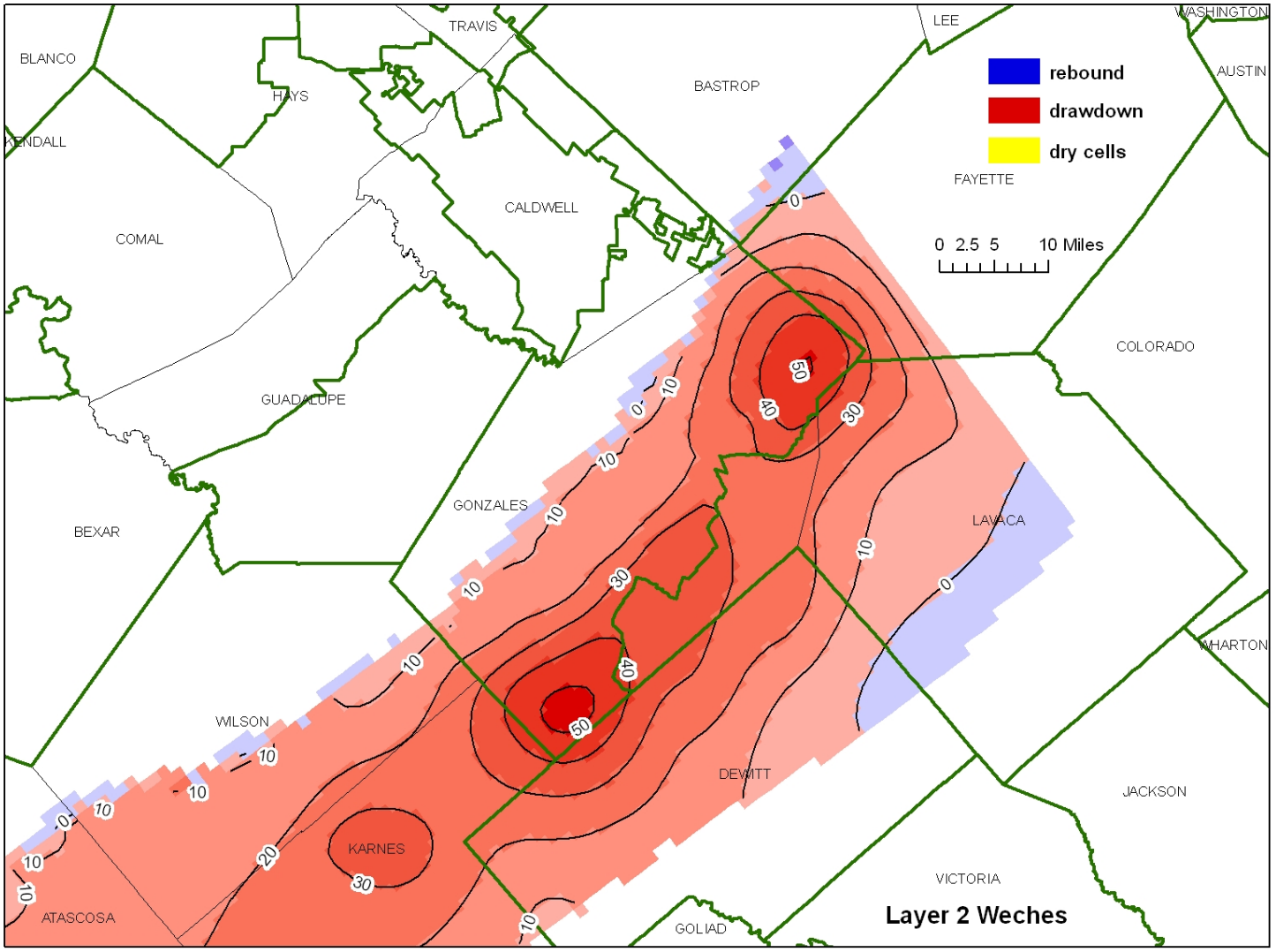
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



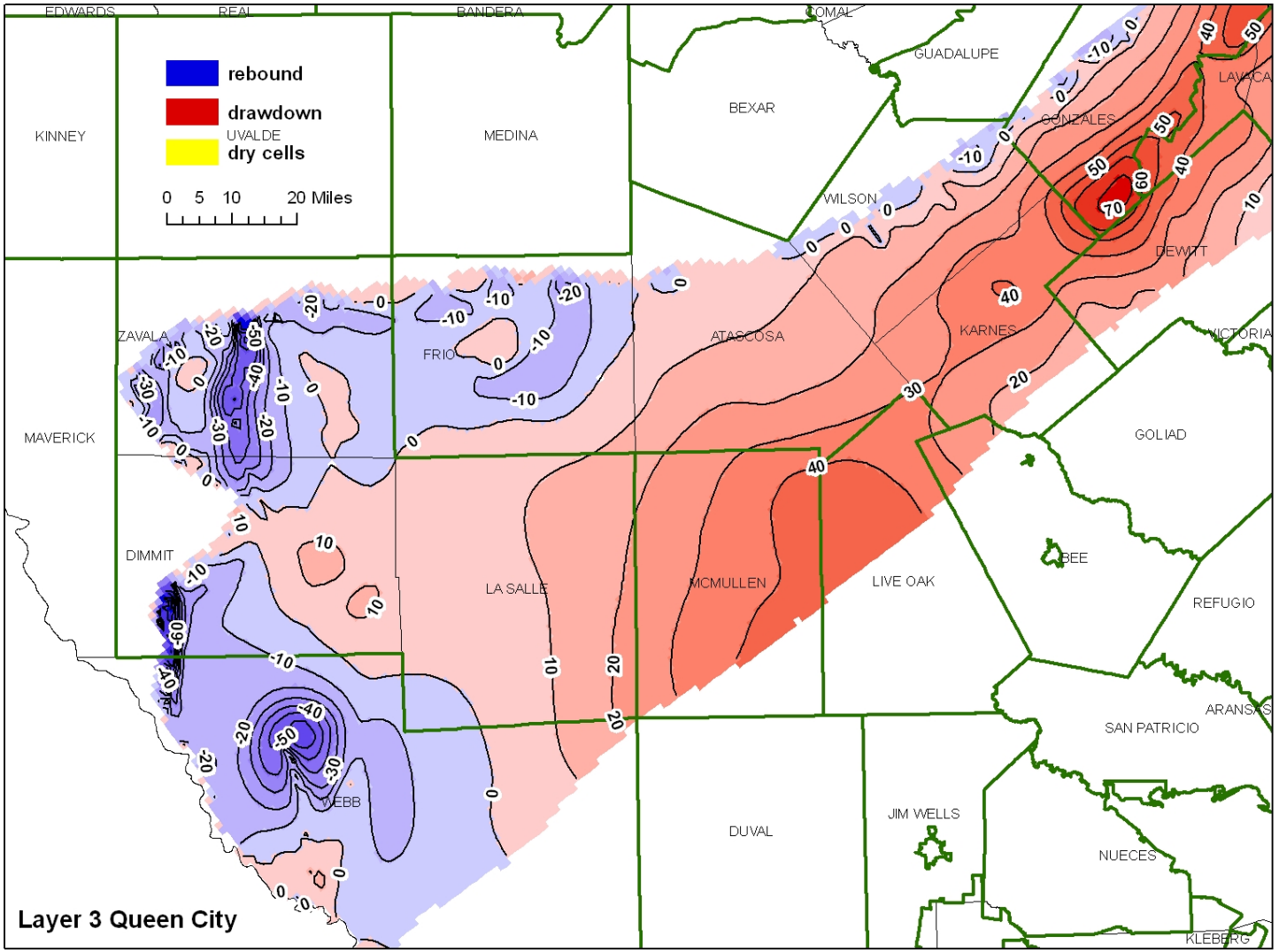
