GAM run 04-13

by Richard Smith
Texas Water Development Board
Groundwater Availability Modeling Section
(512) 936-0877
September 22, 2004

REQUESTOR:

Mr. Stefan Schuster with Freese and Nichols, Inc. on behalf of the Panhandle Regional Water Planning Group

DESCRIPTION OF REQUEST:

Determine the groundwater in storage for each county basin area in the Panhandle Regional Water Planning Area using a 1.25% annual depletion from the base year of 1998 for the total period of 2000 through 2060 with average recharge for each area factored into the analysis. Average recharge is based on a percentage of precipitation for the 1950 through 1990 period of record.

METHODS:

To address the request, we:

- Extracted the recharge rates for each county basin area from the water budgets from the Groundwater Availability Model (GAM) runs for the northern and southern parts of the Ogallala aquifer;
- Calculated the groundwater in storage for 1998 from the GAM and
- Computed the 1.25% annual depletion from 2000 through 2060.

PARAMETERS AND ASSUMPTIONS:

Recharge was reappraised in the updated model of the northern part of the Ogallala aquifer. The methodology is discussed in Dutton (2004). Average recharge was also extracted from the water budgets of the model of the southern part of the Ogallala aquifer (See Blandford, and others, 2003)

RESULTS:

The results are in the attached Excel spreadsheet file.

REFERENCES:

Dutton, Alan, 2004, Adjustments of parameters to improve the calibration of the Og-N model of the Ogallala aquifer, Panhandle Water Planning Area: Bureau of Economic Geology, The University of Texas at Austin, 9 p

Blandford, T. N., Blazer, D. J., Calhoun, K. C., Dutton, A. R., Naing, T., Reedy, R. C., and Scanlon, B. R., 2003, Groundwater availability of the southern Ogallala aquifer in Texas and New Mexico; Numerical Simulations Through 2050: Final Report prepared for the Texas Water Development Board by Daniel B. Stephens & Associates, Inc., 158 p.

