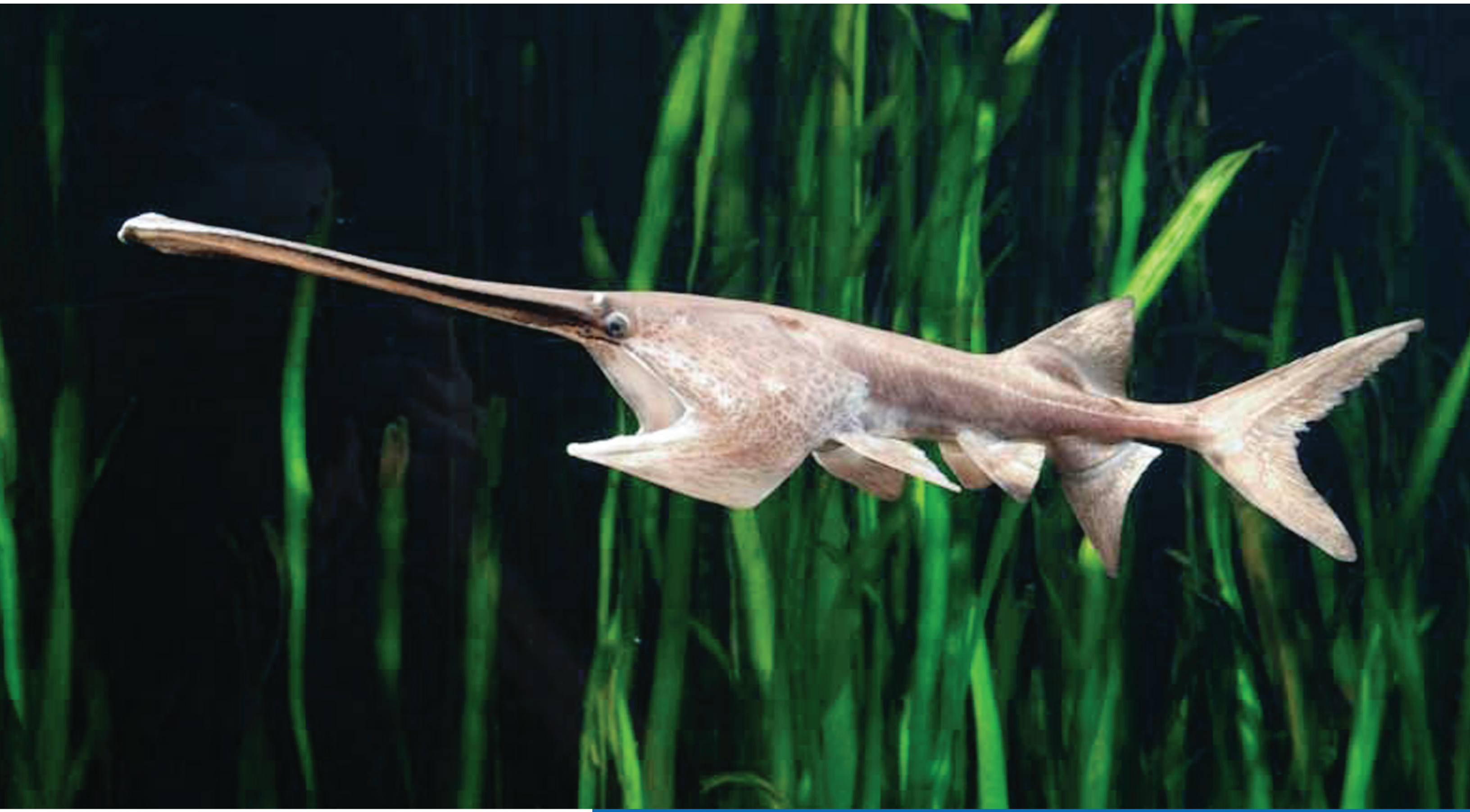

2026 REGION D INITIALLY PREPARED PLAN VOLUME II

Prepared for

The North East Texas Regional Water Planning Group

March 3, 2025

carollo

TBPELS NO. F-558

In association with:

wsp

HAYES ENGINEERING, INC
TEXAS REGISTERED ENGINEERING FIRM F-1465

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APPENDIX C1

DESCRIPTION OF THE REGIONAL WATER PLANNING AREA

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APPENDIX C1

TABLE OF CONTENTS

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Public Water Supply (PWS) Name	Report Year	Service Connection on Density	Water Loss per Connection per Day	Corrected Input Volume	Reported Breaks Leaks	Unreported Loss	Total Real Losses	Cost of Real Losses ($)	Total Water Use (GPCD)	Total Water Loss (GPCD)	%	WUG
Big Wood Springs WS	2020	13.17	60.07	4,511,043	96,550	1,403,517	1,500,067	12,001	48	19	39.58%	County Other, Wood
Callender Lake	2019	17.60	66.24	58,735,678	10,139,499	6,395,091	16,534,590	37,203				
	2020	18.04	140.50	63,384,925	25,704,711	10,392,373	36,097,084	81,218	82	47	57.32%	
Central Bowie County WSC	2018	9.00	74.46	0.00	5,380,200	53,400,282	58,780,482	86,995				
	2019	8.80	58.44	0.00	6,146,864	35,739,883	41,886,747	66,181				
	2021	8.98	70.59	0.00	2,500,000	54,971,762	57,471,762	11,494				
	2022	9.04	63.80	0.00	2,850,000	50,192,965	53,042,965	15,913	83	21	25.30%	
City of Atlanta	2018	30.81	128.75	0.00	0.00	92,653,932	92,653,932	135,275				
	2020	29.50	193.19	328,512,000	25,000,000	118,902,820	143,902,820	201,464	164	89	54.27%	
City of Bogata	2018	41.68	86.34	88,767,368	1,410,000	6,871,636	8,281,636	2,418	211	39	18.48%	
City of Caddo Mills	2018	50.40	71.36	0.00	100,000	13,842,181	13,942,181	46,748				
	2019	44.12	66.74	0.00	100,000	11,214,086	11,314,086	33,942				
	2021	25.62	70.65	0.00	100,000	26,371,131	26,471,131	81,822	116	33	28.45%	
City of Commerce	2018	42.70	32.27	340,470,538	22789272	40,622	22,829,894	5,297				
	2020	47.39	62.32	379,373,034	4,883,882	34,789,256	39,673,138	277,712				
	2021	44.62	35.43	382,204,898	3,650,000	23,316,613	26,966,613	10,139				
	2022	44.62	87.16	397,142,857	5,767,704	68,953,016	74,720,720	28,095	100	24	24.00%	
City of Cooper	2018	33.89	97.96	187,142,857	3,209,600	26,378,755	29,588,355	7,397				
	2019	37.85	36.64	160,456,122	2,642,500	8,118,322	10,760,822	2,690				
	2020	43.37	57.61	174,691,837	679,000	21,082,478	21,761,478	5,440				
	2021	43.37	54.59	167,589,796	192,000	20,272,103	20,464,103	5,116				
	2022	43.37	54.47	189,790,296	0.00	20,247,513	20,247,513	5,062	132	33	25.00%	
City of Cumby	2019	28.28	83.68	32,703,834	1,235,200	10,388,795	11,623,995	52,308	73	28	38.36%	
City of Daingerfield	2020	61.36	44.92	0.00	3,500,000	16,412,191	19,912,191	9,956				
	2022	81.64	90.21	0.00	3,978,190	37,459,357	41,437,547	71,687	158	48	30.38%	
City of Dekalb	2018	12.86	105.00	0.00	0.00	31,280,408	31,280,408	31,280				
	2019	17.76	83.83	0.00	500,000	20,556,366	21,056,366	22,951				
	2020	26.27	95.72	0.00	1,000,000	14,849,361	15,849,361	16,959	168	54	32.14%	
City of Detroit	2020	1.53	85.16	0.00	300,000	365,864	665,864	1,998	75	3	4.00%	
City of East Tawakoni	2019	36.18	31.24	0.00	6,911,165	2,541,740	9,452,905	35,155				
	2022	45.30	47.68	0.00	7,884,040	10,745,106	18,629,146	69,300	56	17	30.36%	
City of Edgewood	2020	36.75	166.96	88,479,592	35,050,000	8,671,314	43,721,314	88,754				
	2021	36.75	57.70	75,366,327	11,220,000	3,322,245	14,542,245	29,521	135	28	20.74%	
City of Emory	2019	21.04	72.12	256,670,707	2,055,590	21,461,547	23,517,137	94,069				
	2022	23.31	64.62	295,447,475	6,462,913	20,121,072	26,583,985	127,603	120	21	17.50%	
City of Gilmer	2019	37.46	32.58	259,100,000	21,000,000	6,161,705	27,161,705	14,939				
	2021	38.43	45.90	276,835,000	15,000,000	16,928,373	31,928,373	175,606				
	2022	37.46	132.35	382,576,531	25,000,000	90,517,525	115,517,525	635,346	134	43	32.09%	
City of Gladewater	2018	43.64	98.44	422,408,081	0.00	115,353,403	115,353,403	207,636				
	2019	44.00	98.99	395,615,306	50,000	117,994,345	118,044,345	212,480				
	2020	32.90	71.01	336,603,158	26,792,054	35,189,822	61,981,876	356,396	146	30	20.55%	
City of Grand Saline	2021	14.95	61.34	143,942,211	50,000	24,231,174	24,281,174	5,949				
	2022	15.00	63.47	117,060,417	11,015,813	16,064,694	27,080,507	8,070	102	28	27.45%	
City of Greenville	2018	59.17	37.17	1,523,838,835	113,463,294	40,071,477	153,534,771	296,322				
	2019	44.43	63.96	1,772,648,485	229,661,710	4,500,672	234,162,382	421,492				
	2020	55.70	53.22	1,550,498,990	88,071,501	143,546,165	231,617,666	416,912	137	25	18.25%	
City of Hawkins	2018	42.27	84.90	80,659,095	3,678,741	15,646,561	19,325,302	28,022	170	41	24.12%	
City of Hooks	2020	43.81	72.17	0.00	2,000,000	32,386,475	34,386,475	322,855	106	38	35.85%	
City of Jefferson	2018	52.17	49.70	0.00	0.00	7,428,871	7,428,871	1,486				
	2019	49.30	73.76	0.00	0.00	27,856,404	27,856,404	5,571	148	31	20.95%	
City of Kilgore	2021	40.45	35.41	675,763,467	3,755,000	54,660,679	58,415,679	45,564				
	2022	44.52	62.94	761,277,237	9,331,000	129,461,368	138,792,368	137,404	150	33	22.00%	
City of Leary	2020	19.23	312.46	21,657,061	0.00	27,809,788	27,809,788	40,741	226	149	65.93%	
City of Lone Star	2020	65.29	69.76	71,560,606	3,500,000	10,773,735	14,273,735	21,125	110	36	32.73%	
City of Longview	2021	39.61	36.58	7,930,823,505	148,924,035	161,333,984	310,258,019	229,591	248	14	5.65%	
City of Marshall	2018	42.75	34.15	1,900,809,000	56,002,635	41,108,733	97,111,368	39,427				
	2019	42.44	70.43	1,642,857,143	49,000,000	192,494,252	241,494,252	98,047				
	2020	43.05	83.46	1,429,458,367	24,689,050	275,458,046	300,147,096	123,060	159	37	23.27%	
City of Mineola	2020	59.00	39.82	200,974,747	2,016,000	28,923,413	30,939,413	233,902	122	24	19.67%	
City of Mount Pleasant	2020	24.22	61.48	2,160,349,000	200,000	114,251,891	114,451,891	91,562	296	25	8.45%	
City of Mount Vernon	2018	39.35	36.24	137,926,000	3,000,000	8,975,326	11,975,326	27,903				
	2019	39.39	56.27	138,852,000	8,000,000	13,145,241	21,145,241	27,489				
	2022	40.48	33.24	138,747,423	6,350,000	4,979,080	11,329,080	14,728	143	16	11.19%	
City of Nash	2019	139.18	34.64	0.00	3,500,000	11,286,714	14,786,714	27,947	82	16	19.51%	
City of New Boston	2018	43.06	232.15	0.00	15,813,400	167,283,789	183,097,189	162,956	219	112	51.14%	
City of Paris	2018	39.04	66.89	5,614,881,800	468,250	189,370,092	189,838,342	39,866				
	2020	41.77	38.29	5,592,137,000	690,052	93,584,419	94,274,471	19,798				
	2021	41.77	59.27	5,518,843,000	545,500	168,568,715	169,114,215	35,514				
	2022	41.77	104.20	6,038,380,000	523,000	340,462,175	340,985,175	71,607	532	44	8.27%	

Public Water Supply (PWS) Name	Report Year	Service Connection on Density	Water Loss per Connection per Day	Corrected Input Volume	Reported Breaks Leaks	Unreported Loss	Total Real Losses	Cost of Real Losses ($)	Total Water Use (GPCD)	Total Water Loss (GPCD)	%	WUG
City of Queen City	2021	54.21	54.81	75,069,792	1,000,000	11,397,799	12,397,799	5,207				
	2022	54.29	66.01	83,770,313	1,000,000	14,264,036	15,264,036	11,753	163	36	22.09%	
City of Redwater	2018	21.86	75.25	0.00	0.00	38,192,694	38,192,694	310,125				
	2019	21.86	59.89	0.00	0.00	30,161,838	30,161,838	24,129				
	2020	24.26	64.07	0.00	0.00	32,992,045	32,992,045	48,498				
	2021	24.40	69.23	0.00	0.00	35,812,221	35,812,221	52,644	86	24	27.91%	
City of Reno	2020	41.47	40.30	0.00	250,000	15,897,288	16,147,288	65,397	82	17	20.73%	
City of Sulphur Springs	2018	48.03	44.69	1,577,193,684	15,442,500	77,743,248	93,185,748	68,492				
	2019	49.69	153.63	1,649,337,895	12,712,500	383,086,175	395,798,675	290,912				
	2020	49.08	43.89	1,764,675,000	23,604,000	26,361,090	49,965,090	36,025				
	2022	58.49	47.08	1,798,355,102	51,598,000	43,381,581	94,979,581	74,464	245	25	10.20%	
City of Waskom	2018	30.76	75.73	97,586,735	1,695,800	22,422,123	24,117,923	12,059				
	2019	27.13	100.12	100,190,722	1,003,206	29,673,431	30,676,637	15,338				
	2020	27.26	126.04	107,003,125	2,113,000	38,835,411	40,948,411	20,474	104	46	44.23%	
City of Wills Point	2018	74.04	160.95	253,707,751	300,000	114,073,817	114,373,817	54,899				
	2019	76.93	59.46	204,169,237	1,000,000	37,085,731	38,085,731	18,281				
	2020	157.69	55.10	237,049,503	20,000,000	12,600,887	32,600,887	15,648				
	2021	198.42	57.17	181,659,843	12,000,000	31,536,996	43,536,996	20,898	72	20	27.78%	
City of Winnsboro	2021	89.02	110.60	223,110,101	3,974,621	59,816,306	63,790,927	114,824	178	53	29.78%	
City of Winona	2020	23.61	153.10	38,645,455	15,099,000	1,496,413	16,595,413	6,970				
	2021	24.54	86.70	31,841,414	6,580,000	3,186,633	9,766,633	4,102	122	42	34.43%	
City of Wolfe City	2018	21.17	70.32	52,664,646	0.00	12,199,287	12,199,287	4,636				
	2022	22.8	80.21	52,216,162	1,000,000	16,072,092	17,072,092	7,358	102	39	38.24%	
Corinth WSC	2020	3.63	70.65	30,253,358	0.00	8,694,620	8,694,620	9,303	76	24	31.58%	
Cypress Springs SUD N Plant 1 and NE Plant	2021	6.25	83.81	379,995,918	32,660,320	81,022,121	113,682,441	261,470				
	2022	6.52	67.98	378,438,776	19,321,340	75,679,211	95,000,551	53,295	84	23	27.38%	
Cypress Springs SUD Pine Valley	2021	7.75	67.99	6,698,980	185,000	2,035,201	2,220,201	19,316	66	23	34.85%	
East Texas MUD of Smith County	2018	25.34	257.58	272,265,245	69,120,000	5,704,347	74,824,347	32,923				
	2019	21.63	171.03	208,049,485	2,500,000	42,571,194	45,071,194	74,818				
	2020	23.45	132.75	188,615,970	3,500,000	37,900,127	41,400,127	68,724				
	2021	23.49	169.91	199,202,377	860,000	48,191,840	49,051,840	24,526	218	56	25.69%	
Hickory Creek SUD	2019	6.43	176.70	171,411,224	68,763,000	21,726,036	90,489,036	145,687				
	2020	6.62	192.76	188,053,061	73,232,000	28,545,163	101,777,163	163,861				
	2022	7.31	125.17	176,694,898	60,337,000	13,931,988	74,268,988	381,743	96	42	43.75%	
Jones WSC	2020	8.86	63.16	153,144,141	0.00	43,377,288	43,377,288	184,353	72	22	30.56%	
Lamar County Water Supply District	2018	7.61	76.53	0.00	0.00	190,535,833	190,535,833	741,184				
	2019	6.96	77.36	0.00	0.00	195,614,174	195,614,174	760,939				
	2020	7.22	68.30	0.00	0.00	177,816,216	177,816,216	629,469				
	2021	7.30	70.60	0.00	64,731,500	119,537,767	184,269,267	700,223	80	22	27.50%	
Liberty Danville FWSD 2	2020	22.35	122.15	0.00	750,000	11,716,432	12,466,432	26,180	84	36	42.86%	
Lindale Rural WSC	2018	13.79	91.73	390,691,660	72,886,001	27,840,292	100,726,293	50,363				
	2020	15.66	59.91	383,225,495	32,272,148	42,383,640	74,655,788	37,328				
	2021	15.69	75.85	400,867,779	36,307,699	63,087,648	99,395,347	49,698	89	26	29.21%	
Lindale Rural WSC DC	2018	4.06	86.20	94,454,700	20,951,203	3,674,296	24,625,499	12,313				
	2020	5.41	93.49	116,271,558	9,515,663	29,231,864	38,747,527	19,374				
	2021	5.09	72.96	114,218,947	16,961,920	9,907,960	26,869,880	13,435				
	2022	5.24	93.06	122,397,905	18,441,448	20,806,032	39,247,480	19,624	92	31	33.70%	
New Hope SUD	2020	19.36	78.86	90,453,347	3,238,800	18,723,977	21,962,777	169,113	94	26	27.66%	
Newsome WSC	2018	2.45	89.37	15,066,383	2,317,260	1,843,944	4,161,204	27,214				
	2022	3.27	139.69	17,939,158	8,832,000	632,489	9,464,489	8,991	117	65	55.56%	
North Hunt SUD	2021	3.03	58.45	94,074,598	4,300,000	10,690,531	14,990,531	66,408	89	31	34.83%	
Oak Grove WSC	2020	5.39	60.94	0.00	441,000	5,575,797	6,016,797	16,546	67	20	29.85%	
Ramey WSC	2020	48.44	113.13	175,395,968	21,438,441	39,897,097	61,335,538	613,355	104	38	36.54%	
Shady Grove SUD	2022	11.61	68.42	0.00	1,010,000	22,938,718	23,948,718	71,607	64	20	31.25%	
Star Mountain WSC	2021	12.02	87.08	59,936,808	0.00	18,459,454	18,459,454	39,688	63	21	33.33%	
Starrville-Friendship WSC	2020	12.98	76.67	65,926,904	16,000,000	2,528,368	18,528,368	14,823	86	26	30.23%	
Texarkana Water Utilities	2020	40.45	32.44	5,922,906,188	142,970,075	239,024,757	381,994,832	355,255	144	15	10.42%	
Tri SUD	2018	4.46	88.13	0.00	12,817,027	139,537,339	152,354,366	472,299	101	32	31.68%	
Waskom Rural WSC	2020	10.00	60.39	27,728,646	1,185,000	4,274,605	5,459,605	2,184	72	20	27.78%	
Western Cass WSC	2020	2.29	78.27	107,339,400	16,185,000	29,310,608	45,495,608	34,577	61	26	42.62%	