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13



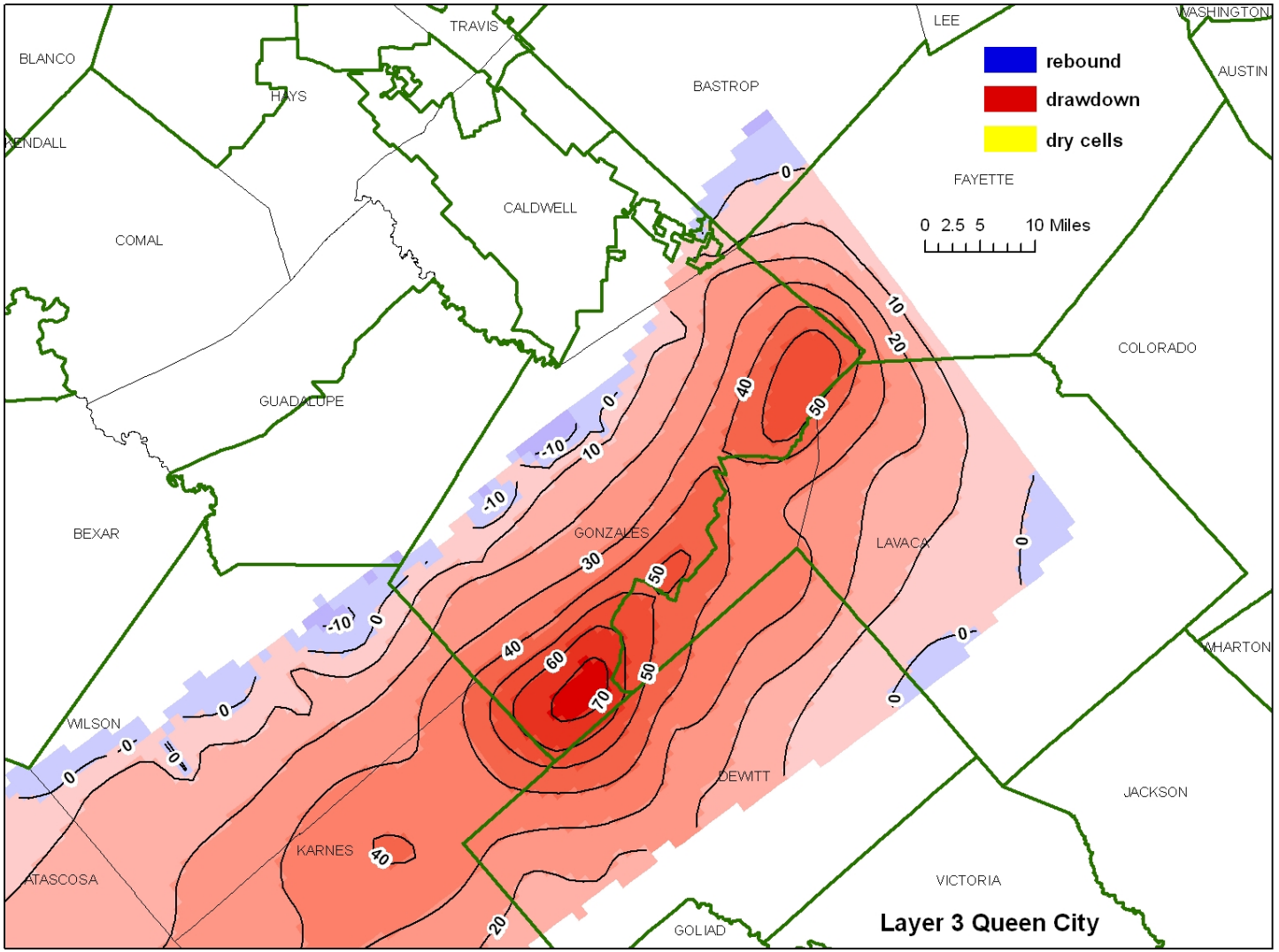
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