County	Basin	Total Volume	Recharge	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
		(AF [1998])	(AFY)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Armstrong	Red	3,767,725	4,745	3,725,373	3,683,551	3,642,251	3,601,468	3,561,194	3,521,424	3,482,151	3,443,368	3,405,071	3,367,252	3,329,906
Carson	Canadian	6,442,791	5,962	6,368,218	6,294,578	6,221,857	6,150,046	6,079,133	6,009,106	5,939,954	5,871,667	5,804,233	5,737,642	5,671,884
Carson	Red	7,228,774	2,256	7,140,670	7,053,668	6,967,753	6,882,912	6,799,131	6,716,398	6,634,699	6,554,021	6,474,352	6,395,678	6,317,988
Childress	Red	0	0	0	0	0	0	0	0	0	0	0	0	0
Collingsworth	Red	74,060	252	73,386	72,720	72,063	71,414	70,773	70,139	69,514	68,897	68,287	67,685	67,091
Dallam	Canadian	15,824,302	21,547	15,648,045	15,473,991	15,302,113	15,132,383	14,964,775	14,799,262	14,635,818	14,474,417	14,315,034	14,157,642	14,002,218
Donley	Red	5,308,275	14,287	5,256,209	5,204,794	5,154,021	5,103,883	5,054,372	5,005,480	4,957,199	4,909,521	4,862,440	4,815,947	4,770,035
Gray	Canadian	2,587,710	1,369	2,556,733	2,526,143	2,495,936	2,466,106	2,436,649	2,407,561	2,378,835	2,350,469	2,322,458	2,294,797	2,267,481
Gray	Red	8,866,563	15,325	8,771,056	8,676,743	8,583,608	8,491,638	8,400,818	8,311,133	8,222,569	8,135,111	8,048,748	7,963,463	7,879,245
Hall	Red	0	0	0	0	0	0	0	0	0	0	0	0	0
Hansford	Canadian	18,696,208	7,670	18,470,175	18,246,967	18,026,550	17,808,888	17,593,946	17,381,691	17,172,090	16,965,108	16,760,714	16,558,875	16,359,558
Hartley	Canadian	20,769,649	17,045	20,527,074	20,287,530	20,050,982	19,817,389	19,586,717	19,358,929	19,133,987	18,911,857	18,692,504	18,475,893	18,261,990
Hemphill	Canadian	7,538,224	15,926	7,459,922	7,382,600	7,306,244	7,230,842	7,156,383	7,082,854	7,010,245	6,938,543	6,867,737	6,797,817	6,728,771
Hemphill	Red	6,006,886	15,489	5,947,289	5,888,438	5,830,322	5,772,932	5,716,260	5,660,296	5,605,032	5,550,458	5,496,567	5,443,349	5,390,797
Hutchinson	Canadian	9,684,826	15,821	9,579,587	9,475,663	9,373,038	9,271,695	9,171,620	9,072,796	8,975,206	8,878,837	8,783,672	8,689,697	8,596,897
Lipscomb	Canadian	18,681,947	20,459	18,468,881	18,258,479	18,050,706	17,845,531	17,642,921	17,442,843	17,245,266	17,050,159	16,857,490	16,667,230	16,479,348
Moore	Canadian	10,801,268	7,631	10,673,884	10,548,091	10,423,872	10,301,205	10,180,071	10,060,452	9,942,327	9,825,680	9,710,490	9,596,740	9,484,412
Ochiltree	Canadian	19,157,216	8,819	18,926,570	18,698,806	18,473,890	18,251,786	18,032,457	17,815,870	17,601,991	17,390,785	17,182,219	16,976,260	16,772,876
Oldham	Canadian	2,274,691	3,246	2,249,503	2,224,631	2,200,069	2,175,814	2,151,863	2,128,210	2,104,854	2,081,789	2,059,013	2,036,522	2,014,311
Oldham	Red	364,385	796	360,626	356,914	353,248	349,628	346,054	342,524	339,038	335,596	332,197	328,840	325,526
Potter	Canadian	2,239,354	3,201	2,214,564	2,190,083	2,165,908	2,142,036	2,118,462	2,095,183	2,072,195	2,049,494	2,027,076	2,004,940	1,983,079
Potter	Red	611,574	336	604,265	597,048	589,921	582,883	575,933	569,070	562,292	555,600	548,991	542,464	536,019
Randall	Canadian	0	0	0	0	0	0	0	0	0	0	0	0	0
Randall	Red	6,341,402	24,940	6,287,074	6,233,426	6,180,448	6,128,132	6,076,470	6,025,454	5,975,076	5,925,327	5,876,200	5,827,687	5,779,781
Roberts	Canadian	22,937,316	23,608	22,674,208	22,414,389	22,157,818	21,904,453	21,654,256	21,407,186	21,163,205	20,922,274	20,684,354	20,449,408	20,217,399
Roberts	Red	994,598	441	982,606	970,764	959,070	947,523	936,119	924,859	913,739	902,758	891,914	881,206	870,631
Sherman	Canadian	16,985,167	7,654	16,780,506	16,578,404	16,378,828	16,181,747	15,987,129	15,794,944	15,605,162	15,417,751	15,232,683	15,049,929	14,869,459
Wheeler	Red	6,660,942	24,111	6,601,792	6,543,381	6,485,700	6,428,740	6,372,492	6,316,947	6,262,096	6,207,931	6,154,444	6,101,624	6,049,465
AF = acre-feet														
AFY = acre-feet per year														