2011 Evaluation of Sub-Regional Water Supply Master Plans Prepared for North East Texas Regional Water Planning Group

In June 2007, the Texas Water Development Board (TWDB) commissioned the Northeast Municipal Water District (NETMWD) to provide a further study of sub-regional water supply master plans in Region D, the North East Texas Region, that was initiated in the 2006 Regional Plan. This report was published under separate cover December 17, 2008 and is not reproduced in this appendix.

Texas is projected to more than double in population in the next 50 years. This growth will increase the vulnerability of our water supplies and lead to a significant decline in quality of life if adequate planning is not undertaken. The investigation of the creation of sub-regional water supply master plans was to allow the smaller systems to consider the economic benefits, regulatory compliance benefits and the ability to better serve their end users with adequate water availability.

The 2006 North East Texas Regional Water Plan (NETRWP) identified 255 public water systems in the region. As the plan developed, it became apparent that many of these were quite small, and that in several cases, a number of small systems were located in close proximity to each other. The North East Texas Regional Water Planning Group (NETRWPG) expressed that very small systems may lack the financial, managerial, or technical capacity to continue as separate, viable entities over the long term. In 2004, the NETRWPG requested funding from the TWDB to study the possibility of combining identified clusters of small public supply systems, and, in 2005, the TWDB approved the request.

A total of 51 existing public water supply systems were selected for inclusion in the study, and they were combined into 10 clusters based upon proximity. These clusters were in six of the most southerly counties in the region – Hopkins County, Rains County, Van Zandt County, Harrison County, Upshur County and Smith County. The final clusters varied in size from 1,252 connections to 4,167 connections, with the goal being to have 2,000 more connections. A total of 25,544 connections were included.

This initial work was presented in a volume entitled "Supplemental Tasks" as a part of the 2006 Regional Plan. Physical data on the systems was tabulated, discussion of financial/managerial/technical and political/legal aspects were presented, and rough cost estimates for physical consolidation were presented. The conclusion of the 2006 work was that:

> "ultimately, for very small systems, consolidation will become essential to survival. Increasing regulatory compliance pressures, increasing costs, and limits on water supply are all growing influences which will compel consolidation."

As a portion of the 2011 planning, the NETRWPG elected to pursue further discussions with the entities identified as potential clusters in the 2006 plan. A second emphasis would expand the scope to include additional very small systems not included in 2006. The 2006 selection was limited to small systems which, by virtue of geographic proximity, might combine with neighboring small systems to create a larger, more viable entity. In the 2011 scope, an additional 93 systems with less than 300 meters were identified which were not positioned geographically so as to suggest consolidation with other small systems. In general, these small entities are adjacent to, or surrounded by, a much larger system which would be the most logical partner.

Based upon the information gathered in the study, the following observations were proferred:

1. At the end of the 2006 planning period, 144 systems (93 small and 51 clusters) were identified. By the end of 2008, only 95 of these are still independent, stand-alone systems. The remaining systems have either merged with another small system, have been purchased by a larger for profit or governmental system, or were a proposed system which had not developed. No new systems were identified in these cluster areas.

2. In general, systems desire to remain completely autonomous. Smaller systems do recognize, however, that there are some advantages in working together, and are occasionally willing to do so – for example, shared management or operating staff, or specific programs – provided that each Board retains final approval authority. A merger or consolidation which results in loss of autonomy is the least preferred option.

3. There is a need for regionalization in northern Van Zandt County. It appears that adequate groundwater resources are becoming increasingly difficult to develop, and a contracted or surface water supply alternative will be too expensive for the smaller entities to pursue individually. The City of Canton has conducted some work in this regard, but the NETRWPG may be of assistance in encouraging regional partnerships among the various local entities.

APPENDIX C2

POPULATION AND WATER DEMAND PROJECTIONS

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APPENDIX C2

TABLE OF CONTENTS

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2026 Regional Water Plan - Population Projections for 2030-2080
for Water User Groups by Region, County, and Basin in Texas

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Bowie	6234	Burns Redbank WSC	Red	2,344	2,490	2,644	2,810	2,985	3,171
D	Bowie	3151	Central Bowie County WSC	Red	1,517	1,530	1,544	1,557	1,571	1,585
D	Bowie	3151	Central Bowie County WSC	Sulphur	8,394	8,466	8,540	8,615	8,691	8,765
D	Bowie	430	County-Other, Bowie	Red	4,052	3,962	3,864	3,705	3,541	3,373
D	Bowie	430	County-Other, Bowie	Sulphur	9,777	9,559	9,323	8,939	8,544	8,140
D	Bowie	699	De Kalb	Red	254	253	251	247	243	240
D	Bowie	699	De Kalb	Sulphur	1,144	1,136	1,127	1,111	1,095	1,079
D	Bowie	958	Hooks	Red	2,637	2,620	2,595	2,556	2,515	2,475
D	Bowie	1615	Macedonia Eylau MUD 1	Sulphur	8,447	8,392	8,310	8,184	8,055	7,925
D	Bowie	1810	Maud	Sulphur	787	782	774	761	750	738
D	Bowie	2100	Nash	Sulphur	4,160	4,133	4,093	4,031	3,968	3,905
D	Bowie	2108	New Boston	Red	1,657	1,646	1,631	1,606	1,580	1,555
D	Bowie	2108	New Boston	Sulphur	3,726	3,701	3,666	3,609	3,553	3,495
D	Bowie	2257	Redwater	Sulphur	2,964	2,944	2,916	2,870	2,826	2,780
D	Bowie	3077	Riverbend Water Resources District	Red	223	221	219	216	212	209
D	Bowie	3077	Riverbend Water Resources District	Sulphur	178	177	175	172	169	166
D	Bowie	140	Texarkana	Red	4,574	4,548	4,512	4,448	4,383	4,318
D	Bowie	140	Texarkana	Sulphur	32,286	32,103	31,848	31,396	30,939	30,477
D	Bowie	2573	Wake Village	Sulphur	5,831	5,793	5,737	5,649	5,561	5,470
	Bowie Total				**94,952**	**94,456**	**93,769**	**92,482**	**91,181**	**89,866**
D	Camp	3146	Bi County WSC	Cypress	7,377	7,459	7,480	7,542	7,605	7,669
D	Camp	443	County-Other, Camp	Cypress	1,430	1,444	1,448	1,461	1,474	1,485
D	Camp	3157	Cypress Springs SUD	Cypress	60	60	61	61	62	62
D	Camp	2205	Pittsburg	Cypress	3,974	4,018	4,030	4,064	4,097	4,131
D	Camp	2351	Sharon WSC	Cypress	33	34	34	34	31	31
	Camp Total				**12,874**	**13,015**	**13,053**	**13,162**	**13,269**	**13,378**
D	Cass	206	Atlanta	Cypress	5,012	4,787	4,540	4,342	4,144	3,945
D	Cass	206	Atlanta	Sulphur	19	18	17	16	15	15
D	Cass	10083	Avinger	Cypress	349	332	314	300	286	270
D	Cass	445	County-Other, Cass	Cypress	5,869	5,318	4,681	4,109	3,496	2,818
D	Cass	445	County-Other, Cass	Sulphur	2,363	2,141	1,885	1,655	1,408	1,135
D	Cass	6274	E M C WSC	Cypress	507	483	456	435	413	393
D	Cass	3007	Eastern Cass WSC	Cypress	3,860	4,015	4,209	4,445	4,730	5,083
D	Cass	3007	Eastern Cass WSC	Sulphur	308	320	336	355	377	406
D	Cass	6368	Holly Springs WSC	Cypress	899	855	807	771	733	696
D	Cass	965	Hughes Springs	Cypress	2,108	2,013	1,909	1,825	1,741	1,659
D	Cass	1326	Linden	Cypress	1,742	1,667	1,586	1,519	1,453	1,387
D	Cass	6424	Mims WSC	Cypress	228	218	206	197	187	178
D	Cass	2241	Queen City	Cypress	827	796	772	754	743	739
D	Cass	2241	Queen City	Sulphur	469	451	438	428	421	419

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Cass	6593	Western Cass WSC	Cypress	2,146	2,043	1,931	1,841	1,752	1,663
D	Cass	6593	Western Cass WSC	Sulphur	766	730	690	658	626	594
	Cass Total				**27,472**	**26,187**	**24,777**	**23,650**	**22,525**	**21,400**
D	Delta	402	Cooper	Sulphur	2,067	2,058	2,045	2,019	1,993	1,967
D	Delta	471	County-Other, Delta	Sulphur	1,098	1,054	1,006	939	872	804
D	Delta	6267	Delta County MUD	Sulphur	1,915	1,941	1,968	1,994	2,021	2,048
D	Delta	2980	North Hunt SUD	Sulphur	204	203	201	200	196	193
	Delta Total				**5,284**	**5,256**	**5,220**	**5,152**	**5,082**	**5,012**
D	Franklin	6255	Cornersville WSC	Cypress	33	35	39	43	47	52
D	Franklin	491	County-Other, Franklin	Cypress	21	21	20	20	20	20
D	Franklin	491	County-Other, Franklin	Sulphur	321	314	308	306	305	303
D	Franklin	3157	Cypress Springs SUD	Cypress	4,564	4,535	4,472	4,506	4,541	4,575
D	Franklin	3157	Cypress Springs SUD	Sulphur	2,325	2,310	2,278	2,296	2,314	2,331
D	Franklin	2088	Mount Vernon	Sulphur	2,444	2,429	2,397	2,415	2,432	2,449
D	Franklin	2635	Winnsboro	Cypress	758	754	744	749	754	760
	Franklin Total				**10,466**	**10,398**	**10,258**	**10,335**	**10,413**	**10,490**
D	Gregg	3000	Chalk Hill SUD	Sabine	20	20	21	20	20	19
D	Gregg	365	Clarksville City	Sabine	838	846	842	828	815	800
D	Gregg	503	County-Other, Gregg	Cypress	521	513	484	447	406	364
D	Gregg	503	County-Other, Gregg	Sabine	3,950	3,889	3,674	3,386	3,080	2,764
D	Gregg	3005	Cross Roads SUD	Sabine	430	438	448	459	471	483
D	Gregg	732	East Mountain Water System	Cypress	198	200	199	194	191	189
D	Gregg	732	East Mountain Water System	Sabine	154	156	155	152	150	147
D	Gregg	754	Elderville WSC	Sabine	4,908	4,958	4,923	4,843	4,762	4,683
D	Gregg	839	Gladewater	Sabine	3,912	3,951	3,924	3,859	3,796	3,732
D	Gregg	6327	Glenwood WSC	Cypress	114	115	114	112	111	109
D	Gregg	1263	Kilgore	Sabine	10,696	10,804	10,735	10,562	10,389	10,219
D	Gregg	1320	Liberty City WSC	Sabine	4,735	4,784	4,750	4,673	4,596	4,518
D	Gregg	86	Longview	Sabine	80,372	81,572	82,484	82,526	82,548	82,630
D	Gregg	6548	Starrville-Friendship WSC	Sabine	452	456	453	446	438	431
D	Gregg	2989	Tryon Road SUD	Cypress	4,411	4,456	4,426	4,353	4,281	4,209
D	Gregg	2989	Tryon Road SUD	Sabine	1,315	1,328	1,319	1,297	1,276	1,254
D	Gregg	2991	West Gregg SUD	Sabine	3,413	3,559	3,728	3,912	4,109	4,319
D	Gregg	2614	White Oak	Sabine	6,421	6,486	6,441	6,335	6,230	6,125
	Gregg Total				**126,860**	**128,531**	**129,120**	**128,404**	**127,669**	**126,995**
D	Harrison	6225	Blocker Crossroads WSC	Cypress	156	160	161	162	163	164
D	Harrison	6225	Blocker Crossroads WSC	Sabine	1,416	1,456	1,462	1,470	1,478	1,485
D	Harrison	513	County-Other, Harrison	Cypress	5,334	5,067	5,068	4,538	4,014	3,506
D	Harrison	513	County-Other, Harrison	Sabine	3,371	3,203	3,203	2,868	2,538	2,217
D	Harrison	10106	Cypress Valley WSC	Cypress	1,496	1,542	1,550	1,563	1,575	1,588
D	Harrison	3159	Diana SUD	Cypress	394	411	413	423	432	440
D	Harrison	10107	Elysian Fields WSC	Sabine	1,197	1,391	1,419	1,629	1,834	2,032
D	Harrison	837	Gill WSC	Sabine	1,246	1,242	1,242	1,200	1,160	1,120