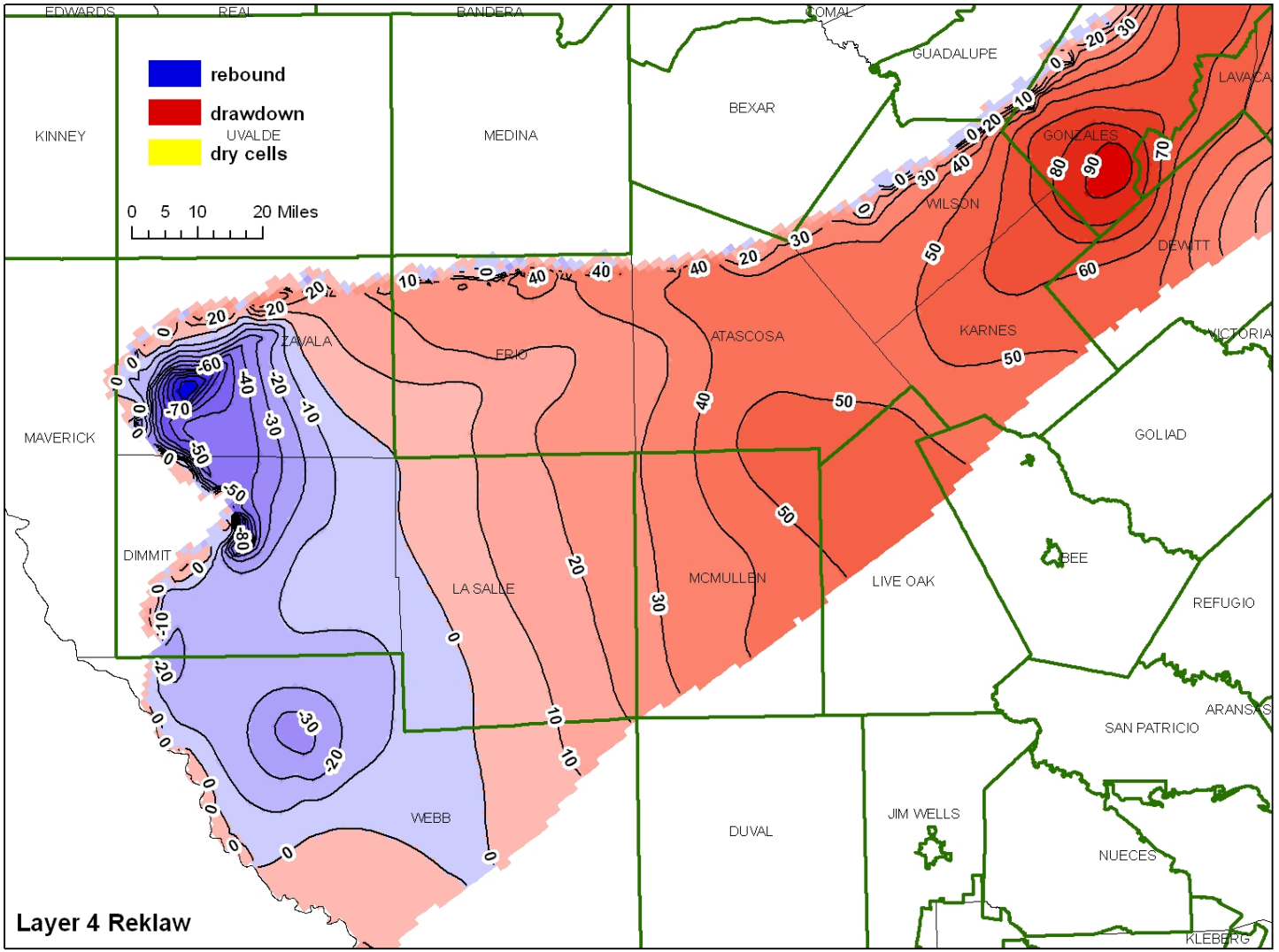
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4
With focus on northeast part of GMA 13