County	Basin	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Armstrong	Red	3,293,027	3,256,609	3,220,646	3,185,133	3,150,063	3,115,432	3,081,234	3,047,463	3,014,115	2,981,183	2,948,663	2,916,549	2,884,837	2,853,521
Carson	Canadian	5,606,947	5,542,823	5,479,499	5,416,968	5,355,218	5,294,240	5,234,024	5,174,561	5,115,841	5,057,855	5,000,594	4,944,048	4,888,210	4,833,069
Carson	Red	6,241,269	6,165,509	6,090,696	6,016,819	5,943,864	5,871,822	5,800,680	5,730,427	5,661,053	5,592,546	5,524,895	5,458,089	5,392,119	5,326,974
Childress	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collingsworth	Red	66,504	65,924	65,352	64,786	64,228	63,677	63,133	62,595	62,064	61,540	61,022	60,511	60,006	59,508
Dallam	Canadian	13,848,737	13,697,175	13,547,507	13,399,710	13,253,760	13,109,635	12,967,311	12,826,766	12,687,979	12,550,926	12,415,586	12,281,938	12,149,960	12,019,632
Donley	Red	4,724,697	4,679,925	4,635,714	4,592,055	4,548,941	4,506,367	4,464,325	4,422,808	4,381,810	4,341,325	4,301,346	4,261,867	4,222,881	4,184,382
Gray	Canadian	2,240,507	2,213,870	2,187,566	2,161,591	2,135,940	2,110,610	2,085,597	2,060,897	2,036,505	2,012,418	1,988,632	1,965,144	1,941,949	1,919,044
Gray	Red	7,796,079	7,713,953	7,632,854	7,552,768	7,473,684	7,395,588	7,318,468	7,242,312	7,167,108	7,092,844	7,019,509	6,947,090	6,875,576	6,804,956
Hall	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hansford	Canadian	16,162,734	15,968,369	15,776,434	15,586,898	15,399,732	15,214,905	15,032,388	14,852,153	14,674,170	14,498,413	14,324,852	14,153,461	13,984,212	13,817,079
Hartley	Canadian	18,050,760	17,842,171	17,636,189	17,432,782	17,231,917	17,033,563	16,837,689	16,644,263	16,453,255	16,264,635	16,078,372	15,894,437	15,712,802	15,533,437
Hemphill	Canadian	6,660,587	6,593,256	6,526,767	6,461,109	6,396,271	6,332,244	6,269,017	6,206,581	6,144,925	6,084,040	6,023,915	5,964,543	5,905,912	5,848,015
Hemphill	Red	5,338,901	5,287,654	5,237,048	5,187,074	5,137,725	5,088,993	5,040,870	4,993,349	4,946,421	4,900,080	4,854,319	4,809,129	4,764,504	4,720,437