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Harrison	868	Gum Springs WSC	Cypress	2,476	2,680	2,711	2,897	3,079	3,254
D	Harrison	868	Gum Springs WSC	Sabine	7,954	8,610	8,708	9,308	9,889	10,453
D	Harrison	877	Hallsville	Sabine	4,575	4,925	4,980	5,291	5,594	5,887
D	Harrison	6337	Harleton WSC	Cypress	3,456	3,577	3,597	3,649	3,701	3,751
D	Harrison	6397	Leigh WSC	Cypress	1,476	1,326	1,307	1,073	847	627
D	Harrison	86	Longview	Sabine	2,743	3,046	3,169	3,618	4,071	4,441
D	Harrison	95	Marshall	Cypress	4,146	4,060	4,052	3,822	3,598	3,381
D	Harrison	95	Marshall	Sabine	19,187	18,785	18,753	17,687	16,652	15,645
D	Harrison	6454	North Harrison WSC	Cypress	1,453	1,522	1,533	1,575	1,616	1,655
D	Harrison	6475	Panola-Bethany WSC	Cypress	159	129	105	86	70	57
D	Harrison	6475	Panola-Bethany WSC	Sabine	261	212	173	141	114	93
D	Harrison	6515	Scottsville	Cypress	396	439	446	489	531	571
D	Harrison	6515	Scottsville	Sabine	912	1,011	1,026	1,126	1,222	1,316
D	Harrison	6553	Talley WSC	Cypress	1,098	1,118	1,122	1,115	1,107	1,100
D	Harrison	6553	Talley WSC	Sabine	785	799	802	797	792	787
D	Harrison	2989	Tryon Road SUD	Cypress	2,031	2,473	2,535	3,037	3,523	3,997
D	Harrison	2579	Waskom	Cypress	2,023	1,886	1,869	1,637	1,412	1,193
D	Harrison	6589	West Harrison WSC	Cypress	405	459	467	523	578	631
D	Harrison	6589	West Harrison WSC	Sabine	1,471	1,667	1,695	1,899	2,098	2,290
	Harrison Total				**71,617**	**73,196**	**73,568**	**73,623**	**73,688**	**73,681**
D	Hopkins	6230	Brashear WSC	Sabine	503	542	549	568	589	609
D	Hopkins	6230	Brashear WSC	Sulphur	492	530	537	556	576	596
D	Hopkins	2999	Brinker WSC	Sulphur	2,591	2,753	2,799	2,886	2,976	3,066
D	Hopkins	23	Cash SUD	Sabine	212	246	273	336	351	419
D	Hopkins	10104	Como	Sabine	609	608	608	608	608	608
D	Hopkins	10104	Como	Sulphur	168	168	168	168	168	168
D	Hopkins	6255	Cornersville WSC	Cypress	430	448	457	468	479	490
D	Hopkins	6255	Cornersville WSC	Sabine	444	462	472	482	494	507
D	Hopkins	6255	Cornersville WSC	Sulphur	53	55	56	58	59	60
D	Hopkins	523	County-Other, Hopkins	Sabine	1,174	1,209	1,252	1,278	1,304	1,331
D	Hopkins	523	County-Other, Hopkins	Sulphur	1,032	1,062	1,100	1,123	1,147	1,170
D	Hopkins	686	Cumby	Sabine	658	640	665	663	659	656
D	Hopkins	686	Cumby	Sulphur	78	76	78	78	78	77
D	Hopkins	3157	Cypress Springs SUD	Cypress	438	459	468	480	493	506
D	Hopkins	3157	Cypress Springs SUD	Sulphur	683	718	732	751	771	791
D	Hopkins	6322	Gafford Chapel WSC	Sulphur	1,090	1,120	1,149	1,169	1,191	1,213
D	Hopkins	3016	Jones WSC	Sabine	83	81	84	84	84	84
D	Hopkins	6388	Lake Fork WSC	Sabine	135	141	144	147	150	153
D	Hopkins	1803	Martin Springs WSC	Sabine	2,588	2,673	2,735	2,791	2,847	2,903
D	Hopkins	1803	Martin Springs WSC	Sulphur	528	545	558	569	580	592
D	Hopkins	6422	Miller Grove WSC	Sabine	1,152	1,208	1,232	1,264	1,297	1,330
D	Hopkins	2136	North Hopkins WSC	Sulphur	9,220	9,591	9,799	10,026	10,254	10,486
D	Hopkins	6520	Shady Grove No 2 WSC	Sabine	363	390	395	409	423	437

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Hopkins	6520	Shady Grove No 2 WSC	Sulphur	300	322	327	338	350	362
D	Hopkins	6523	Shirley WSC	Sabine	1,738	1,827	1,861	1,913	1,964	2,017
D	Hopkins	136	Sulphur Springs	Sulphur	16,070	16,393	16,829	17,091	17,350	17,611
	Hopkins Total				**42,832**	**44,267**	**45,327**	**46,304**	**47,242**	**48,242**
D	Hunt	164	Ables Springs SUD	Sabine	619	670	715	753	792	830
D	Hunt	6208	B H P WSC	Sabine	6,056	7,047	7,913	8,719	9,533	10,352
D	Hunt	317	Caddo Basin SUD	Sabine	15,886	14,328	16,734	17,259	17,109	18,651
D	Hunt	318	Caddo Mills	Sabine	1,083	1,103	1,123	1,143	1,165	1,186
D	Hunt	23	Cash SUD	Sabine	19,404	22,046	24,600	26,370	26,351	27,704
D	Hunt	337	Celeste	Sabine	826	870	908	937	967	996
D	Hunt	3154	Combined Consumers SUD	Sabine	5,518	5,756	5,971	6,118	6,270	6,424
D	Hunt	392	Commerce	Sulphur	6,332	6,137	5,977	5,732	5,489	5,248
D	Hunt	527	County-Other, Hunt	Sabine	5,604	5,837	5,819	5,498	4,975	4,198
D	Hunt	527	County-Other, Hunt	Sulphur	2,571	2,678	2,670	2,523	2,283	1,926
D	Hunt	527	County-Other, Hunt	Trinity	1	1	1	1	1	1
D	Hunt	6320	Frognot WSC	Trinity	23	29	34	40	45	52
D	Hunt	64	Greenville	Sabine	54,617	61,479	65,416	68,708	72,042	75,417
D	Hunt	938	Hickory Creek SUD	Sabine	1,633	1,872	2,146	2,461	2,821	3,234
D	Hunt	938	Hickory Creek SUD	Sulphur	1,128	1,293	1,483	1,700	1,949	2,234
D	Hunt	938	Hickory Creek SUD	Trinity	738	846	970	1,112	1,275	1,462
D	Hunt	1242	Josephine	Sabine	155	180	204	225	245	267
D	Hunt	1614	MacBee SUD	Sabine	316	330	341	350	358	366
D	Hunt	2980	North Hunt SUD	Sulphur	2,350	2,306	2,273	2,208	2,144	2,082
D	Hunt	6489	Poetry WSC	Sabine	2,011	2,306	2,547	2,719	2,267	2,281
D	Hunt	2242	Quinlan	Sabine	1,785	1,936	2,071	2,184	2,299	2,416
D	Hunt	2304	Royse City	Sabine	4,136	5,910	7,450	8,967	10,495	12,034
D	Hunt	6521	Shady Grove SUD	Sabine	1,628	2,074	2,643	3,369	4,293	5,471
D	Hunt	6521	Shady Grove SUD	Sulphur	104	133	170	216	276	351
D	Hunt	6563	Texas A&M University Commerce	Sulphur	2,125	2,125	2,125	2,125	2,125	2,125
D	Hunt	6591	West Leonard WSC	Trinity	36	41	46	52	56	60
D	Hunt	2601	West Tawakoni	Sabine	2,874	3,165	3,420	3,643	3,870	4,098
D	Hunt	2638	Wolfe City	Sulphur	1,610	1,640	1,669	1,679	1,688	1,699
	Hunt Total				**141,169**	**154,138**	**167,439**	**176,811**	**183,183**	**193,165**
D	Lamar	264	Blossom	Sulphur	1,385	1,389	1,382	1,376	1,370	1,364
D	Lamar	6227	Bois D Arc MUD	Red	16	16	16	16	16	16
D	Lamar	550	County-Other, Lamar	Red	233	233	232	231	230	229
D	Lamar	550	County-Other, Lamar	Sulphur	2,460	2,464	2,454	2,441	2,430	2,418
D	Lamar	84	Lamar County WSD	Red	12,587	12,621	12,559	12,503	12,445	12,387
D	Lamar	84	Lamar County WSD	Sulphur	5,005	5,019	4,994	4,971	4,949	4,926
D	Lamar	115	Paris	Red	10,537	10,566	10,519	10,469	10,418	10,368
D	Lamar	115	Paris	Sulphur	16,301	16,347	16,274	16,197	16,119	16,041
D	Lamar	2259	Reno (Lamar)	Red	182	182	181	181	180	179
D	Lamar	2259	Reno (Lamar)	Sulphur	2,572	2,580	2,568	2,555	2,543	2,532

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
	Lamar Total				**51,278**	**51,417**	**51,179**	**50,940**	**50,700**	**50,460**
D	Marion	569	County-Other, Marion	Cypress	1,566	1,361	1,079	920	739	537
D	Marion	3159	Diana SUD	Cypress	507	425	362	302	255	214
D	Marion	6274	E M C WSC	Cypress	1,752	1,572	1,361	1,226	1,086	939
D	Marion	6337	Harleton WSC	Cypress	790	677	543	456	366	271
D	Marion	1230	Jefferson	Cypress	1,676	1,564	1,443	1,360	1,277	1,196
D	Marion	6380	Kellyville-Berea WSC	Cypress	977	956	939	924	913	906
D	Marion	6424	Mims WSC	Cypress	1,867	1,936	2,042	2,100	2,170	2,259
D	Marion	2163	Ore City	Cypress	109	139	181	207	235	265
	Marion Total				**9,244**	**8,630**	**7,950**	**7,495**	**7,041**	**6,587**
D	Morris	3146	Bi County WSC	Cypress	1,420	1,292	1,143	1,046	949	848
D	Morris	583	County-Other, Morris	Cypress	1,633	1,616	1,594	1,578	1,562	1,547
D	Morris	583	County-Other, Morris	Sulphur	630	623	615	608	602	596
D	Morris	690	Daingerfield	Cypress	2,179	2,239	2,318	2,358	2,400	2,445
D	Morris	6368	Holly Springs WSC	Cypress	627	565	496	450	404	357
D	Morris	1593	Lone Star	Cypress	1,294	1,195	1,083	1,010	936	860
D	Morris	2099	Naples	Cypress	715	710	707	702	698	693
D	Morris	2099	Naples	Sulphur	684	679	676	670	666	663
D	Morris	2157	Omaha	Cypress	561	547	535	524	513	503
D	Morris	2157	Omaha	Sulphur	440	430	419	411	402	394
D	Morris	2988	Tri SUD	Cypress	1,730	1,719	1,596	1,527	1,429	1,281
D	Morris	6593	Western Cass WSC	Cypress	58	57	57	56	56	55
D	Morris	6593	Western Cass WSC	Sulphur	105	103	103	102	101	100
	Morris Total				**12,076**	**11,775**	**11,342**	**11,042**	**10,718**	**10,342**
D	Rains	3149	Bright Star Salem SUD	Sabine	2,430	2,609	2,741	2,929	3,122	3,317
D	Rains	23	Cash SUD	Sabine	917	1,010	1,196	1,472	1,707	1,978
D	Rains	601	County-Other, Rains	Sabine	2,674	2,860	2,997	3,194	3,392	3,595
D	Rains	735	East Tawakoni	Sabine	817	826	846	842	836	829
D	Rains	50	Emory	Sabine	1,745	1,780	1,831	1,844	1,856	1,865
D	Rains	3012	Golden WSC	Sabine	45	51	58	58	58	58
D	Rains	6422	Miller Grove WSC	Sabine	232	250	263	284	304	324
D	Rains	2214	Point	Sabine	1,092	1,112	1,142	1,147	1,150	1,152
D	Rains	6523	Shirley WSC	Sabine	821	893	943	1,021	1,102	1,183
D	Rains	6536	South Rains SUD	Sabine	2,797	3,007	3,160	3,381	3,606	3,836
	Rains Total				**13,570**	**14,398**	**15,177**	**16,172**	**17,133**	**18,137**
D	Red River	6195	410 WSC	Red	588	559	532	509	487	465
D	Red River	6195	410 WSC	Sulphur	768	729	694	665	636	608
D	Red River	269	Bogata	Sulphur	892	841	795	755	717	679
D	Red River	364	Clarksville	Sulphur	2,483	2,198	1,906	1,677	1,442	1,206
D	Red River	605	County-Other, Red River	Red	369	321	258	198	117	9
D	Red River	605	County-Other, Red River	Sulphur	1,081	940	757	579	345	27
D	Red River	2256	Red River County WSC	Red	1,295	1,226	1,179	1,149	1,141	1,164
D	Red River	2256	Red River County WSC	Sulphur	3,371	3,192	3,067	2,990	2,969	3,029

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Red River	10105	Talco	Sulphur	21	23	26	26	28	29
	Red River Total				**10,868**	**10,029**	**9,214**	**8,548**	**7,882**	**7,216**
D	Smith	6241	Carroll WSC	Sabine	428	446	456	461	465	470
D	Smith	623	County-Other, Smith	Sabine	2,725	2,529	2,390	2,196	2,003	1,808
D	Smith	683	Crystal Systems Texas	Sabine	4,643	4,848	4,994	5,070	5,150	5,232
D	Smith	2984	East Texas MUD	Sabine	2,934	3,414	3,750	4,062	4,376	4,690
D	Smith	1224	Jackson WSC	Sabine	1,635	1,765	1,857	1,928	2,001	2,072
D	Smith	1320	Liberty City WSC	Sabine	206	231	249	266	281	297
D	Smith	1324	Lindale	Sabine	3,717	3,838	3,925	3,954	3,985	4,018
D	Smith	1325	Lindale Rural WSC	Sabine	10,049	11,096	11,830	12,454	13,080	13,707
D	Smith	2164	Overton	Sabine	134	142	150	154	159	163
D	Smith	6483	Pine Ridge WSC	Sabine	1,617	1,809	1,944	2,062	2,181	2,299
D	Smith	6512	Sand Flat WSC	Sabine	4,067	4,217	4,325	4,370	4,419	4,468
D	Smith	2382	Southern Utilities	Sabine	11,353	11,974	12,412	12,693	12,978	13,267
D	Smith	6546	Star Mountain WSC	Sabine	1,380	1,452	1,505	1,536	1,568	1,601
D	Smith	6548	Starrville-Friendship WSC	Sabine	1,113	1,108	1,106	1,085	1,064	1,044
D	Smith	144	Tyler	Sabine	796	718	666	594	524	456
D	Smith	2991	West Gregg SUD	Sabine	1,012	1,072	1,114	1,143	1,171	1,200
D	Smith	2636	Winona	Sabine	597	660	704	743	781	818
	Smith Total				**48,406**	**51,319**	**53,377**	**54,771**	**56,186**	**57,610**
D	Titus	3146	Bi County WSC	Cypress	525	644	829	971	1,128	1,305
D	Titus	636	County-Other, Titus	Cypress	476	434	351	287	218	138
D	Titus	636	County-Other, Titus	Sulphur	768	700	568	464	351	223
D	Titus	3157	Cypress Springs SUD	Cypress	258	303	367	418	474	537
D	Titus	3157	Cypress Springs SUD	Sulphur	187	219	266	302	343	388
D	Titus	100	Mount Pleasant	Cypress	15,777	16,202	16,449	16,654	16,880	17,129
D	Titus	10105	Talco	Sulphur	563	561	541	527	509	492
D	Titus	2988	Tri SUD	Cypress	11,147	12,429	13,311	14,228	15,072	15,848
D	Titus	2988	Tri SUD	Sulphur	6,344	7,073	7,575	8,098	8,577	9,020
	Titus Total				**36,045**	**38,565**	**40,257**	**41,949**	**43,552**	**45,080**
D	Upshur	3146	Bi County WSC	Cypress	4,695	4,737	4,720	4,652	4,583	4,515
D	Upshur	254	Big Sandy	Sabine	1,124	1,135	1,131	1,114	1,097	1,081
D	Upshur	641	County-Other, Upshur	Cypress	4,699	4,401	3,958	3,383	2,761	2,091
D	Upshur	641	County-Other, Upshur	Sabine	1,824	1,708	1,536	1,313	1,072	811
D	Upshur	3159	Diana SUD	Cypress	5,393	5,914	6,485	7,112	7,799	8,553
D	Upshur	732	East Mountain Water System	Cypress	292	295	294	289	285	281
D	Upshur	732	East Mountain Water System	Sabine	1,132	1,142	1,138	1,122	1,106	1,089
D	Upshur	3010	Fouke WSC	Sabine	73	73	73	72	72	72
D	Upshur	838	Gilmer	Cypress	5,176	5,223	5,205	5,130	5,056	4,979
D	Upshur	839	Gladewater	Sabine	2,416	2,437	2,429	2,393	2,359	2,323
D	Upshur	6327	Glenwood WSC	Cypress	2,694	2,719	2,707	2,669	2,630	2,590
D	Upshur	6327	Glenwood WSC	Sabine	55	55	55	54	53	53
D	Upshur	2163	Ore City	Cypress	1,366	1,378	1,372	1,354	1,334	1,313