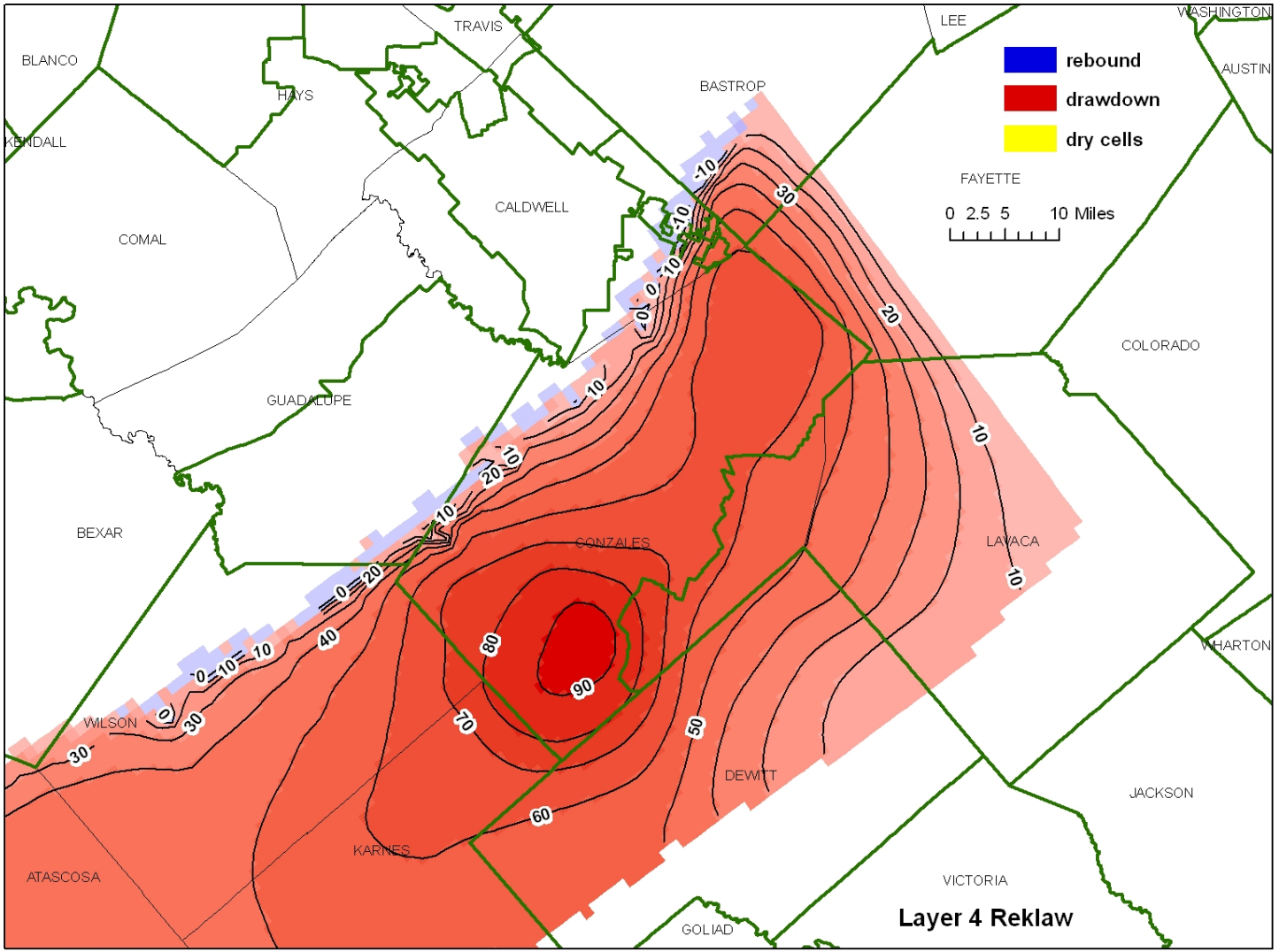
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