Hutchinson	Canadian	8,505,257	8,414,762	8,325,398	8,237,151	8,150,008	8,063,953	7,978,975	7,895,058	7,812,191	7,730,359	7,649,551	7,569,752	7,490,951	7,413,135
Lipscomb	Canadian	16,293,815	16,110,601	15,929,677	15,751,015	15,574,586	15,400,362	15,228,316	15,058,421	14,890,649	14,724,975	14,561,371	14,399,812	14,240,273	14,082,729
Moore	Canadian	9,373,489	9,263,951	9,155,783	9,048,968	8,943,487	8,839,325	8,736,465	8,634,890	8,534,585	8,435,534	8,337,722	8,241,132	8,145,749	8,051,558
Ochiltree	Canadian	16,572,034	16,373,702	16,177,850	15,984,446	15,793,459	15,604,860	15,418,618	15,234,704	15,053,089	14,873,744	14,696,641	14,521,752	14,349,049	14,178,505
Oldham	Canadian	1,992,378	1,970,720	1,949,332	1,928,211	1,907,355	1,886,759	1,866,420	1,846,336	1,826,503	1,806,918	1,787,578	1,768,479	1,749,619	1,730,995
Oldham	Red	322,252	319,020	315,828	312,676	309,563	306,490	303,454	300,457	297,497	294,574	291,688	288,837	286,023	283,243
Potter	Canadian	1,961,492	1,940,175	1,919,124	1,898,337	1,877,809	1,857,538	1,837,520	1,817,753	1,798,232	1,778,956	1,759,921	1,741,123	1,722,561	1,704,230
Potter	Red	529,655	523,370	517,164	511,036	504,984	499,008	493,106	487,278	481,523	475,840	470,228	464,686	459,214	453,810
Randall	Canadian	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Randall	Red	5,732,474	5,685,758	5,639,625	5,594,070	5,549,084	5,504,660	5,460,792	5,417,472	5,374,693	5,332,449	5,290,733	5,249,539	5,208,859	5,168,688
Roberts	Canadian	19,988,290	19,762,044	19,538,627	19,318,003	19,100,137	18,884,993	18,672,539	18,462,741	18,255,565	18,050,979	17,848,951	17,649,447	17,452,438	17,257,891
Roberts	Red	860,189	849,877	839,695	829,639	819,709	809,904	800,221	790,659	781,216	771,892	762,684	753,591	744,612	735,745
Sherman	Canadian	14,691,245	14,515,258	14,341,472	14,169,857	14,000,388	13,833,038	13,667,779	13,504,586	13,343,432	13,184,293	13,027,144	12,871,959	12,718,713	12,567,384
Wheeler	Red	5,997,958	5,947,095	5,896,868	5,847,268	5,798,289	5,749,921	5,702,159	5,654,993	5,608,417	5,562,423	5,517,004	5,472,153	5,427,862	5,384,125
AF = acre-feet															
AFY = acre-feet per year															