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Upshur	2237	Pritchett WSC	Cypress	2,160	2,180	2,171	2,140	2,109	2,077
D	Upshur	2237	Pritchett WSC	Sabine	5,274	5,320	5,301	5,224	5,149	5,070
D	Upshur	2351	Sharon WSC	Cypress	2,009	2,027	2,019	1,991	1,962	1,933
D	Upshur	6578	Union Grove WSC	Cypress	61	62	61	61	60	59
D	Upshur	6578	Union Grove WSC	Sabine	1,769	1,784	1,778	1,752	1,727	1,701
	Upshur Total				**42,212**	**42,590**	**42,433**	**41,825**	**41,214**	**40,591**
D	Van Zandt	164	Ables Springs SUD	Sabine	35	37	39	42	44	46
D	Van Zandt	6220	Ben Wheeler WSC	Neches	2,836	3,237	3,620	4,029	4,444	4,861
D	Van Zandt	247	Bethel Ash WSC	Neches	1,368	1,505	1,637	1,769	1,902	2,039
D	Van Zandt	247	Bethel Ash WSC	Trinity	352	387	420	454	489	524
D	Van Zandt	328	Canton	Sabine	5,415	6,041	6,673	7,298	7,982	8,644
D	Van Zandt	6241	Carroll WSC	Neches	4	4	5	5	6	6
D	Van Zandt	6241	Carroll WSC	Sabine	511	583	650	724	797	871
D	Van Zandt	3154	Combined Consumers SUD	Sabine	1,116	1,175	1,231	1,278	1,324	1,371
D	Van Zandt	645	County-Other, Van Zandt	Neches	5,801	6,728	7,394	7,977	8,297	8,330
D	Van Zandt	645	County-Other, Van Zandt	Sabine	6,378	7,395	8,128	8,769	9,121	9,156
D	Van Zandt	645	County-Other, Van Zandt	Trinity	5,810	6,738	7,405	7,989	8,310	8,343
D	Van Zandt	743	Edgewood	Sabine	1,536	1,585	1,632	1,654	1,678	1,707
D	Van Zandt	6280	Edom WSC	Neches	1,009	1,027	1,043	1,041	1,040	1,040
D	Van Zandt	6321	Fruitvale WSC	Sabine	3,467	3,794	4,107	4,416	4,730	5,049
D	Van Zandt	3012	Golden WSC	Sabine	732	821	907	997	1,087	1,179
D	Van Zandt	854	Grand Saline	Sabine	3,404	3,469	3,530	3,529	3,533	3,541
D	Van Zandt	6403	Little Hope Moore WSC	Neches	473	494	514	528	543	558
D	Van Zandt	6403	Little Hope Moore WSC	Sabine	1,005	1,051	1,093	1,123	1,155	1,187
D	Van Zandt	1613	Mabank	Trinity	330	371	410	451	493	536
D	Van Zandt	1614	MacBee SUD	Sabine	3,304	4,088	5,058	6,258	7,744	9,581
D	Van Zandt	1614	MacBee SUD	Trinity	5,078	6,283	7,773	9,618	11,900	14,724
D	Van Zandt	6446	Myrtle Springs WSC	Sabine	969	1,194	1,409	1,654	1,900	2,146
D	Van Zandt	6446	Myrtle Springs WSC	Trinity	2,406	2,965	3,499	4,109	4,719	5,333
D	Van Zandt	6483	Pine Ridge WSC	Sabine	350	449	545	654	763	874
D	Van Zandt	6497	Pruitt Sandflat WSC	Sabine	1,151	1,152	1,153	1,128	1,105	1,083
D	Van Zandt	2982	R P M WSC	Neches	1,612	1,597	1,584	1,530	1,478	1,430
D	Van Zandt	2380	South Tawakoni WSC	Sabine	2,619	2,114	1,709	1,348	1,067	846
D	Van Zandt	2561	Van	Neches	1,952	1,987	2,020	2,015	2,014	2,016
D	Van Zandt	2561	Van	Sabine	1,328	1,351	1,373	1,371	1,370	1,371
D	Van Zandt	2626	Wills Point	Sabine	2,518	2,786	3,041	3,301	3,564	3,830
D	Van Zandt	2626	Wills Point	Trinity	2,777	3,071	3,354	3,639	3,929	4,222
	Van Zandt Total				**67,646**	**75,479**	**82,956**	**90,698**	**98,528**	**106,444**
D	Wood	3149	Bright Star Salem SUD	Sabine	1,797	1,979	2,087	2,333	2,579	2,823
D	Wood	6255	Cornersville WSC	Sabine	251	270	289	310	332	357
D	Wood	661	County-Other, Wood	Cypress	649	639	592	568	530	476
D	Wood	661	County-Other, Wood	Sabine	4,274	4,207	3,901	3,740	3,490	3,133
D	Wood	3157	Cypress Springs SUD	Cypress	462	487	502	532	561	591

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Wood	3010	Fouke WSC	Sabine	5,904	6,178	6,340	6,628	6,919	7,214
D	Wood	3012	Golden WSC	Sabine	2,747	2,854	2,918	3,019	3,123	3,229
D	Wood	921	Hawkins	Sabine	1,334	1,358	1,373	1,378	1,385	1,393
D	Wood	3016	Jones WSC	Sabine	4,201	4,464	4,618	4,931	5,247	5,562
D	Wood	6388	Lake Fork WSC	Sabine	2,005	2,131	2,206	2,355	2,507	2,658
D	Wood	3015	Liberty Utilities Silverleaf Water	Sabine	2,664	2,757	2,810	2,889	2,971	3,054
D	Wood	1842	Mineola	Sabine	6,281	6,595	6,779	7,122	7,468	7,817
D	Wood	3029	New Hope SUD	Sabine	2,984	2,966	2,954	2,847	2,743	2,644
D	Wood	2237	Pritchett WSC	Sabine	54	57	58	59	61	63
D	Wood	2243	Quitman	Sabine	2,214	2,216	2,217	2,162	2,112	2,065
D	Wood	2247	Ramey WSC	Sabine	3,637	4,176	4,795	5,506	6,322	7,259
D	Wood	2351	Sharon WSC	Cypress	1,398	1,488	1,541	1,649	1,757	1,866
D	Wood	2351	Sharon WSC	Sabine	3,008	3,201	3,315	3,548	3,781	4,016
D	Wood	6523	Shirley WSC	Sabine	119	121	122	124	125	127
D	Wood	2635	Winnsboro	Cypress	1,257	1,299	1,324	1,359	1,395	1,432
D	Wood	2635	Winnsboro	Sabine	1,322	1,366	1,391	1,429	1,466	1,506
	Wood Total				**48,562**	**50,809**	**52,132**	**54,488**	**56,874**	**59,285**
Region D Total					**873,433**	**904,455**	**928,548**	**947,851**	**964,080**	**983,981**

2026 Regional Water Plan - Demand Projections for 2030-2080
for Water User Groups by Region, County, and Basin in Texas

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Bowie	6234	Burns Redbank WSC	Red	260	274	291	310	329	349
D	Bowie	3151	Central Bowie County WSC	Red	118	118	119	120	121	122
D	Bowie	3151	Central Bowie County WSC	Sulphur	651	651	657	663	669	675
D	Bowie	430	County-Other, Bowie	Red	468	455	444	425	407	387
D	Bowie	430	County-Other, Bowie	Sulphur	1,129	1,098	1,070	1,027	981	935
D	Bowie	699	De Kalb	Red	48	48	47	47	46	45
D	Bowie	699	De Kalb	Sulphur	218	215	214	210	208	205
D	Bowie	958	Hooks	Red	317	313	310	305	301	296
D	Bowie	997	Irrigation, Bowie	Red	6,868	6,868	6,868	6,868	6,868	6,868
D	Bowie	997	Irrigation, Bowie	Sulphur	3,199	3,199	3,199	3,199	3,199	3,199
D	Bowie	1350	Livestock, Bowie	Red	487	442	379	325	303	303
D	Bowie	1350	Livestock, Bowie	Sulphur	834	757	649	555	518	518
D	Bowie	1615	Macedonia Eylau MUD 1	Sulphur	710	705	698	688	677	666
D	Bowie	1633	Manufacturing, Bowie	Red	295	306	317	329	341	354
D	Bowie	1633	Manufacturing, Bowie	Sulphur	1,540	1,597	1,657	1,718	1,782	1,848
D	Bowie	1810	Maud	Sulphur	164	162	161	158	156	153
D	Bowie	10392	Mining, Bowie	Red	753	760	794	823	846	864
D	Bowie	10392	Mining, Bowie	Sulphur	1,228	1,238	1,294	1,341	1,379	1,408
D	Bowie	2100	Nash	Sulphur	314	309	306	302	297	292
D	Bowie	2108	New Boston	Red	403	399	396	389	383	377
D	Bowie	2108	New Boston	Sulphur	906	898	889	876	862	848
D	Bowie	2257	Redwater	Sulphur	403	399	395	389	383	377
D	Bowie	3077	Riverbend Water Resources District	Red	211	209	206	203	200	196
D	Bowie	3077	Riverbend Water Resources District	Sulphur	169	166	165	162	159	157
D	Bowie	140	Texarkana	Red	840	832	825	813	802	790
D	Bowie	140	Texarkana	Sulphur	5,929	5,870	5,824	5,741	5,657	5,572
D	Bowie	2573	Wake Village	Sulphur	649	641	635	625	615	605
	Bowie Total				**29,111**	**28,929**	**28,809**	**28,611**	**28,489**	**28,409**
D	Camp	3146	Bi County WSC	Cypress	632	634	636	641	647	652
D	Camp	443	County-Other, Camp	Cypress	96	97	97	98	99	100
D	Camp	3157	Cypress Springs SUD	Cypress	10	10	10	10	10	10
D	Camp	10380	Irrigation, Camp	Cypress	5	5	5	5	5	5
D	Camp	1363	Livestock, Camp	Cypress	1,448	1,448	1,448	1,448	1,448	1,448
D	Camp	1643	Manufacturing, Camp	Cypress	44	46	48	50	52	54
D	Camp	2205	Pittsburg	Cypress	841	848	850	857	864	872
D	Camp	2351	Sharon WSC	Cypress	4	4	4	4	4	4
	Camp Total				**3,080**	**3,092**	**3,098**	**3,113**	**3,129**	**3,145**
D	Cass	206	Atlanta	Cypress	977	931	882	844	805	766
D	Cass	206	Atlanta	Sulphur	4	3	3	3	3	3
D	Cass	10083	Avinger	Cypress	100	95	90	86	82	77

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Cass	445	County-Other, Cass	Cypress	497	447	394	345	294	237
D	Cass	445	County-Other, Cass	Sulphur	200	180	158	139	118	95
D	Cass	6274	E M C WSC	Cypress	37	36	34	32	31	29
D	Cass	3007	Eastern Cass WSC	Cypress	282	291	305	321	343	368
D	Cass	3007	Eastern Cass WSC	Sulphur	23	23	24	26	27	29
D	Cass	6368	Holly Springs WSC	Cypress	75	71	67	64	61	58
D	Cass	965	Hughes Springs	Cypress	378	360	341	326	311	296
D	Cass	1326	Linden	Cypress	347	331	315	302	289	276
D	Cass	1365	Livestock, Cass	Cypress	671	671	671	671	671	671
D	Cass	1365	Livestock, Cass	Sulphur	121	121	121	121	121	121
D	Cass	1645	Manufacturing, Cass	Cypress	14	15	15	16	17	17
D	Cass	1645	Manufacturing, Cass	Sulphur	36,138	37,475	38,862	40,299	41,790	43,337
D	Cass	6424	Mims WSC	Cypress	15	14	14	13	12	12
D	Cass	1874	Mining, Cass	Cypress	35	35	35	35	35	35
D	Cass	2241	Queen City	Cypress	153	147	142	139	137	136
D	Cass	2241	Queen City	Sulphur	87	83	81	79	77	77
D	Cass	6593	Western Cass WSC	Cypress	209	197	186	178	169	161
D	Cass	6593	Western Cass WSC	Sulphur	74	71	67	63	60	57
	Cass Total				**40,437**	**41,597**	**42,807**	**44,102**	**45,453**	**46,858**
D	Delta	402	Cooper	Sulphur	464	461	458	452	446	440
D	Delta	471	County-Other, Delta	Sulphur	74	71	68	63	59	54
D	Delta	6267	Delta County MUD	Sulphur	191	194	196	199	201	204
D	Delta	1036	Irrigation, Delta	Sulphur	3,049	3,049	3,049	3,049	3,049	3,049
D	Delta	1391	Livestock, Delta	Sulphur	511	511	511	511	511	511
D	Delta	2980	North Hunt SUD	Sulphur	30	30	29	29	29	28
	Delta Total				**4,319**	**4,316**	**4,311**	**4,303**	**4,295**	**4,286**
D	Franklin	6255	Cornersville WSC	Cypress	3	4	4	4	5	5
D	Franklin	491	County-Other, Franklin	Cypress	4	4	4	4	4	4
D	Franklin	491	County-Other, Franklin	Sulphur	58	56	55	55	55	54
D	Franklin	3157	Cypress Springs SUD	Cypress	732	724	714	719	725	730
D	Franklin	3157	Cypress Springs SUD	Sulphur	373	369	364	367	369	372
D	Franklin	3105	Irrigation, Franklin	Cypress	46	46	46	46	46	46
D	Franklin	3105	Irrigation, Franklin	Sabine	46	46	46	46	46	46
D	Franklin	3105	Irrigation, Franklin	Sulphur	46	46	46	46	46	46
D	Franklin	1411	Livestock, Franklin	Cypress	615	615	615	615	615	615
D	Franklin	1411	Livestock, Franklin	Sulphur	739	739	739	739	739	739
D	Franklin	2088	Mount Vernon	Sulphur	481	475	469	472	476	479
D	Franklin	2635	Winnsboro	Cypress	150	149	147	148	149	150
	Franklin Total				**3,293**	**3,273**	**3,249**	**3,261**	**3,275**	**3,286**
D	Gregg	3000	Chalk Hill SUD	Sabine	2	2	2	2	2	2
D	Gregg	365	Clarksville City	Sabine	126	126	126	124	122	120
D	Gregg	503	County-Other, Gregg	Cypress	65	64	60	55	50	45
D	Gregg	503	County-Other, Gregg	Sabine	494	482	456	420	382	343

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Gregg	3005	Cross Roads SUD	Sabine	45	46	47	48	49	50
D	Gregg	732	East Mountain Water System	Cypress	52	52	52	51	50	49
D	Gregg	732	East Mountain Water System	Sabine	40	41	41	40	39	39
D	Gregg	754	Elderville WSC	Sabine	528	533	529	521	512	504
D	Gregg	839	Gladewater	Sabine	851	856	850	836	823	809
D	Gregg	6327	Glenwood WSC	Cypress	14	14	14	14	13	13
D	Gregg	3104	Irrigation, Gregg	Sabine	33	33	33	33	33	33
D	Gregg	1263	Kilgore	Sabine	3,186	3,208	3,187	3,136	3,085	3,034
D	Gregg	1320	Liberty City WSC	Sabine	543	544	540	531	523	514
D	Gregg	1423	Livestock, Gregg	Cypress	27	27	27	27	27	27
D	Gregg	1423	Livestock, Gregg	Sabine	152	152	152	152	152	152
D	Gregg	86	Longview	Sabine	22,779	23,053	23,311	23,323	23,329	23,352
D	Gregg	1679	Manufacturing, Gregg	Sabine	1,552	1,610	1,670	1,732	1,796	1,863
D	Gregg	1924	Mining, Gregg	Cypress	10	10	10	10	10	10
D	Gregg	1924	Mining, Gregg	Sabine	72	72	72	72	72	72
D	Gregg	6548	Starrville-Friendship WSC	Sabine	64	64	64	63	62	61
D	Gregg	2427	Steam-Electric Power, Gregg	Sabine	940	940	940	940	940	940
D	Gregg	2989	Tryon Road SUD	Cypress	710	715	710	698	686	675
D	Gregg	2989	Tryon Road SUD	Sabine	212	213	212	208	205	201
D	Gregg	2991	West Gregg SUD	Sabine	350	363	380	399	419	440
D	Gregg	2614	White Oak	Sabine	2,656	2,678	2,659	2,616	2,572	2,529
	Gregg Total				**35,503**	**35,898**	**36,144**	**36,051**	**35,953**	**35,877**
D	Harrison	6225	Blocker Crossroads WSC	Cypress	15	15	15	15	16	16
D	Harrison	6225	Blocker Crossroads WSC	Sabine	137	139	140	141	141	142
D	Harrison	513	County-Other, Harrison	Cypress	604	570	570	510	452	394
D	Harrison	513	County-Other, Harrison	Sabine	382	360	360	323	285	249
D	Harrison	10106	Cypress Valley WSC	Cypress	162	165	166	168	169	170
D	Harrison	3159	Diana SUD	Cypress	38	39	39	40	41	42
D	Harrison	10107	Elysian Fields WSC	Sabine	165	191	195	224	252	279
D	Harrison	837	Gill WSC	Sabine	202	200	200	193	186	180
D	Harrison	868	Gum Springs WSC	Cypress	398	429	434	464	493	521
D	Harrison	868	Gum Springs WSC	Sabine	1,279	1,380	1,396	1,492	1,585	1,675
D	Harrison	877	Hallsville	Sabine	653	701	708	753	796	837
D	Harrison	6337	Harleton WSC	Cypress	284	292	293	298	302	306
D	Harrison	1076	Irrigation, Harrison	Cypress	336	336	336	336	336	336
D	Harrison	1076	Irrigation, Harrison	Sabine	224	224	224	224	224	224
D	Harrison	6397	Leigh WSC	Cypress	399	357	352	289	228	169
D	Harrison	1433	Livestock, Harrison	Cypress	353	371	389	408	430	430
D	Harrison	1433	Livestock, Harrison	Sabine	274	287	301	317	334	334
D	Harrison	86	Longview	Sabine	777	861	896	1,022	1,151	1,255
D	Harrison	1688	Manufacturing, Harrison	Cypress	12	12	13	13	14	14
D	Harrison	1688	Manufacturing, Harrison	Sabine	25,974	26,940	27,941	28,980	30,057	31,175
D	Harrison	95	Marshall	Cypress	827	807	806	760	716	673