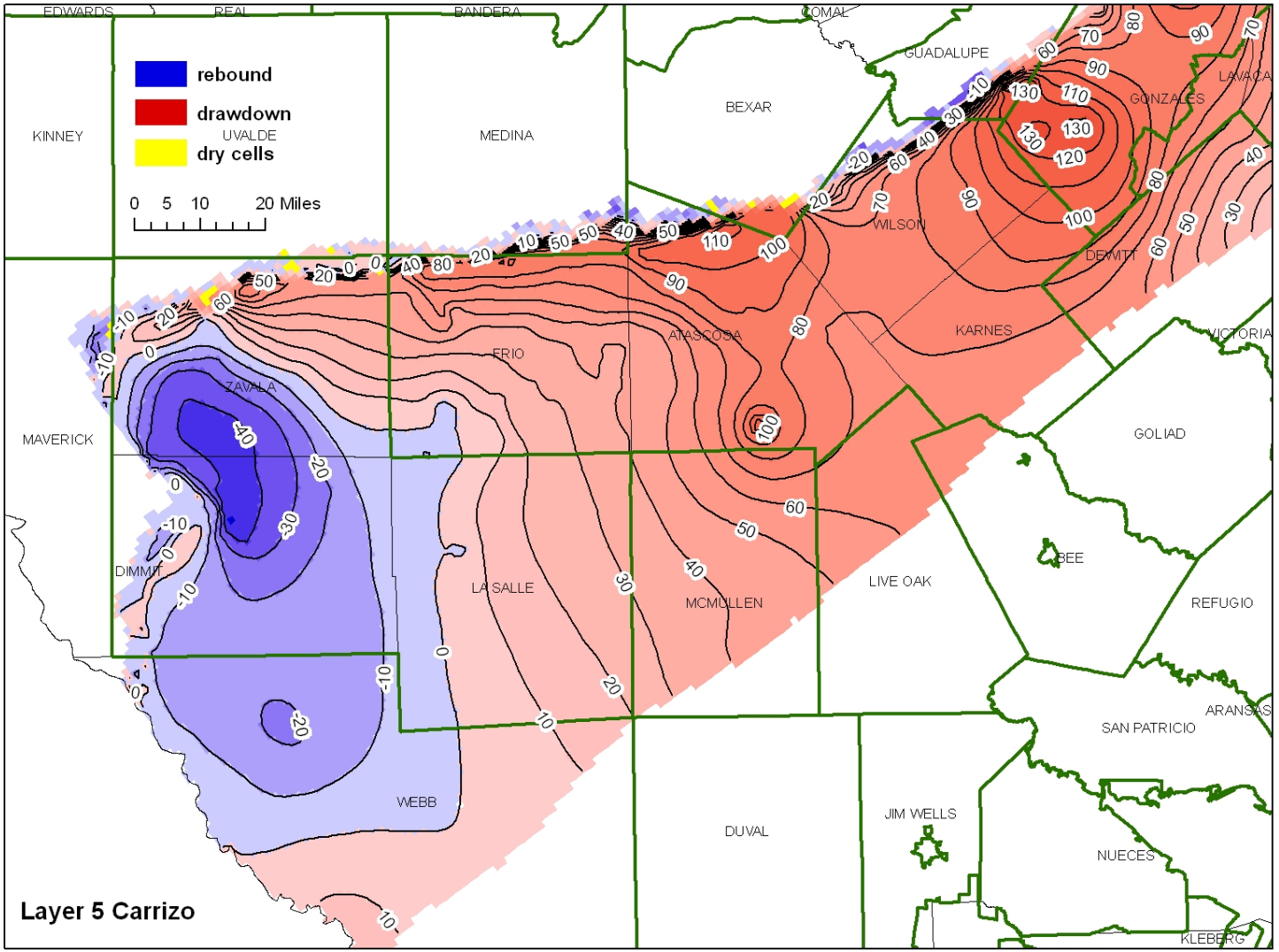
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13



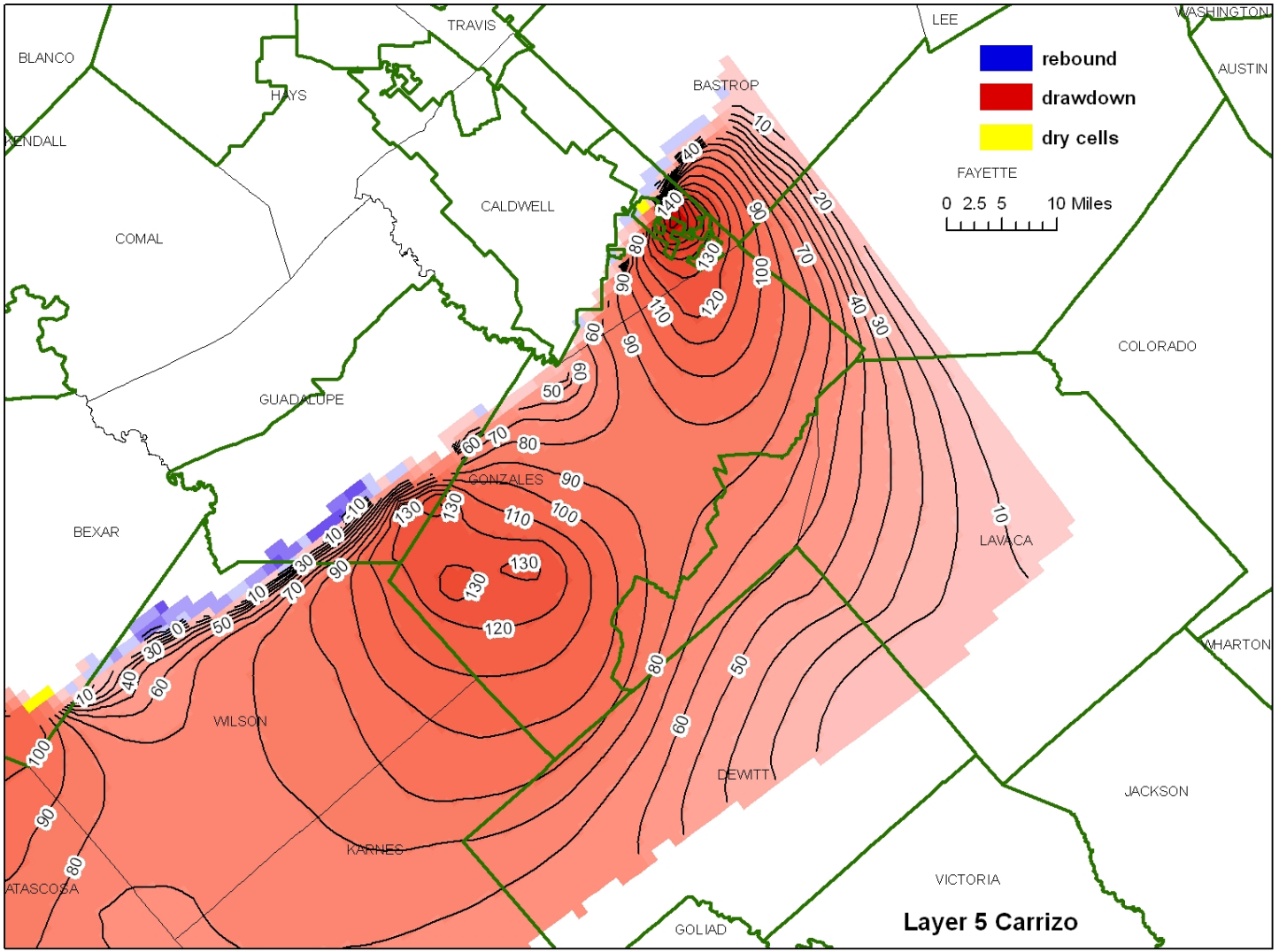