County	Basin	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Armstrong	Red	2,822,597	2,792,059	2,761,903	2,732,124	2,702,717	2,673,678	2,645,002	2,616,684	2,588,720	2,561,106	2,533,837	2,506,908	2,480,317	2,454,057
Carson	Canadian	4,778,618	4,724,847	4,671,749	4,619,314	4,567,535	4,516,403	4,465,910	4,416,048	4,366,810	4,318,187	4,270,171	4,222,756	4,175,934	4,129,697
Carson	Red	5,262,642	5,199,115	5,136,382	5,074,433	5,013,259	4,952,849	4,893,194	4,834,285	4,776,113	4,718,667	4,661,940	4,605,921	4,550,603	4,495,976
Childress	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collingsworth	Red	59,016	58,530	58,050	57,576	57,107	56,645	56,189	55,738	55,293	54,853	54,419	53,991	53,567	53,149
Dallam	Canadian	11,890,933	11,763,844	11,638,342	11,514,410	11,392,026	11,271,173	11,151,830	11,033,978	10,917,600	10,802,677	10,689,190	10,577,122	10,466,455	10,357,171
Donley	Red	4,146,365	4,108,823	4,071,750	4,035,140	3,998,988	3,963,288	3,928,035	3,893,222	3,858,844	3,824,896	3,791,372	3,758,267	3,725,576	3,693,294
Gray	Canadian	1,896,425	1,874,089	1,852,033	1,830,252	1,808,743	1,787,503	1,766,528	1,745,816	1,725,363	1,705,165	1,685,220	1,665,524	1,646,075	1,626,868
Gray	Red	6,735,219	6,666,354	6,598,350	6,531,195	6,464,880	6,399,394	6,334,727	6,270,868	6,207,807	6,145,535	6,084,040	6,023,315	5,963,348	5,904,132
Hall	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hansford	Canadian	13,652,035	13,489,055	13,328,111	13,169,179	13,012,234	12,857,251	12,704,205	12,553,072	12,403,828	12,256,450	12,110,914	11,967,197	11,825,277	11,685,130
Hartley	Canadian	15,356,315	15,181,406	15,008,683	14,838,120	14,669,689	14,503,363	14,339,116	14,176,922	14,016,756	13,858,592	13,702,405	13,548,170	13,395,863	13,245,460
Hemphill	Canadian	5,790,841	5,734,382	5,678,628	5,623,572	5,569,203	5,515,514	5,462,497	5,410,142	5,358,441	5,307,387	5,256,971	5,207,185	5,158,022	5,109,473
Hemphill	Red	4,676,921	4,633,949	4,591,514	4,549,610	4,508,229	4,467,366	4,427,013	4,387,165	4,347,814	4,308,956	4,270,584	4,232,691	4,195,272	4,158,320
Hutchinson	Canadian	7,336,291	7,260,409	7,185,474	7,111,477	7,038,404	6,966,245	6,894,988	6,824,621	6,755,134	6,686,516	6,618,755	6,551,841	6,485,764	6,420,513
Lipscomb	Canadian	13,927,153	13,773,522	13,621,812	13,471,998	13,324,056	13,177,964	13,033,698	12,891,236	12,750,554	12,611,631	12,474,444	12,338,972	12,205,193	12,073,087
Moore	Canadian	7,958,545	7,866,695	7,775,993	7,686,424	7,597,975	7,510,632	7,424,380	7,339,207	7,255,098	7,172,041	7,090,022	7,009,028	6,929,047	6,850,065
Ochiltree	Canadian	14,010,093	13,843,785	13,679,557	13,517,381	13,357,233	13,199,087	13,042,917	12,888,699	12,736,409	12,586,023	12,437,517	12,290,867	12,146,050	12,003,043
Oldham	Canadian	1,712,604	1,694,442	1,676,508	1,658,798	1,641,309	1,624,038	1,606,984	1,590,143	1,573,512	1,557,089	1,540,872	1,524,857	1,509,042	1,493,425
Oldham	Red	280,499	277,788	275,112	272,468	269,858	267,281	264,736	262,222	259,740	257,289	254,869	252,479	250,119	247,788
Potter	Canadian	1,686,129	1,668,254	1,650,602	1,633,171	1,615,958	1,598,960	1,582,174	1,565,599	1,549,230	1,533,066	1,517,104	1,501,342	1,485,777	1,470,406
Potter	Red	448,473	443,203	437,999	432,860	427,785	422,774	417,825	412,938	408,113	403,347	398,641	393,994	389,405	384,874
Randall	Canadian	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Randall	Red	5,129,020	5,089,847	5,051,163	5,012,964	4,975,241	4,937,991	4,901,206	4,864,880	4,829,009	4,793,586	4,758,606	4,724,064	4,689,953	4,656,268
Roberts	Canadian	17,065,776	16,876,062	16,688,720	16,503,719	16,321,031	16,140,627	15,962,477	15,786,555	15,612,831	15,441,280	15,271,872	15,104,582	14,939,383	14,776,250
Roberts	Red	726,988	718,342	709,803	701,371	693,045	684,823	676,703	668,685	660,767	652,948	645,227	637,602	630,073	622,638
Sherman	Canadian	12,417,945	12,270,375	12,124,650	11,980,745	11,838,640	11,698,311	11,559,737	11,422,894	11,287,762	11,154,319	11,022,544	10,892,416	10,763,915	10,637,020
Wheeler	Red	5,340,935	5,298,284	5,256,167	5,214,576	5,173,505	5,132,948	5,092,897	5,053,347	5,014,292	4,975,725	4,937,639	4,900,030	4,862,891	4,826,216
AF = acre-feet															
AFY = acre-feet per year															