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Harrison	95	Marshall	Sabine	3,829	3,737	3,730	3,518	3,312	3,112
D	Harrison	1933	Mining, Harrison	Cypress	732	732	732	732	732	732
D	Harrison	1933	Mining, Harrison	Sabine	1,959	1,959	1,959	1,959	1,959	1,959
D	Harrison	6454	North Harrison WSC	Cypress	163	170	171	175	180	184
D	Harrison	6475	Panola-Bethany WSC	Cypress	31	25	20	17	14	11
D	Harrison	6475	Panola-Bethany WSC	Sabine	51	41	34	27	22	18
D	Harrison	6515	Scottsville	Cypress	102	113	115	126	137	147
D	Harrison	6515	Scottsville	Sabine	236	261	264	290	315	339
D	Harrison	2432	Steam-Electric Power, Harrison	Sabine	23,145	23,145	23,145	23,145	23,145	23,145
D	Harrison	6553	Talley WSC	Cypress	75	76	76	76	75	75
D	Harrison	6553	Talley WSC	Sabine	54	54	55	54	54	53
D	Harrison	2989	Tryon Road SUD	Cypress	327	397	407	487	565	641
D	Harrison	2579	Waskom	Cypress	288	268	265	232	200	169
D	Harrison	6589	West Harrison WSC	Cypress	42	47	48	54	60	65
D	Harrison	6589	West Harrison WSC	Sabine	153	172	175	196	216	236
	Harrison Total				**64,682**	**65,873**	**66,970**	**68,058**	**69,194**	**70,307**
D	Hopkins	6230	Brashear WSC	Sabine	106	114	115	119	124	128
D	Hopkins	6230	Brashear WSC	Sulphur	104	111	113	117	121	125
D	Hopkins	2999	Brinker WSC	Sulphur	425	450	458	472	487	501
D	Hopkins	23	Cash SUD	Sabine	27	31	34	42	44	53
D	Hopkins	10104	Como	Sabine	88	87	87	87	87	87
D	Hopkins	10104	Como	Sulphur	24	24	24	24	24	24
D	Hopkins	6255	Cornersville WSC	Cypress	45	46	47	49	50	51
D	Hopkins	6255	Cornersville WSC	Sabine	46	48	49	50	51	53
D	Hopkins	6255	Cornersville WSC	Sulphur	6	6	6	6	6	6
D	Hopkins	523	County-Other, Hopkins	Sabine	134	137	142	145	147	151
D	Hopkins	523	County-Other, Hopkins	Sulphur	117	120	124	127	130	132
D	Hopkins	686	Cumby	Sabine	88	85	89	89	88	87
D	Hopkins	686	Cumby	Sulphur	10	10	10	10	10	10
D	Hopkins	3157	Cypress Springs SUD	Cypress	70	73	75	77	79	81
D	Hopkins	3157	Cypress Springs SUD	Sulphur	110	115	117	120	123	126
D	Hopkins	6322	Gafford Chapel WSC	Sulphur	130	133	136	139	141	144
D	Hopkins	1086	Irrigation, Hopkins	Cypress	9	9	9	9	9	9
D	Hopkins	1086	Irrigation, Hopkins	Sabine	124	124	124	124	124	124
D	Hopkins	1086	Irrigation, Hopkins	Sulphur	3,777	3,777	3,777	3,777	3,777	3,777
D	Hopkins	3016	Jones WSC	Sabine	12	11	12	12	12	12
D	Hopkins	6388	Lake Fork WSC	Sabine	20	21	21	22	22	23
D	Hopkins	1443	Livestock, Hopkins	Cypress	308	308	308	308	308	308
D	Hopkins	1443	Livestock, Hopkins	Sabine	1,293	1,293	1,293	1,293	1,293	1,293
D	Hopkins	1443	Livestock, Hopkins	Sulphur	2,652	2,652	2,652	2,652	2,652	2,652
D	Hopkins	1697	Manufacturing, Hopkins	Sulphur	1,042	1,081	1,121	1,163	1,206	1,251
D	Hopkins	1803	Martin Springs WSC	Sabine	399	410	420	428	437	445
D	Hopkins	1803	Martin Springs WSC	Sulphur	81	83	85	87	89	91

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Hopkins	6422	Miller Grove WSC	Sabine	193	202	206	211	217	222
D	Hopkins	1941	Mining, Hopkins	Sabine	2	2	2	2	2	2
D	Hopkins	2136	North Hopkins WSC	Sulphur	1,152	1,192	1,218	1,246	1,275	1,304
D	Hopkins	6520	Shady Grove No 2 WSC	Sabine	64	68	69	72	74	77
D	Hopkins	6520	Shady Grove No 2 WSC	Sulphur	53	57	57	59	61	63
D	Hopkins	6523	Shirley WSC	Sabine	243	254	259	266	273	280
D	Hopkins	136	Sulphur Springs	Sulphur	3,440	3,497	3,590	3,646	3,701	3,757
	Hopkins Total				**16,394**	**16,631**	**16,849**	**17,050**	**17,244**	**17,449**
D	Hunt	164	Ables Springs SUD	Sabine	42	45	48	51	53	56
D	Hunt	6208	B H P WSC	Sabine	568	656	736	811	887	963
D	Hunt	317	Caddo Basin SUD	Sabine	1,989	1,786	2,086	2,152	2,133	2,325
D	Hunt	318	Caddo Mills	Sabine	153	155	158	161	164	167
D	Hunt	23	Cash SUD	Sabine	2,448	2,769	3,090	3,312	3,310	3,480
D	Hunt	337	Celeste	Sabine	109	114	119	123	127	130
D	Hunt	3154	Combined Consumers SUD	Sabine	726	754	783	802	822	842
D	Hunt	392	Commerce	Sulphur	1,590	1,537	1,497	1,436	1,375	1,314
D	Hunt	527	County-Other, Hunt	Sabine	675	700	697	659	596	503
D	Hunt	527	County-Other, Hunt	Sulphur	310	321	320	302	274	231
D	Hunt	527	County-Other, Hunt	Trinity	0	0	0	0	0	0
D	Hunt	6320	Frognot WSC	Trinity	2	3	3	4	4	5
D	Hunt	64	Greenville	Sabine	19,410	21,807	23,203	24,371	25,554	26,751
D	Hunt	938	Hickory Creek SUD	Sabine	265	302	347	398	455	522
D	Hunt	938	Hickory Creek SUD	Sulphur	182	209	239	274	314	360
D	Hunt	938	Hickory Creek SUD	Trinity	119	136	156	179	206	236
D	Hunt	1090	Irrigation, Hunt	Sabine	237	237	237	237	237	237
D	Hunt	1090	Irrigation, Hunt	Sulphur	69	69	69	69	69	69
D	Hunt	1090	Irrigation, Hunt	Trinity	10	10	10	10	10	10
D	Hunt	1242	Josephine	Sabine	33	38	43	47	52	56
D	Hunt	1447	Livestock, Hunt	Sabine	835	835	835	835	835	835
D	Hunt	1447	Livestock, Hunt	Sulphur	339	339	339	339	339	339
D	Hunt	1447	Livestock, Hunt	Trinity	48	48	48	48	48	48
D	Hunt	1614	MacBee SUD	Sabine	37	38	40	41	42	43
D	Hunt	1701	Manufacturing, Hunt	Sabine	635	659	684	709	735	762
D	Hunt	2980	North Hunt SUD	Sulphur	342	336	331	322	312	303
D	Hunt	6489	Poetry WSC	Sabine	236	269	297	317	264	266
D	Hunt	2242	Quinlan	Sabine	240	258	276	292	307	322
D	Hunt	2304	Royse City	Sabine	619	881	1,111	1,337	1,565	1,795
D	Hunt	6521	Shady Grove SUD	Sabine	164	207	263	335	428	545
D	Hunt	6521	Shady Grove SUD	Sulphur	10	13	17	22	27	35
D	Hunt	2438	Steam-Electric Power, Hunt	Sabine	373	373	373	373	373	373
D	Hunt	6563	Texas A&M University Commerce	Sulphur	433	432	432	432	432	432
D	Hunt	6591	West Leonard WSC	Trinity	5	5	6	7	7	8
D	Hunt	2601	West Tawakoni	Sabine	323	354	383	408	433	459

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Hunt	2638	Wolfe City	Sulphur	163	165	168	169	170	171
	Hunt Total				**33,739**	**36,860**	**39,444**	**41,384**	**42,959**	**44,993**
D	Lamar	264	Blossom	Sulphur	137	136	136	135	134	134
D	Lamar	6227	Bois D Arc MUD	Red	2	2	2	2	2	2
D	Lamar	550	County-Other, Lamar	Red	35	35	34	34	34	34
D	Lamar	550	County-Other, Lamar	Sulphur	367	365	364	362	361	359
D	Lamar	1111	Irrigation, Lamar	Red	5,999	5,999	5,999	5,999	5,999	5,999
D	Lamar	1111	Irrigation, Lamar	Sulphur	2,096	2,096	2,096	2,096	2,096	2,096
D	Lamar	84	Lamar County WSD	Red	2,079	2,077	2,067	2,058	2,048	2,038
D	Lamar	84	Lamar County WSD	Sulphur	827	826	822	818	814	811
D	Lamar	1470	Livestock, Lamar	Red	579	579	579	579	579	579
D	Lamar	1470	Livestock, Lamar	Sulphur	1,049	1,049	1,049	1,049	1,049	1,049
D	Lamar	1712	Manufacturing, Lamar	Red	1,231	1,277	1,324	1,373	1,425	1,477
D	Lamar	1712	Manufacturing, Lamar	Sulphur	4,279	4,438	4,604	4,775	4,952	5,137
D	Lamar	115	Paris	Red	1,452	1,448	1,441	1,434	1,427	1,420
D	Lamar	115	Paris	Sulphur	2,246	2,239	2,230	2,219	2,209	2,198
D	Lamar	2259	Reno (Lamar)	Red	27	26	26	26	26	26
D	Lamar	2259	Reno (Lamar)	Sulphur	375	375	373	371	370	368
D	Lamar	2444	Steam-Electric Power, Lamar	Red	386	386	386	386	386	386
D	Lamar	2444	Steam-Electric Power, Lamar	Sulphur	5,320	5,320	5,320	5,320	5,320	5,320
	Lamar Total				**28,486**	**28,673**	**28,852**	**29,036**	**29,231**	**29,433**
D	Marion	569	County-Other, Marion	Cypress	105	91	73	62	50	36
D	Marion	3159	Diana SUD	Cypress	49	40	34	29	24	20
D	Marion	6274	E M C WSC	Cypress	130	116	101	91	80	69
D	Marion	6337	Harleton WSC	Cypress	65	55	44	37	30	22
D	Marion	6622	Irrigation, Marion	Cypress	5	5	5	5	5	5
D	Marion	1230	Jefferson	Cypress	443	412	380	358	336	315
D	Marion	6380	Kellyville-Berea WSC	Cypress	125	122	119	117	116	115
D	Marion	1489	Livestock, Marion	Cypress	169	169	169	169	169	169
D	Marion	10387	Manufacturing, Marion	Cypress	151	157	163	169	175	181
D	Marion	6424	Mims WSC	Cypress	123	128	135	139	143	149
D	Marion	1983	Mining, Marion	Cypress	24	24	24	24	24	24
D	Marion	2163	Ore City	Cypress	15	19	25	29	33	37
D	Marion	2451	Steam-Electric Power, Marion	Cypress	4,257	4,257	4,257	4,257	4,257	4,257
	Marion Total				**5,661**	**5,595**	**5,529**	**5,486**	**5,442**	**5,399**
D	Morris	3146	Bi County WSC	Cypress	122	110	97	89	81	72
D	Morris	583	County-Other, Morris	Cypress	191	187	184	183	180	179
D	Morris	583	County-Other, Morris	Sulphur	73	72	71	70	70	69
D	Morris	690	Daingerfield	Cypress	452	463	479	487	496	505
D	Morris	6368	Holly Springs WSC	Cypress	52	47	41	37	33	30
D	Morris	6623	Irrigation, Morris	Cypress	3	3	3	3	3	3
D	Morris	6623	Irrigation, Morris	Sulphur	7	7	7	7	7	7
D	Morris	1503	Livestock, Morris	Cypress	371	371	371	371	371	371

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Morris	1503	Livestock, Morris	Sulphur	215	215	215	215	215	215
D	Morris	1593	Lone Star	Cypress	206	190	172	160	149	136
D	Morris	1738	Manufacturing, Morris	Cypress	27,561	28,586	29,649	30,751	31,894	33,080
D	Morris	2099	Naples	Cypress	93	92	92	91	91	90
D	Morris	2099	Naples	Sulphur	89	88	87	87	86	86
D	Morris	2157	Omaha	Cypress	87	85	82	81	79	77
D	Morris	2157	Omaha	Sulphur	68	66	65	63	62	61
D	Morris	2457	Steam-Electric Power, Morris	Cypress	50	50	50	50	50	50
D	Morris	2988	Tri SUD	Cypress	200	198	183	175	164	147
D	Morris	6593	Western Cass WSC	Cypress	6	5	5	5	5	5
D	Morris	6593	Western Cass WSC	Sulphur	10	10	10	10	10	10
	Morris Total				**29,856**	**30,845**	**31,863**	**32,935**	**34,046**	**35,193**
D	Rains	3149	Bright Star Salem SUD	Sabine	407	435	458	489	521	554
D	Rains	23	Cash SUD	Sabine	116	127	150	185	214	248
D	Rains	601	County-Other, Rains	Sabine	254	271	284	302	321	340
D	Rains	735	East Tawakoni	Sabine	183	185	189	188	187	186
D	Rains	50	Emory	Sabine	732	745	766	772	777	781
D	Rains	3012	Golden WSC	Sabine	5	6	6	6	6	6
D	Rains	3103	Irrigation, Rains	Sabine	60	60	60	60	60	60
D	Rains	1521	Livestock, Rains	Sabine	503	503	503	503	503	503
D	Rains	1753	Manufacturing, Rains	Sabine	1	1	1	1	1	1
D	Rains	6422	Miller Grove WSC	Sabine	39	42	44	47	51	54
D	Rains	2214	Point	Sabine	229	233	239	240	241	241
D	Rains	6523	Shirley WSC	Sabine	115	124	131	142	153	164
D	Rains	6536	South Rains SUD	Sabine	271	290	305	326	348	370
	Rains Total				**2,915**	**3,022**	**3,136**	**3,261**	**3,383**	**3,508**
D	Red River	6195	410 WSC	Red	153	145	138	132	127	121
D	Red River	6195	410 WSC	Sulphur	200	190	180	173	165	158
D	Red River	269	Bogata	Sulphur	170	160	151	143	136	129
D	Red River	364	Clarksville	Sulphur	623	550	477	420	361	302
D	Red River	605	County-Other, Red River	Red	45	39	31	24	14	1
D	Red River	605	County-Other, Red River	Sulphur	132	114	92	70	42	3
D	Red River	1160	Irrigation, Red River	Red	1,227	1,227	1,227	1,227	1,227	1,227
D	Red River	1160	Irrigation, Red River	Sulphur	2,556	2,556	2,556	2,556	2,556	2,556
D	Red River	1525	Livestock, Red River	Red	498	498	498	498	498	498
D	Red River	1525	Livestock, Red River	Sulphur	1,094	1,094	1,094	1,094	1,094	1,094
D	Red River	1755	Manufacturing, Red River	Red	3	3	3	3	3	3
D	Red River	2256	Red River County WSC	Red	140	132	126	123	122	125
D	Red River	2256	Red River County WSC	Sulphur	363	342	329	321	319	324
D	Red River	10105	Talco	Sulphur	4	5	5	5	6	6
	Red River Total				**7,208**	**7,055**	**6,907**	**6,789**	**6,670**	**6,547**
D	Smith	6241	Carroll WSC	Sabine	48	50	51	52	52	53
D	Smith	623	County-Other, Smith	Sabine	308	284	269	247	225	203