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



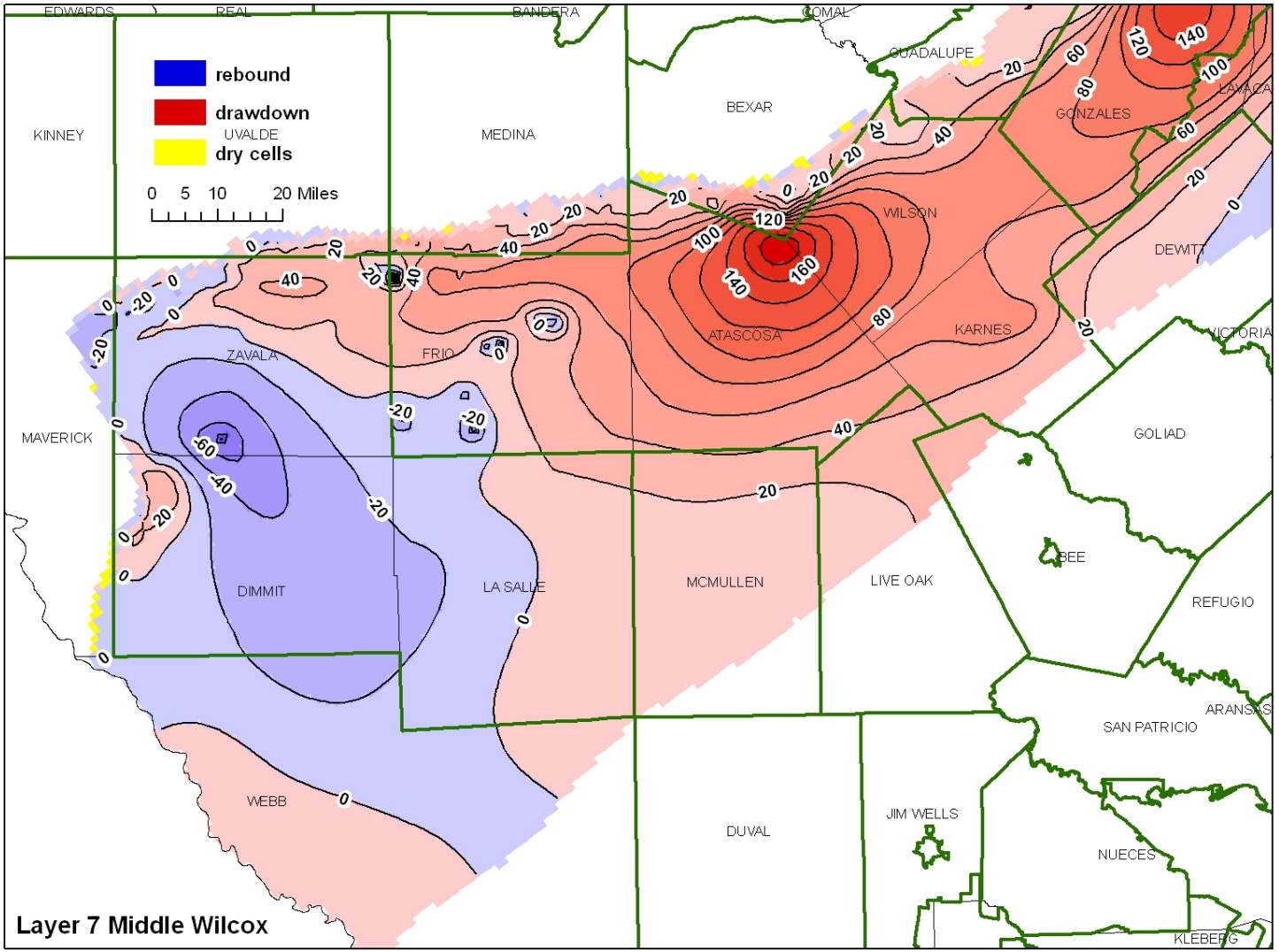
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13.