County	Basin	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Armstrong	Red	2,428,126	2,402,520	2,377,233	2,352,262	2,327,604	2,303,253	2,279,207	2,255,462	2,232,013	2,208,858	2,185,992	2,163,412	2,141,114	2,119,094
Carson	Canadian	4,084,038	4,038,949	3,994,425	3,950,456	3,907,038	3,864,162	3,821,822	3,780,011	3,738,723	3,697,951	3,657,689	3,617,930	3,578,668	3,539,897
Carson	Red	4,442,033	4,388,763	4,336,160	4,284,213	4,232,917	4,182,261	4,132,239	4,082,842	4,034,062	3,985,892	3,938,324	3,891,351	3,844,965	3,799,159
Childress	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collingsworth	Red	52,737	52,329	51,926	51,529	51,136	50,749	50,366	49,988	49,615	49,246	48,882	48,523	48,168	47,817
Dallam	Canadian	10,249,253	10,142,684	10,037,447	9,933,526	9,830,903	9,729,564	9,629,491	9,530,669	9,433,082	9,336,715	9,241,553	9,147,581	9,054,782	8,963,144
Donley	Red	3,661,415	3,629,935	3,598,848	3,568,150	3,537,835	3,507,900	3,478,338	3,449,147	3,420,320	3,391,853	3,363,742	3,335,983	3,308,571	3,281,501
Gray	Canadian	1,607,902	1,589,172	1,570,677	1,552,413	1,534,377	1,516,567	1,498,979	1,481,611	1,464,461	1,447,524	1,430,800	1,414,284	1,397,975	1,381,870
Gray	Red	5,845,655	5,787,909	5,730,885	5,674,574	5,618,967	5,564,055	5,509,829	5,456,281	5,403,403	5,351,185	5,299,621	5,248,700	5,198,417	5,148,761
Hall	Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hansford	Canadian	11,546,736	11,410,071	11,275,115	11,141,845	11,010,242	10,880,284	10,751,950	10,625,220	10,500,074	10,376,493	10,254,456	10,133,945	10,014,940	9,897,423
Hartley	Canadian	13,096,937	12,950,270	12,805,437	12,662,414	12,521,179	12,381,710	12,243,984	12,107,979	11,973,674	11,841,049	11,710,081	11,580,750	11,453,036	11,326,918
Hemphill	Canadian	5,061,531	5,014,188	4,967,437	4,921,270	4,875,681	4,830,661	4,786,204	4,742,303	4,698,950	4,656,140	4,613,864	4,572,117	4,530,892	4,490,182
Hemphill	Red	4,121,830	4,085,797	4,050,214	4,015,076	3,980,377	3,946,111	3,912,274	3,878,860	3,845,864	3,813,280	3,781,103	3,749,329	3,717,952	3,686,967
Hutchinson	Canadian	6,356,077	6,292,447	6,229,612	6,167,563	6,106,289	6,045,781	5,986,030	5,927,025	5,868,758	5,811,220	5,754,400	5,698,291	5,642,883	5,588,168
Lipscomb	Canadian	11,942,632	11,813,808	11,686,594	11,560,970	11,436,916	11,314,413	11,193,442	11,073,982	10,956,016	10,839,525	10,724,489	10,610,892	10,498,714	10,387,939
Moore	Canadian	6,772,071	6,695,051	6,618,994	6,543,888	6,469,721	6,396,481	6,324,156	6,252,736	6,182,208	6,112,562	6,043,786	5,975,870	5,908,803	5,842,575
Ochiltree	Canadian	11,861,824	11,722,370	11,584,659	11,448,670	11,314,381	11,181,770	11,050,816	10,921,500	10,793,800	10,667,697	10,543,169	10,420,199	10,298,765	10,178,849
Oldham	Canadian	1,478,004	1,462,775	1,447,736	1,432,886	1,418,221	1,403,739	1,389,438	1,375,316	1,361,371	1,347,600	1,334,001	1,320,572	1,307,311	1,294,216
Oldham	Red	245,487	243,214	240,969	238,753	236,565	234,403	232,269	230,161	228,080	226,025	223,996	221,991	220,012	218,058
Potter	Canadian	1,455,228	1,440,239	1,425,437	1,410,821	1,396,387	1,382,134	1,368,058	1,354,159	1,340,434	1,326,880	1,313,495	1,300,278	1,287,226	1,274,337
Potter	Red	380,399	375,980	371,616	367,307	363,052	358,850	354,700	350,602	346,556	342,560	338,614	334,717	330,869	327,069
Randall	Canadian	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Randall	Red	4,623,004	4,590,157	4,557,719	4,525,688	4,494,057	4,462,821	4,431,975	4,401,515	4,371,436	4,341,733	4,312,401	4,283,436	4,254,833	4,226,587
Roberts	Canadian	14,615,155	14,456,074	14,298,982	14,143,853	13,990,663	13,839,388	13,690,005	13,542,488	13,396,815	13,252,964	13,110,910	12,970,632	12,832,108	12,695,315
Roberts	Red	615,296	608,045	600,885	593,815	586,833	579,938	573,130	566,406	559,767	553,210	546,736	540,343	534,029	527,794
Sherman	Canadian	10,511,712	10,387,969	10,265,774	10,145,106	10,025,946	9,908,276	9,792,077	9,677,330	9,564,017	9,452,121	9,341,624	9,232,507	9,124,755	9,018,350
Wheeler	Red	4,790,000	4,754,236	4,718,919	4,684,044	4,649,605	4,615,596	4,582,013	4,548,849	4,516,099	4,483,759	4,451,824	4,420,287	4,389,145	4,358,392
AF = acre-feet															
AFY = acre-feet per year															