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Smith	683	Crystal Systems Texas	Sabine	1,489	1,552	1,599	1,623	1,649	1,675
D	Smith	2984	East Texas MUD	Sabine	1,328	1,541	1,693	1,834	1,976	2,118
D	Smith	1177	Irrigation, Smith	Sabine	311	311	311	311	311	311
D	Smith	1224	Jackson WSC	Sabine	175	188	198	205	213	220
D	Smith	1320	Liberty City WSC	Sabine	24	26	28	30	32	34
D	Smith	1324	Lindale	Sabine	865	889	909	916	923	931
D	Smith	1325	Lindale Rural WSC	Sabine	1,302	1,430	1,525	1,605	1,686	1,767
D	Smith	1543	Livestock, Smith	Sabine	465	465	465	465	465	465
D	Smith	1767	Manufacturing, Smith	Sabine	19	20	21	22	23	24
D	Smith	2164	Overton	Sabine	30	32	34	35	36	37
D	Smith	6483	Pine Ridge WSC	Sabine	199	222	239	253	268	282
D	Smith	6512	Sand Flat WSC	Sabine	319	331	339	343	346	350
D	Smith	2382	Southern Utilities	Sabine	2,194	2,306	2,390	2,444	2,499	2,555
D	Smith	6546	Star Mountain WSC	Sabine	244	255	265	270	276	282
D	Smith	6548	Starrville-Friendship WSC	Sabine	158	156	156	153	150	147
D	Smith	144	Tyler	Sabine	233	209	194	173	153	133
D	Smith	2991	West Gregg SUD	Sabine	104	109	114	116	119	122
D	Smith	2636	Winona	Sabine	180	199	212	224	235	246
	Smith Total				**9,995**	**10,575**	**11,012**	**11,321**	**11,637**	**11,955**
D	Titus	3146	Bi County WSC	Cypress	45	55	70	83	96	111
D	Titus	636	County-Other, Titus	Cypress	73	66	54	44	33	21
D	Titus	636	County-Other, Titus	Sulphur	118	107	87	71	54	34
D	Titus	3157	Cypress Springs SUD	Cypress	41	48	59	67	75	86
D	Titus	3157	Cypress Springs SUD	Sulphur	30	35	42	48	55	62
D	Titus	3102	Irrigation, Titus	Cypress	118	118	118	118	118	118
D	Titus	3102	Irrigation, Titus	Sulphur	1,074	1,074	1,074	1,074	1,074	1,074
D	Titus	1556	Livestock, Titus	Cypress	675	675	675	675	675	675
D	Titus	1556	Livestock, Titus	Sulphur	498	498	498	498	498	498
D	Titus	1773	Manufacturing, Titus	Cypress	4,455	4,621	4,793	4,971	5,156	5,348
D	Titus	100	Mount Pleasant	Cypress	4,049	4,145	4,209	4,261	4,319	4,382
D	Titus	2472	Steam-Electric Power, Titus	Cypress	29,541	29,541	29,541	29,541	29,541	29,541
D	Titus	10105	Talco	Sulphur	119	118	114	111	107	103
D	Titus	2988	Tri SUD	Cypress	1,290	1,428	1,530	1,635	1,732	1,821
D	Titus	2988	Tri SUD	Sulphur	734	813	870	931	986	1,037
	Titus Total				**42,860**	**43,342**	**43,734**	**44,128**	**44,519**	**44,911**
D	Upshur	3146	Bi County WSC	Cypress	402	403	401	396	390	384
D	Upshur	254	Big Sandy	Sabine	266	267	267	263	259	255
D	Upshur	641	County-Other, Upshur	Cypress	517	481	432	370	302	228
D	Upshur	641	County-Other, Upshur	Sabine	200	187	168	143	117	89
D	Upshur	3159	Diana SUD	Cypress	517	563	618	677	743	815
D	Upshur	732	East Mountain Water System	Cypress	77	77	77	76	75	74
D	Upshur	732	East Mountain Water System	Sabine	297	299	298	294	289	285
D	Upshur	3010	Fouke WSC	Sabine	10	10	10	10	10	10

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Upshur	838	Gilmer	Cypress	946	951	947	934	920	906
D	Upshur	839	Gladewater	Sabine	525	528	526	519	511	503
D	Upshur	6327	Glenwood WSC	Cypress	327	328	327	322	318	313
D	Upshur	6327	Glenwood WSC	Sabine	7	7	7	7	6	6
D	Upshur	1194	Irrigation, Upshur	Cypress	143	143	143	143	143	143
D	Upshur	1561	Livestock, Upshur	Cypress	808	808	808	808	808	808
D	Upshur	1561	Livestock, Upshur	Sabine	300	300	300	300	300	300
D	Upshur	1777	Manufacturing, Upshur	Cypress	33	34	36	37	38	39
D	Upshur	1777	Manufacturing, Upshur	Sabine	52	54	55	57	59	62
D	Upshur	2045	Mining, Upshur	Sabine	139	139	139	139	139	139
D	Upshur	2163	Ore City	Cypress	192	193	192	189	187	184
D	Upshur	2237	Pritchett WSC	Cypress	255	256	255	252	248	244
D	Upshur	2237	Pritchett WSC	Sabine	623	626	623	614	605	596
D	Upshur	2351	Sharon WSC	Cypress	230	231	230	227	224	221
D	Upshur	6578	Union Grove WSC	Cypress	8	8	8	8	8	7
D	Upshur	6578	Union Grove WSC	Sabine	224	226	225	221	218	216
	Upshur Total				**7,098**	**7,119**	**7,092**	**7,006**	**6,917**	**6,827**
D	Van Zandt	164	Ables Springs SUD	Sabine	2	2	3	3	3	3
D	Van Zandt	6220	Ben Wheeler WSC	Neches	291	330	369	411	453	496
D	Van Zandt	247	Bethel Ash WSC	Neches	134	146	159	172	185	198
D	Van Zandt	247	Bethel Ash WSC	Trinity	34	38	41	44	48	51
D	Van Zandt	328	Canton	Sabine	1,735	1,931	2,133	2,333	2,552	2,763
D	Van Zandt	6241	Carroll WSC	Neches	0	0	1	1	1	1
D	Van Zandt	6241	Carroll WSC	Sabine	58	66	72	81	89	97
D	Van Zandt	3154	Combined Consumers SUD	Sabine	147	154	161	167	174	180
D	Van Zandt	645	County-Other, Van Zandt	Neches	575	663	729	787	818	821
D	Van Zandt	645	County-Other, Van Zandt	Sabine	631	730	802	864	900	903
D	Van Zandt	645	County-Other, Van Zandt	Trinity	576	664	730	788	819	823
D	Van Zandt	743	Edgewood	Sabine	322	332	341	346	351	357
D	Van Zandt	6280	Edom WSC	Neches	134	136	138	138	137	137
D	Van Zandt	6321	Fruitvale WSC	Sabine	332	361	391	421	451	481
D	Van Zandt	3012	Golden WSC	Sabine	82	91	101	111	121	131
D	Van Zandt	854	Grand Saline	Sabine	466	473	481	481	482	483
D	Van Zandt	1198	Irrigation, Van Zandt	Neches	406	406	406	406	406	406
D	Van Zandt	6403	Little Hope Moore WSC	Neches	43	44	46	47	49	50
D	Van Zandt	6403	Little Hope Moore WSC	Sabine	90	94	97	100	103	106
D	Van Zandt	1565	Livestock, Van Zandt	Neches	628	628	628	628	628	628
D	Van Zandt	1565	Livestock, Van Zandt	Sabine	830	830	830	830	830	830
D	Van Zandt	1565	Livestock, Van Zandt	Trinity	476	476	476	476	476	476
D	Van Zandt	1613	Mabank	Trinity	64	72	80	88	96	104
D	Van Zandt	1614	MacBee SUD	Sabine	385	476	589	729	902	1,116
D	Van Zandt	1614	MacBee SUD	Trinity	591	732	906	1,120	1,386	1,715
D	Van Zandt	1779	Manufacturing, Van Zandt	Sabine	556	577	598	620	643	667

Region	County	EntityId	WUG Name	Basin	2030	2040	2050	2060	2070	2080
D	Van Zandt	2049	Mining, Van Zandt	Sabine	6	6	6	6	6	6
D	Van Zandt	6446	Myrtle Springs WSC	Sabine	79	97	114	134	154	174
D	Van Zandt	6446	Myrtle Springs WSC	Trinity	196	240	283	333	382	432
D	Van Zandt	6483	Pine Ridge WSC	Sabine	43	55	67	80	94	107
D	Van Zandt	6497	Pruitt Sandflat WSC	Sabine	125	125	125	122	120	117
D	Van Zandt	2982	R P M WSC	Neches	244	241	239	231	223	216
D	Van Zandt	2380	South Tawakoni WSC	Sabine	295	236	191	151	119	95
D	Van Zandt	2561	Van	Neches	311	315	321	320	320	320
D	Van Zandt	2561	Van	Sabine	212	215	218	218	218	218
D	Van Zandt	2626	Wills Point	Sabine	495	546	596	647	698	750
D	Van Zandt	2626	Wills Point	Trinity	546	602	657	713	770	828
	Van Zandt Total				**12,140**	**13,130**	**14,125**	**15,147**	**16,207**	**17,286**
D	Wood	3149	Bright Star Salem SUD	Sabine	301	330	348	389	430	471
D	Wood	6255	Cornersville WSC	Sabine	26	28	30	32	35	37
D	Wood	661	County-Other, Wood	Cypress	59	58	54	51	48	43
D	Wood	661	County-Other, Wood	Sabine	390	381	353	339	316	284
D	Wood	3157	Cypress Springs SUD	Cypress	74	78	80	85	90	94
D	Wood	3010	Fouke WSC	Sabine	783	815	837	875	913	952
D	Wood	3012	Golden WSC	Sabine	306	317	324	335	347	358
D	Wood	921	Hawkins	Sabine	354	360	364	365	367	369
D	Wood	1214	Irrigation, Wood	Cypress	65	65	65	65	65	65
D	Wood	1214	Irrigation, Wood	Sabine	460	460	460	460	460	460
D	Wood	3016	Jones WSC	Sabine	590	625	646	690	734	778
D	Wood	6388	Lake Fork WSC	Sabine	297	315	326	348	370	392
D	Wood	3015	Liberty Utilities Silverleaf Water	Sabine	704	729	743	764	785	807
D	Wood	1581	Livestock, Wood	Cypress	346	346	346	346	346	346
D	Wood	1581	Livestock, Wood	Sabine	1,324	1,324	1,324	1,324	1,324	1,324
D	Wood	1793	Manufacturing, Wood	Sabine	2,912	3,020	3,132	3,248	3,368	3,493
D	Wood	1842	Mineola	Sabine	937	979	1,007	1,058	1,109	1,161
D	Wood	2065	Mining, Wood	Sabine	347	349	351	352	353	353
D	Wood	3029	New Hope SUD	Sabine	533	528	526	507	488	471
D	Wood	2237	Pritchett WSC	Sabine	6	7	7	7	7	7
D	Wood	2243	Quitman	Sabine	345	344	344	335	328	320
D	Wood	2247	Ramey WSC	Sabine	581	664	763	876	1,006	1,155
D	Wood	2351	Sharon WSC	Cypress	160	170	176	188	201	213
D	Wood	2351	Sharon WSC	Sabine	345	365	378	405	431	458
D	Wood	6523	Shirley WSC	Sabine	17	17	17	17	17	18
D	Wood	2635	Winnsboro	Cypress	249	256	261	269	275	283
D	Wood	2635	Winnsboro	Sabine	262	270	275	282	290	297
	Wood Total				**12,773**	**13,200**	**13,537**	**14,012**	**14,503**	**15,009**
Region D Total					**389,550**	**399,025**	**407,468**	**415,054**	**422,546**	**430,678**

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DRAFT DB27 RWP Data - Water User Group (WUG) Adjusted Planning Gallons Per Capita per Day (GPCD) with Water Efficiency & Recommended Conservation Savings