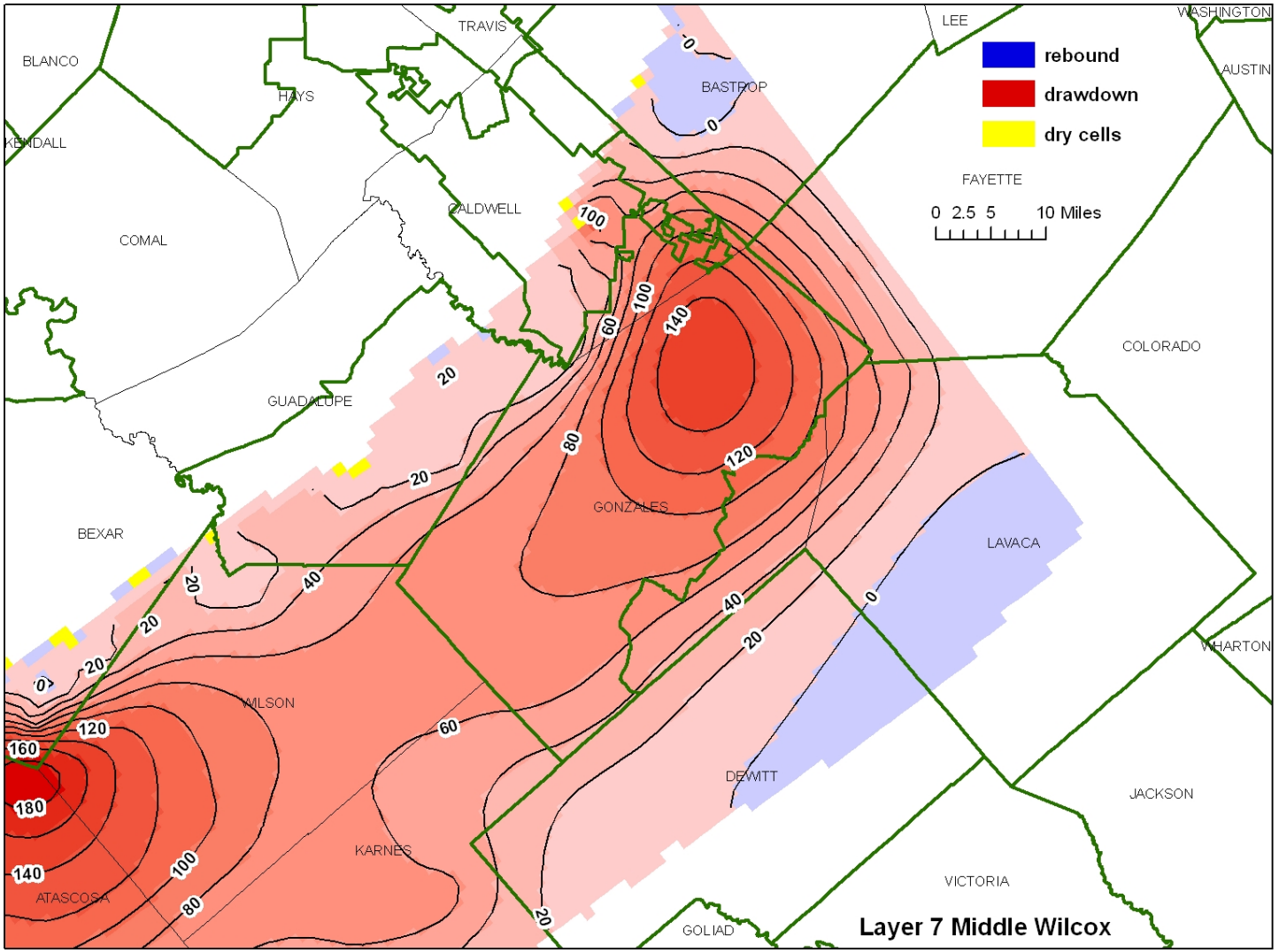
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



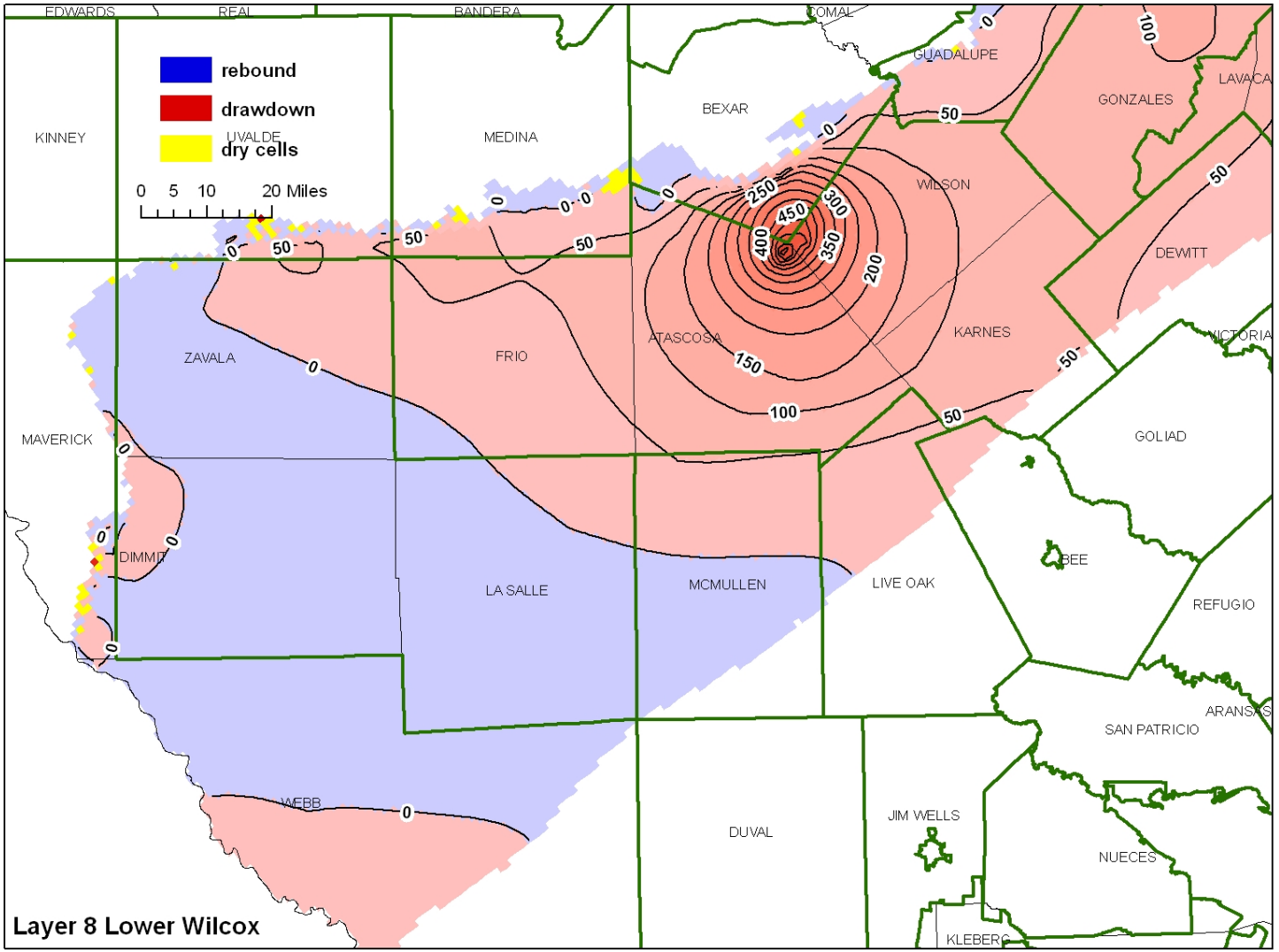
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13.