County	Basin	2052	2053	2054	2055	2056	2057	2058	2059	2060
		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Armstrong	Red	2,097,350	2,075,878	2,054,674	2,033,736	2,013,059	1,992,640	1,972,477	1,952,566	1,932,903
Carson	Canadian	3,501,610	3,463,802	3,426,467	3,389,598	3,353,190	3,317,237	3,281,734	3,246,674	3,212,053
Carson	Red	3,753,926	3,709,257	3,665,148	3,621,589	3,578,575	3,536,099	3,494,154	3,452,732	3,411,829
Childress	Red	0	0	0	0	0	0	0	0	0
Collingsworth	Red	47,471	47,129	46,792	46,459	46,130	45,805	45,484	45,167	44,854
Dallam	Canadian	8,872,652	8,783,290	8,695,046	8,607,905	8,521,852	8,436,876	8,352,962	8,270,096	8,188,267
Donley	Red	3,254,769	3,228,372	3,202,305	3,176,564	3,151,144	3,126,042	3,101,254	3,076,776	3,052,603
Gray	Canadian	1,365,966	1,350,260	1,334,752	1,319,437	1,304,313	1,289,379	1,274,631	1,260,067	1,245,686
Gray	Red	5,099,727	5,051,305	5,003,489	4,956,270	4,909,642	4,863,596	4,818,126	4,773,225	4,728,885
Hall	Red	0	0	0	0	0	0	0	0	0
Hansford	Canadian	9,781,375	9,666,778	9,553,612	9,441,862	9,331,508	9,222,534	9,114,922	9,008,655	8,903,716
Hartley	Canadian	11,202,377	11,079,392	10,957,945	10,838,016	10,719,586	10,602,636	10,487,149	10,373,104	10,260,486
Hemphill	Canadian	4,449,981	4,410,283	4,371,080	4,332,368	4,294,140	4,256,390	4,219,111	4,182,298	4,145,946
Hemphill	Red	3,656,369	3,626,154	3,596,316	3,566,852	3,537,756	3,509,023	3,480,650	3,452,631	3,424,962
Hutchinson	Canadian	5,534,137	5,480,781	5,428,092	5,376,061	5,324,681	5,273,944	5,223,840	5,174,363	5,125,504
Lipscomb	Canadian	10,278,548	10,170,525	10,063,852	9,958,512	9,854,490	9,751,767	9,650,329	9,550,158	9,451,240
Moore	Canadian	5,777,174	5,712,591	5,648,815	5,585,836	5,523,644	5,462,230	5,401,584	5,341,695	5,282,555
Ochiltree	Canadian	10,060,433	9,943,496	9,828,021	9,713,990	9,601,384	9,490,186	9,380,377	9,271,941	9,164,861
Oldham	Canadian	1,281,284	1,268,514	1,255,904	1,243,451	1,231,154	1,219,011	1,207,019	1,195,178	1,183,484
Oldham	Red	216,128	214,222	212,340	210,482	208,647	206,834	205,045	203,277	201,532
Potter	Canadian	1,261,610	1,249,041	1,236,629	1,224,373	1,212,270	1,200,318	1,188,516	1,176,861	1,165,351
Potter	Red	323,317	319,611	315,952	312,339	308,771	305,247	301,767	298,331	294,938
Randall	Canadian	0	0	0	0	0	0	0	0	0
Randall	Red	4,198,695	4,171,151	4,143,951	4,117,092	4,090,568	4,064,375	4,038,511	4,012,969	3,987,747
Roberts	Canadian	12,560,232	12,426,838	12,295,111	12,165,030	12,036,576	11,909,727	11,784,464	11,660,767	11,538,616
Roberts	Red	521,638	515,558	509,554	503,625	497,771	491,989	486,280	480,642	475,075
Sherman	Canadian	8,913,275	8,809,513	8,707,048	8,605,864	8,505,945	8,407,275	8,309,838	8,213,619	8,118,603
Wheeler	Red	4,328,023	4,298,034	4,268,420	4,239,176	4,210,298	4,181,780	4,153,620	4,125,811	4,098,349
AF = acre-feet										
AFY = acre-feet per year										