WUG Primary Region	WUG Name	WUG Geographic Split Planning Regions	WUG Subtype	Baseline GPCD 2030	Water Efficiency Savings GPCD 2030	Recommended Conservation Savings GPCD 2030	Adjusted GPCD 2030	Baseline GPCD 2040	Water Efficiency Savings GPCD 2040	Recommended Conservation Savings GPCD 2040	Adjusted GPCD 2040	Baseline GPCD 2050	Water Efficiency Savings GPCD 2050	Recommended Conservation Savings GPCD 2050	Adjusted GPCD 2050	Baseline GPCD 2060	Water Efficiency Savings GPCD 2060	Recommended Conservation Savings GPCD 2060	Adjusted GPCD 2060	Baseline GPCD 2070	Water Efficiency Savings GPCD 2070	Recommended Conservation Savings GPCD 2070	Adjusted GPCD 2070	Baseline GPCD 2080	Water Efficiency Savings GPCD 2080	Recommended Conservation Savings GPCD 2080	Adjusted GPCD 2080	EntityId	EntityRwpId
C	Ables Springs SUD	C; D	Utility	60	0.00	0.68	59.32	60.00	0.00	1.04	58.96	60.00	0.00	1.23	58.77	60.00	0.00	1.40	58.60	60.00	0.00	1.51	58.49	60.00	0.00	1.78	58.22	164	155
C	Bois D Arc MUD	C; D	Utility	105	4.53	2.34	98.13	105.00	5.05	3.07	96.88	105.00	5.05	3.53	96.42	105.00	5.05	3.74	96.21	105.00	5.05	4.20	95.75	105.00	5.05	4.63	95.32	6,227	12,937
C	Frognot WSC	C; D	Utility	94	4.46	2.10	87.44	94.00	4.87	2.68	86.45	94.00	4.87	3.01	86.12	94.00	4.87	3.46	85.67	94.00	4.87	3.55	85.58	94.00	4.87	3.91	85.22	6,320	13,030
C	Josephine	C; D	Utility	192	3.76	2.74	185.50	192.00	4.14	3.59	184.27	192.00	4.14	4.41	183.45	192.00	4.14	5.03	182.83	192.00	4.14	12.55	175.31	192.00	4.14	13.76	174.10	1,242	1,140
C	Mabank	C; D	Utility	178	4.07	8.36	165.57	178.00	4.72	17.95	155.33	178.00	4.72	22.64	150.64	178.00	4.72	23.19	150.09	178.00	4.72	23.63	149.65	178.00	4.72	24.53	148.75	1,613	1,500
C	Royse City	C; D	Utility	138	4.29	6.76	126.95	138.00	4.85	12.89	120.26	138.00	4.85	12.77	120.38	138.00	4.85	11.62	121.53	138.00	4.85	11.54	121.61	138.00	4.85	10.80	122.35	2,304	2,164
C	West Leonard WSC	C; D	Utility	120	4.24	2.34	113.42	120.00	4.64	3.55	111.81	120.00	4.64	4.11	111.25	120.00	4.64	4.29	111.07	120.00	4.64	4.66	110.70	120.00	4.64	5.16	110.20	6,591	13,301
D	Ben Wheeler WSC	D; I	Utility	96	4.47	0.00	91.53	96.00	4.93	0.00	91.07	96.00	4.93	0.00	91.07	96.00	4.93	0.00	91.07	96.00	4.93	0.00	91.07	96.00	4.93	0.00	91.07	6,220	12,930
D	Caddo Basin SUD	C; D	Utility	116	4.22	0.00	111.78	116.00	4.71	0.00	111.29	116.00	4.71	0.00	111.29	116.00	4.71	0.00	111.29	116.00	4.71	0.00	111.29	116.00	4.71	0.00	111.29	317	293
D	Carroll WSC	D; I	Utility	105	4.38	0.00	100.62	105.00	4.88	0.00	100.12	105.00	4.88	0.00	100.12	105.00	4.88	0.00	100.12	105.00	4.88	0.00	100.12	105.00	4.88	0.00	100.12	6,241	12,951
D	Cash SUD	C; D	Utility	117	4.37	0.00	112.63	117.00	4.87	0.00	112.13	117.00	4.87	0.00	112.13	117.00	4.87	0.00	112.13	117.00	4.87	0.00	112.13	117.00	4.87	0.00	112.13	23	22
D	Crystal Systems Texas	D; I	Utility	291	4.70	0.00	286.30	291.00	5.23	0.00	285.77	291.00	5.23	0.00	285.77	291.00	5.23	0.00	285.77	291.00	5.23	0.00	285.77	291.00	5.23	0.00	285.77	683	637
D	Delta County MUD	C; D	Utility	93	4.00	0.00	89.00	93.00	4.00	0.00	89.00	93.00	4.00	0.00	89.00	93.00	4.00	0.00	89.00	93.00	4.00	0.00	89.00	93.00	4.00	0.00	89.00	6,267	12,977
D	Edom WSC	D; I	Utility	123	4.47	0.00	118.53	123.00	5.05	0.00	117.95	123.00	5.05	0.00	117.95	123.00	5.05	0.00	117.95	123.00	5.05	0.00	117.95	123.00	5.05	0.00	117.95	6,280	12,990
D	Elderville WSC	D; I	Utility	96	0.00	0.00	96.00	96.00	0.00	0.00	96.00	96.00	0.00	0.00	96.00	96.00	0.00	0.00	96.00	96.00	0.00	0.00	96.00	96.00	0.00	0.00	96.00	754	695
D	Elysian Fields WSC	D; I	Utility	127	3.78	0.00	123.22	127.00	4.28	0.00	122.72	127.00	4.28	0.00	122.72	127.00	4.28	0.00	122.72	127.00	4.28	0.00	122.72	127.00	4.28	0.00	122.72	10,107	21,104
D	Gill WSC	D; I	Utility	150	5.30	0.00	144.70	150.00	6.60	0.00	143.40	150.00	6.60	0.00	143.40	150.00	6.60	0.00	143.40	150.00	6.60	0.00	143.40	150.00	6.60	0.00	143.40	837	758
D	Hickory Creek SUD	C; D	Utility	149	4.47	0.00	144.53	149.00	4.96	0.00	144.04	149.00	4.96	0.00	144.04	149.00	4.96	0.00	144.04	149.00	4.96	0.00	144.04	149.00	4.96	0.00	144.04	938	841
D	Kilgore	D; I	Utility	271	5.07	0.00	265.93	271.00	5.94	0.00	265.06	271.00	5.94	0.00	265.06	271.00	5.94	0.00	265.06	271.00	5.94	0.00	265.06	271.00	5.94	0.00	265.06	1,263	1,160
D	Liberty Utilities Silverleaf Water	D; I	Utility	237	1.00	0.00	236.00	237.00	1.00	0.00	236.00	237.00	1.00	0.00	236.00	237.00	1.00	0.00	236.00	237.00	1.00	0.00	236.00	237.00	1.00	0.00	236.00	3,015	2,827
D	Lindale	D; I	Utility	213	5.35	0.00	207.65	213.00	6.24	0.00	206.76	213.00	6.24	0.00	206.76	213.00	6.24	0.00	206.76	213.00	6.24	0.00	206.76	213.00	6.24	0.00	206.76	1,324	1,213
D	Lindale Rural WSC	D; I	Utility	120	4.34	0.00	115.66	120.00	4.93	0.00	115.07	120.00	4.93	0.00	115.07	120.00	4.93	0.00	115.07	120.00	4.93	0.00	115.07	120.00	4.93	0.00	115.07	1,325	1,214
D	MacBee SUD	C; D	Utility	104	0.00	0.00	104.00	104.00	0.00	0.00	104.00	104.00	0.00	0.00	104.00	104.00	0.00	0.00	104.00	104.00	0.00	0.00	104.00	104.00	0.00	0.00	104.00	1,614	1,501
D	North Hunt SUD	C; D	Utility	130	0.00	0.00	130.00	130.00	0.00	0.00	130.00	130.00	0.00	0.00	130.00	130.00	0.00	0.00	130.00	130.00	0.00	0.00	130.00	130.00	0.00	0.00	130.00	2,980	2,792
D	Poetry WSC	C; D	Utility	109	4.43	0.00	104.57	109.00	4.86	0.00	104.14	109.00	4.86	0.00	104.14	109.00	4.86	0.00	104.14	109.00	4.86	0.00	104.14	109.00	4.86	0.00	104.14	6,489	13,199
D	R P M WSC	D; I	Utility	140	4.62	0.00	135.38	140.00	5.16	0.00	134.84	140.00	5.16	0.00	134.84	140.00	5.16	0.00	134.84	140.00	5.16	0.00	134.84	140.00	5.16	0.00	134.84	2,982	2,794
D	West Gregg SUD	D; I	Utility	96	4.45	0.00	91.55	96.00	5.01	0.00	90.99	96.00	5.01	0.00	90.99	96.00	5.01	0.00	90.99	96.00	5.01	0.00	90.99	96.00	5.01	0.00	90.99	2,991	2,803
D	Wolfe City	C; D	Utility	95	4.70	0.00	90.30	95.00	5.22	0.00	89.78	95.00	5.22	0.00	89.78	95.00	5.22	0.00	89.78	95.00	5.22	0.00	89.78	95.00	5.22	0.00	89.78	2,638	2,469
I	Bethel Ash WSC	C; D; I	Utility	92	4.59	0.47	86.94	92.00	5.14	0.45	86.41	92.00	5.14	0.44	86.42	92.00	5.14	0.42	86.44	92.00	5.14	0.41	86.45	92.00	5.14	0.39	86.47	247	235
I	Chalk Hill SUD	D; I	Utility	79	4.43	0.00	74.57	79.00	5.06	0.00	73.94	79.00	5.06	0.00	73.94	79.00	5.06	0.00	73.94	79.00	5.06	0.00	73.94	79.00	5.06	0.00	73.94	3,000	2,812
I	County-Other, Smith	D; I	County-	106	4.97	0.00	101.03	106.00	5.60	0.00	100.40	106.00	5.60	0.00	100.40	106.00	5.60	0.00	100.40	106.00	5.60	0.00	100.40	106.00	5.60	0.00	100.40	623	578
I	Cross Roads SUD	D; I	Utility	98	4.20	0.00	93.80	98.00	4.79	0.00	93.21	98.00	4.79	0.00	93.21	98.00	4.79	0.00	93.21	98.00	4.79	0.00	93.21	98.00	4.79	0.00	93.21	3,005	2,817
I	Jackson WSC	D; I	Utility	100	4.48	0.00	95.52	100.00	5.05	0.00	94.95	100.00	5.05	0.00	94.95	100.00	5.05	0.00	94.95	100.00	5.05	0.00	94.95	100.00	5.05	0.00	94.95	1,224	1,124
I	Overton	D; I	Utility	208	4.82	2.94	200.24	208.00	5.36	4.73	197.91	208.00	5.36	5.37	197.27	208.00	5.36	5.18	197.46	208.00	5.36	5.46	197.18	208.00	5.36	6.29	196.35	2,164	2,035
I	Panola-Bethany WSC	D; I	Utility	178	4.74	2.34	170.92	178.00	5.32	4.52	168.16	178.00	5.32	4.17	168.51	178.00	5.32	4.77	167.91	178.00	5.32	5.44	167.24	178.00	5.32	6.14	166.54	6,475	13,185
I	Southern Utilities	D; I	Utility	177	4.49	3.59	168.92	177.00	5.10	5.46	166.44	177.00	5.10	6.02	165.88	177.00	5.10	6.59	165.31	177.00	5.10	7.16	164.74	177.00	5.10	7.74	164.16	2,382	2,233
I	Tyler	D; I	Utility	266	4.98	5.44	255.58	266.00	5.67	8.24	252.09	266.00	5.67	9.11	251.22	266.00	5.67	9.98	250.35	266.00	5.67	10.85	249.48	266.00	5.67	11.72	248.61	144	135

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Bowie County Total	**94,952**	**94,456**	**93,769**	**92,482**	**91,181**	**89,866**
Bowie County / Red Basin Total	**17,258**	**17,270**	**17,260**	**17,145**	**17,030**	**16,926**
Burns Redbank WSC	2,344	2,490	2,644	2,810	2,985	3,171
Central Bowie County WSC	1,517	1,530	1,544	1,557	1,571	1,585
De Kalb	254	253	251	247	243	240
Hooks	2,637	2,620	2,595	2,556	2,515	2,475
New Boston	1,657	1,646	1,631	1,606	1,580	1,555
Riverbend Water Resources District	223	221	219	216	212	209
Texarkana	4,574	4,548	4,512	4,448	4,383	4,318
County-Other	4,052	3,962	3,864	3,705	3,541	3,373
Bowie County / Sulphur Basin Total	**77,694**	**77,186**	**76,509**	**75,337**	**74,151**	**72,940**
Central Bowie County WSC	8,394	8,466	8,540	8,615	8,691	8,765
De Kalb	1,144	1,136	1,127	1,111	1,095	1,079
Macedonia Eylau MUD 1	8,447	8,392	8,310	8,184	8,055	7,925
Maud	787	782	774	761	750	738
Nash	4,160	4,133	4,093	4,031	3,968	3,905
New Boston	3,726	3,701	3,666	3,609	3,553	3,495
Redwater	2,964	2,944	2,916	2,870	2,826	2,780
Riverbend Water Resources District	178	177	175	172	169	166
Texarkana	32,286	32,103	31,848	31,396	30,939	30,477
Wake Village	5,831	5,793	5,737	5,649	5,561	5,470
County-Other	9,777	9,559	9,323	8,939	8,544	8,140
Camp County Total	**12,874**	**13,015**	**13,053**	**13,162**	**13,269**	**13,378**
Camp County / Cypress Basin Total	**12,874**	**13,015**	**13,053**	**13,162**	**13,269**	**13,378**
Bi County WSC	7,377	7,459	7,480	7,542	7,605	7,669
Cypress Springs SUD	60	60	61	61	62	62
Pittsburg	3,974	4,018	4,030	4,064	4,097	4,131
Sharon WSC	33	34	34	34	31	31
County-Other	1,430	1,444	1,448	1,461	1,474	1,485
Cass County Total	**27,472**	**26,187**	**24,777**	**23,650**	**22,525**	**21,400**
Cass County / Cypress Basin Total	**23,547**	**22,527**	**21,411**	**20,538**	**19,678**	**18,831**
Atlanta	5,012	4,787	4,540	4,342	4,144	3,945
Avinger	349	332	314	300	286	270
E M C WSC	507	483	456	435	413	393
Eastern Cass WSC	3,860	4,015	4,209	4,445	4,730	5,083

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Holly Springs WSC	899	855	807	771	733	696
Hughes Springs	2,108	2,013	1,909	1,825	1,741	1,659
Linden	1,742	1,667	1,586	1,519	1,453	1,387
Mims WSC	228	218	206	197	187	178
Queen City	827	796	772	754	743	739
Western Cass WSC	2,146	2,043	1,931	1,841	1,752	1,663
County-Other	5,869	5,318	4,681	4,109	3,496	2,818
Cass County / Sulphur Basin Total	**3,925**	**3,660**	**3,366**	**3,112**	**2,847**	**2,569**
Atlanta	19	18	17	16	15	15
Eastern Cass WSC	308	320	336	355	377	406
Queen City	469	451	438	428	421	419
Western Cass WSC	766	730	690	658	626	594
County-Other	2,363	2,141	1,885	1,655	1,408	1,135
Delta County Total	**5,284**	**5,256**	**5,220**	**5,152**	**5,082**	**5,012**
Delta County / Sulphur Basin Total	**5,284**	**5,256**	**5,220**	**5,152**	**5,082**	**5,012**
Cooper	2,067	2,058	2,045	2,019	1,993	1,967
Delta County MUD*	1,915	1,941	1,968	1,994	2,021	2,048
North Hunt SUD*	204	203	201	200	196	193
County-Other	1,098	1,054	1,006	939	872	804
Franklin County Total	**10,466**	**10,398**	**10,258**	**10,335**	**10,413**	**10,490**
Franklin County / Cypress Basin Total	**5,376**	**5,345**	**5,275**	**5,318**	**5,362**	**5,407**
Cornersville WSC	33	35	39	43	47	52
Cypress Springs SUD	4,564	4,535	4,472	4,506	4,541	4,575
Winnsboro	758	754	744	749	754	760
County-Other	21	21	20	20	20	20
Franklin County / Sulphur Basin Total	**5,090**	**5,053**	**4,983**	**5,017**	**5,051**	**5,083**
Cypress Springs SUD	2,325	2,310	2,278	2,296	2,314	2,331
Mount Vernon	2,444	2,429	2,397	2,415	2,432	2,449
County-Other	321	314	308	306	305	303
Gregg County Total	**126,860**	**128,531**	**129,120**	**128,404**	**127,669**	**126,995**
Gregg County / Cypress Basin Total	**5,244**	**5,284**	**5,223**	**5,106**	**4,989**	**4,871**
East Mountain Water System	198	200	199	194	191	189
Glenwood WSC	114	115	114	112	111	109
Tryon Road SUD	4,411	4,456	4,426	4,353	4,281	4,209

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
County-Other	521	513	484	447	406	364
Gregg County / Sabine Basin Total	**121,616**	**123,247**	**123,897**	**123,298**	**122,680**	**122,124**
Chalk Hill SUD*	20	20	21	20	20	19
Clarksville City	838	846	842	828	815	800
Cross Roads SUD*	430	438	448	459	471	483
East Mountain Water System	154	156	155	152	150	147
Elderville WSC*	4,908	4,958	4,923	4,843	4,762	4,683
Gladewater	3,912	3,951	3,924	3,859	3,796	3,732
Kilgore*	10,696	10,804	10,735	10,562	10,389	10,219
Liberty City WSC	4,735	4,784	4,750	4,673	4,596	4,518
Longview	80,372	81,572	82,484	82,526	82,548	82,630
Starrville-Friendship WSC	452	456	453	446	438	431
Tryon Road SUD	1,315	1,328	1,319	1,297	1,276	1,254
West Gregg SUD*	3,413	3,559	3,728	3,912	4,109	4,319
White Oak	6,421	6,486	6,441	6,335	6,230	6,125
County-Other	3,950	3,889	3,674	3,386	3,080	2,764
Harrison County Total	**71,617**	**73,196**	**73,568**	**73,623**	**73,688**	**73,681**
Harrison County / Cypress Basin Total	**26,499**	**26,849**	**26,936**	**26,589**	**26,246**	**25,915**
Blocker Crossroads WSC	156	160	161	162	163	164
Cypress Valley WSC	1,496	1,542	1,550	1,563	1,575	1,588
Diana SUD	394	411	413	423	432	440
Gum Springs WSC	2,476	2,680	2,711	2,897	3,079	3,254
Harleton WSC	3,456	3,577	3,597	3,649	3,701	3,751
Leigh WSC	1,476	1,326	1,307	1,073	847	627
Marshall	4,146	4,060	4,052	3,822	3,598	3,381
North Harrison WSC	1,453	1,522	1,533	1,575	1,616	1,655
Panola-Bethany WSC*	159	129	105	86	70	57
Scottsville	396	439	446	489	531	571
Talley WSC	1,098	1,118	1,122	1,115	1,107	1,100
Tryon Road SUD	2,031	2,473	2,535	3,037	3,523	3,997
Waskom	2,023	1,886	1,869	1,637	1,412	1,193
West Harrison WSC	405	459	467	523	578	631
County-Other	5,334	5,067	5,068	4,538	4,014	3,506
Harrison County / Sabine Basin Total	**45,118**	**46,347**	**46,632**	**47,034**	**47,442**	**47,766**
Blocker Crossroads WSC	1,416	1,456	1,462	1,470	1,478	1,485