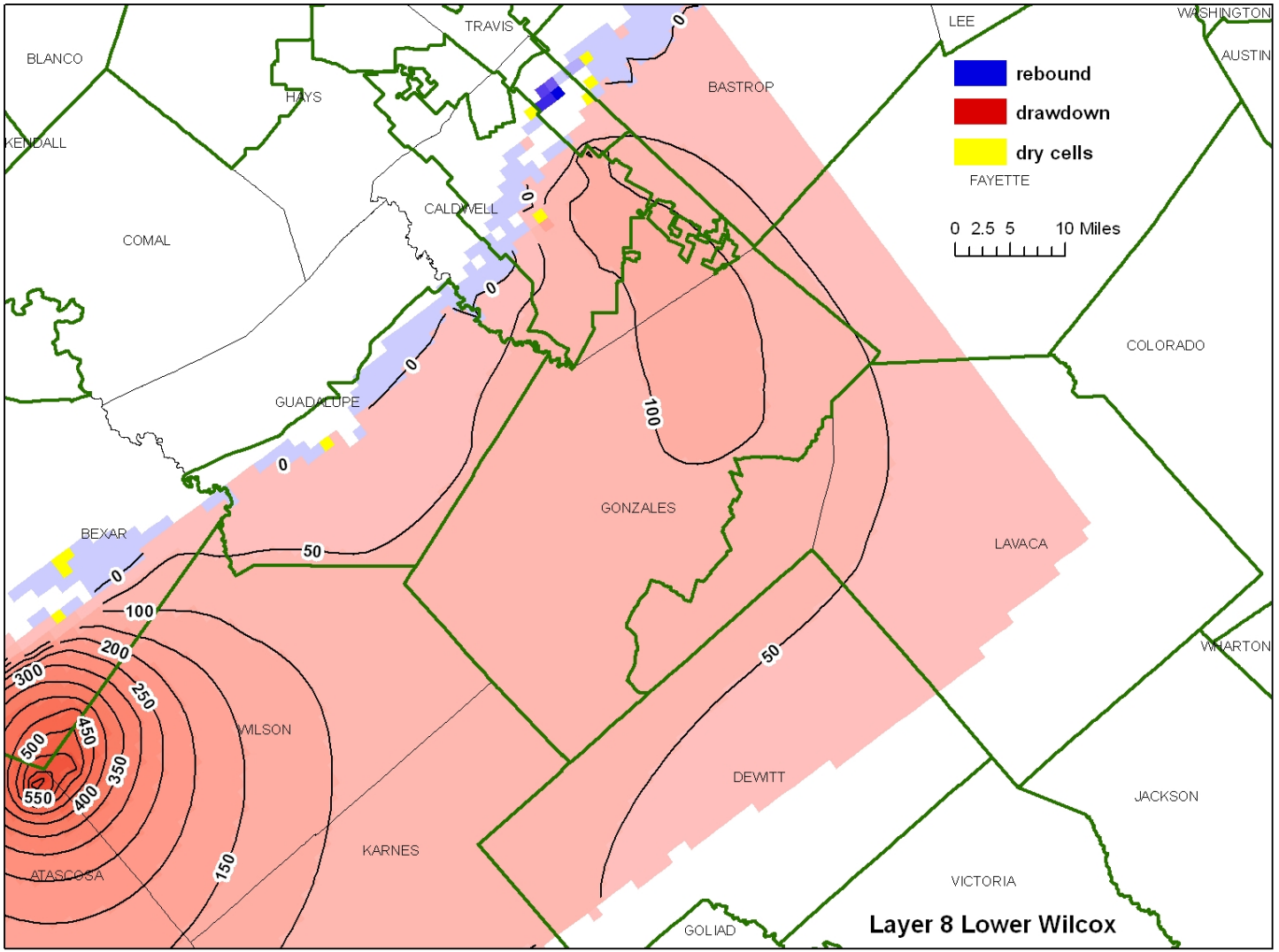
GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13.



GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4



GAM Run 09-034 with additional pumping in Gonzales and southeast Caldwell counties Scenario 4. With focus on northeast part of GMA 13.