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Elysian Fields WSC*	1,197	1,391	1,419	1,629	1,834	2,032
Gill WSC*	1,246	1,242	1,242	1,200	1,160	1,120
Gum Springs WSC	7,954	8,610	8,708	9,308	9,889	10,453
Hallsville	4,575	4,925	4,980	5,291	5,594	5,887
Longview	2,743	3,046	3,169	3,618	4,071	4,441
Marshall	19,187	18,785	18,753	17,687	16,652	15,645
Panola-Bethany WSC*	261	212	173	141	114	93
Scottsville	912	1,011	1,026	1,126	1,222	1,316
Talley WSC	785	799	802	797	792	787
West Harrison WSC	1,471	1,667	1,695	1,899	2,098	2,290
County-Other	3,371	3,203	3,203	2,868	2,538	2,217
Hopkins County Total	**42,832**	**44,267**	**45,327**	**46,304**	**47,242**	**48,242**
Hopkins County / Cypress Basin Total	**868**	**907**	**925**	**948**	**972**	**996**
Cornersville WSC	430	448	457	468	479	490
Cypress Springs SUD	438	459	468	480	493	506
Hopkins County / Sabine Basin Total	**9,659**	**10,027**	**10,270**	**10,543**	**10,770**	**11,054**
Brashear WSC	503	542	549	568	589	609
Cash SUD*	212	246	273	336	351	419
Como	609	608	608	608	608	608
Cornersville WSC	444	462	472	482	494	507
Cumby	658	640	665	663	659	656
Jones WSC	83	81	84	84	84	84
Lake Fork WSC	135	141	144	147	150	153
Martin Springs WSC	2,588	2,673	2,735	2,791	2,847	2,903
Miller Grove WSC	1,152	1,208	1,232	1,264	1,297	1,330
Shady Grove No 2 WSC	363	390	395	409	423	437
Shirley WSC	1,738	1,827	1,861	1,913	1,964	2,017
County-Other	1,174	1,209	1,252	1,278	1,304	1,331
Hopkins County / Sulphur Basin Total	**32,305**	**33,333**	**34,132**	**34,813**	**35,500**	**36,192**
Brashear WSC	492	530	537	556	576	596
Brinker WSC	2,591	2,753	2,799	2,886	2,976	3,066
Como	168	168	168	168	168	168
Cornersville WSC	53	55	56	58	59	60
Cumby	78	76	78	78	78	77
Cypress Springs SUD	683	718	732	751	771	791

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Gafford Chapel WSC	1,090	1,120	1,149	1,169	1,191	1,213
Martin Springs WSC	528	545	558	569	580	592
North Hopkins WSC	9,220	9,591	9,799	10,026	10,254	10,486
Shady Grove No 2 WSC	300	322	327	338	350	362
Sulphur Springs	16,070	16,393	16,829	17,091	17,350	17,611
County-Other	1,032	1,062	1,100	1,123	1,147	1,170
Hunt County Total	**141,169**	**154,138**	**167,439**	**176,811**	**183,183**	**193,165**
Hunt County / Sabine Basin Total	**124,151**	**136,909**	**150,021**	**159,423**	**165,852**	**175,925**
Ables Springs SUD*	619	670	715	753	792	830
B H P WSC	6,056	7,047	7,913	8,719	9,533	10,352
Caddo Basin SUD*	15,886	14,328	16,734	17,259	17,109	18,651
Caddo Mills	1,083	1,103	1,123	1,143	1,165	1,186
Cash SUD*	19,404	22,046	24,600	26,370	26,351	27,704
Celeste	826	870	908	937	967	996
Combined Consumers SUD	5,518	5,756	5,971	6,118	6,270	6,424
Greenville	54,617	61,479	65,416	68,708	72,042	75,417
Hickory Creek SUD*	1,633	1,872	2,146	2,461	2,821	3,234
Josephine*	155	180	204	225	245	267
MacBee SUD*	316	330	341	350	358	366
Poetry WSC*	2,011	2,306	2,547	2,719	2,267	2,281
Quinlan	1,785	1,936	2,071	2,184	2,299	2,416
Royse City*	4,136	5,910	7,450	8,967	10,495	12,034
Shady Grove SUD	1,628	2,074	2,643	3,369	4,293	5,471
West Tawakoni	2,874	3,165	3,420	3,643	3,870	4,098
County-Other	5,604	5,837	5,819	5,498	4,975	4,198
Hunt County / Sulphur Basin Total	**16,220**	**16,312**	**16,367**	**16,183**	**15,954**	**15,665**
Commerce	6,332	6,137	5,977	5,732	5,489	5,248
Hickory Creek SUD*	1,128	1,293	1,483	1,700	1,949	2,234
North Hunt SUD*	2,350	2,306	2,273	2,208	2,144	2,082
Shady Grove SUD	104	133	170	216	276	351
Texas A&M University Commerce	2,125	2,125	2,125	2,125	2,125	2,125
Wolfe City*	1,610	1,640	1,669	1,679	1,688	1,699
County-Other	2,571	2,678	2,670	2,523	2,283	1,926
Hunt County / Trinity Basin Total	**798**	**917**	**1,051**	**1,205**	**1,377**	**1,575**
Frognot WSC*	23	29	34	40	45	52

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Hickory Creek SUD*	738	846	970	1,112	1,275	1,462
West Leonard WSC*	36	41	46	52	56	60
County-Other	1	1	1	1	1	1
Lamar County Total	**51,278**	**51,417**	**51,179**	**50,940**	**50,700**	**50,460**
Lamar County / Red Basin Total	**23,555**	**23,618**	**23,507**	**23,400**	**23,289**	**23,179**
Bois D Arc MUD*	16	16	16	16	16	16
Lamar County WSD	12,587	12,621	12,559	12,503	12,445	12,387
Paris	10,537	10,566	10,519	10,469	10,418	10,368
Reno (Lamar)	182	182	181	181	180	179
County-Other	233	233	232	231	230	229
Lamar County / Sulphur Basin Total	**27,723**	**27,799**	**27,672**	**27,540**	**27,411**	**27,281**
Blossom	1,385	1,389	1,382	1,376	1,370	1,364
Lamar County WSD	5,005	5,019	4,994	4,971	4,949	4,926
Paris	16,301	16,347	16,274	16,197	16,119	16,041
Reno (Lamar)	2,572	2,580	2,568	2,555	2,543	2,532
County-Other	2,460	2,464	2,454	2,441	2,430	2,418
Marion County Total	**9,244**	**8,630**	**7,950**	**7,495**	**7,041**	**6,587**
Marion County / Cypress Basin Total	**9,244**	**8,630**	**7,950**	**7,495**	**7,041**	**6,587**
Diana SUD	507	425	362	302	255	214
E M C WSC	1,752	1,572	1,361	1,226	1,086	939
Harleton WSC	790	677	543	456	366	271
Jefferson	1,676	1,564	1,443	1,360	1,277	1,196
Kellyville-Berea WSC	977	956	939	924	913	906
Mims WSC	1,867	1,936	2,042	2,100	2,170	2,259
Ore City	109	139	181	207	235	265
County-Other	1,566	1,361	1,079	920	739	537
Morris County Total	**12,076**	**11,775**	**11,342**	**11,042**	**10,718**	**10,342**
Morris County / Cypress Basin Total	**10,217**	**9,940**	**9,529**	**9,251**	**8,947**	**8,589**
Bi County WSC	1,420	1,292	1,143	1,046	949	848
Daingerfield	2,179	2,239	2,318	2,358	2,400	2,445
Holly Springs WSC	627	565	496	450	404	357
Lone Star	1,294	1,195	1,083	1,010	936	860
Naples	715	710	707	702	698	693
Omaha	561	547	535	524	513	503

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Tri SUD	1,730	1,719	1,596	1,527	1,429	1,281
Western Cass WSC	58	57	57	56	56	55
County-Other	1,633	1,616	1,594	1,578	1,562	1,547
Morris County / Sulphur Basin Total	**1,859**	**1,835**	**1,813**	**1,791**	**1,771**	**1,753**
Naples	684	679	676	670	666	663
Omaha	440	430	419	411	402	394
Western Cass WSC	105	103	103	102	101	100
County-Other	630	623	615	608	602	596
Rains County Total	**13,570**	**14,398**	**15,177**	**16,172**	**17,133**	**18,137**
Rains County / Sabine Basin Total	**13,570**	**14,398**	**15,177**	**16,172**	**17,133**	**18,137**
Bright Star Salem SUD	2,430	2,609	2,741	2,929	3,122	3,317
Cash SUD*	917	1,010	1,196	1,472	1,707	1,978
East Tawakoni	817	826	846	842	836	829
Emory	1,745	1,780	1,831	1,844	1,856	1,865
Golden WSC	45	51	58	58	58	58
Miller Grove WSC	232	250	263	284	304	324
Point	1,092	1,112	1,142	1,147	1,150	1,152
Shirley WSC	821	893	943	1,021	1,102	1,183
South Rains SUD	2,797	3,007	3,160	3,381	3,606	3,836
County-Other	2,674	2,860	2,997	3,194	3,392	3,595
Red River County Total	**10,868**	**10,029**	**9,214**	**8,548**	**7,882**	**7,216**
Red River County / Red Basin Total	**2,252**	**2,106**	**1,969**	**1,856**	**1,745**	**1,638**
410 WSC	588	559	532	509	487	465
Red River County WSC	1,295	1,226	1,179	1,149	1,141	1,164
County-Other	369	321	258	198	117	9
Red River County / Sulphur Basin Total	**8,616**	**7,923**	**7,245**	**6,692**	**6,137**	**5,578**
410 WSC	768	729	694	665	636	608
Bogata	892	841	795	755	717	679
Clarksville	2,483	2,198	1,906	1,677	1,442	1,206
Red River County WSC	3,371	3,192	3,067	2,990	2,969	3,029
Talco	21	23	26	26	28	29
County-Other	1,081	940	757	579	345	27

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Smith County Total	**48,406**	**51,319**	**53,377**	**54,771**	**56,186**	**57,610**
Smith County / Sabine Basin Total	**48,406**	**51,319**	**53,377**	**54,771**	**56,186**	**57,610**
Carroll WSC*	428	446	456	461	465	470
Crystal Systems Texas*	4,643	4,848	4,994	5,070	5,150	5,232
East Texas MUD	2,934	3,414	3,750	4,062	4,376	4,690
Jackson WSC*	1,635	1,765	1,857	1,928	2,001	2,072
Liberty City WSC	206	231	249	266	281	297
Lindale Rural WSC*	10,049	11,096	11,830	12,454	13,080	13,707
Lindale*	3,717	3,838	3,925	3,954	3,985	4,018
Overton*	134	142	150	154	159	163
Pine Ridge WSC	1,617	1,809	1,944	2,062	2,181	2,299
Sand Flat WSC	4,067	4,217	4,325	4,370	4,419	4,468
Southern Utilities*	11,353	11,974	12,412	12,693	12,978	13,267
Star Mountain WSC	1,380	1,452	1,505	1,536	1,568	1,601
Starrville-Friendship WSC	1,113	1,108	1,106	1,085	1,064	1,044
Tyler*	796	718	666	594	524	456
West Gregg SUD*	1,012	1,072	1,114	1,143	1,171	1,200
Winona	597	660	704	743	781	818
County-Other*	2,725	2,529	2,390	2,196	2,003	1,808
Titus County Total	**36,045**	**38,565**	**40,257**	**41,949**	**43,552**	**45,080**
Titus County / Cypress Basin Total	**28,183**	**30,012**	**31,307**	**32,558**	**33,772**	**34,957**
Bi County WSC	525	644	829	971	1,128	1,305
Cypress Springs SUD	258	303	367	418	474	537
Mount Pleasant	15,777	16,202	16,449	16,654	16,880	17,129
Tri SUD	11,147	12,429	13,311	14,228	15,072	15,848
County-Other	476	434	351	287	218	138
Titus County / Sulphur Basin Total	**7,862**	**8,553**	**8,950**	**9,391**	**9,780**	**10,123**
Cypress Springs SUD	187	219	266	302	343	388
Talco	563	561	541	527	509	492
Tri SUD	6,344	7,073	7,575	8,098	8,577	9,020
County-Other	768	700	568	464	351	223
Upshur County Total	**42,212**	**42,590**	**42,433**	**41,825**	**41,214**	**40,591**
Upshur County / Cypress Basin Total	**28,545**	**28,936**	**28,992**	**28,781**	**28,579**	**28,391**
Bi County WSC	4,695	4,737	4,720	4,652	4,583	4,515
Diana SUD	5,393	5,914	6,485	7,112	7,799	8,553

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
East Mountain Water System	292	295	294	289	285	281
Gilmer	5,176	5,223	5,205	5,130	5,056	4,979
Glenwood WSC	2,694	2,719	2,707	2,669	2,630	2,590
Ore City	1,366	1,378	1,372	1,354	1,334	1,313
Pritchett WSC	2,160	2,180	2,171	2,140	2,109	2,077
Sharon WSC	2,009	2,027	2,019	1,991	1,962	1,933
Union Grove WSC	61	62	61	61	60	59
County-Other	4,699	4,401	3,958	3,383	2,761	2,091
Upshur County / Sabine Basin Total	**13,667**	**13,654**	**13,441**	**13,044**	**12,635**	**12,200**
Big Sandy	1,124	1,135	1,131	1,114	1,097	1,081
East Mountain Water System	1,132	1,142	1,138	1,122	1,106	1,089
Fouke WSC	73	73	73	72	72	72
Gladewater	2,416	2,437	2,429	2,393	2,359	2,323
Glenwood WSC	55	55	55	54	53	53
Pritchett WSC	5,274	5,320	5,301	5,224	5,149	5,070
Union Grove WSC	1,769	1,784	1,778	1,752	1,727	1,701
County-Other	1,824	1,708	1,536	1,313	1,072	811
Van Zandt County Total	**67,646**	**75,479**	**82,956**	**90,698**	**98,528**	**106,444**
Van Zandt County / Neches Basin Total	**15,055**	**16,579**	**17,817**	**18,894**	**19,724**	**20,280**
Ben Wheeler WSC*	2,836	3,237	3,620	4,029	4,444	4,861
Bethel Ash WSC*	1,368	1,505	1,637	1,769	1,902	2,039
Carroll WSC*	4	4	5	5	6	6
Edom WSC*	1,009	1,027	1,043	1,041	1,040	1,040
Little Hope Moore WSC	473	494	514	528	543	558
R P M WSC*	1,612	1,597	1,584	1,530	1,478	1,430
Van	1,952	1,987	2,020	2,015	2,014	2,016
County-Other	5,801	6,728	7,394	7,977	8,297	8,330
Van Zandt County / Sabine Basin Total	**35,838**	**39,085**	**42,278**	**45,544**	**48,964**	**52,482**
Ables Springs SUD*	35	37	39	42	44	46
Canton	5,415	6,041	6,673	7,298	7,982	8,644
Carroll WSC*	511	583	650	724	797	871
Combined Consumers SUD	1,116	1,175	1,231	1,278	1,324	1,371
Edgewood	1,536	1,585	1,632	1,654	1,678	1,707
Fruitvale WSC	3,467	3,794	4,107	4,416	4,730	5,049
Golden WSC	732	821	907	997	1,087	1,179

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Grand Saline	3,404	3,469	3,530	3,529	3,533	3,541
Little Hope Moore WSC	1,005	1,051	1,093	1,123	1,155	1,187
MacBee SUD*	3,304	4,088	5,058	6,258	7,744	9,581
Myrtle Springs WSC	969	1,194	1,409	1,654	1,900	2,146
Pine Ridge WSC	350	449	545	654	763	874
Pruitt Sandflat WSC	1,151	1,152	1,153	1,128	1,105	1,083
South Tawakoni WSC	2,619	2,114	1,709	1,348	1,067	846
Van	1,328	1,351	1,373	1,371	1,370	1,371
Wills Point	2,518	2,786	3,041	3,301	3,564	3,830
County-Other	6,378	7,395	8,128	8,769	9,121	9,156
Van Zandt County / Trinity Basin Total	**16,753**	**19,815**	**22,861**	**26,260**	**29,840**	**33,682**
Bethel Ash WSC*	352	387	420	454	489	524
Mabank*	330	371	410	451	493	536
MacBee SUD*	5,078	6,283	7,773	9,618	11,900	14,724
Myrtle Springs WSC	2,406	2,965	3,499	4,109	4,719	5,333
Wills Point	2,777	3,071	3,354	3,639	3,929	4,222
County-Other	5,810	6,738	7,405	7,989	8,310	8,343
Wood County Total	**48,562**	**50,809**	**52,132**	**54,488**	**56,874**	**59,285**
Wood County / Cypress Basin Total	**3,766**	**3,913**	**3,959**	**4,108**	**4,243**	**4,365**
Cypress Springs SUD	462	487	502	532	561	591
Sharon WSC	1,398	1,488	1,541	1,649	1,757	1,866
Winnsboro	1,257	1,299	1,324	1,359	1,395	1,432
County-Other	649	639	592	568	530	476
Wood County / Sabine Basin Total	**44,796**	**46,896**	**48,173**	**50,380**	**52,631**	**54,920**
Bright Star Salem SUD	1,797	1,979	2,087	2,333	2,579	2,823
Cornersville WSC	251	270	289	310	332	357
Fouke WSC	5,904	6,178	6,340	6,628	6,919	7,214
Golden WSC	2,747	2,854	2,918	3,019	3,123	3,229
Hawkins	1,334	1,358	1,373	1,378	1,385	1,393
Jones WSC	4,201	4,464	4,618	4,931	5,247	5,562
Lake Fork WSC	2,005	2,131	2,206	2,355	2,507	2,658
Liberty Utilities Silverleaf Water*	2,664	2,757	2,810	2,889	2,971	3,054
Mineola	6,281	6,595	6,779	7,122	7,468	7,817
New Hope SUD	2,984	2,966	2,954	2,847	2,743	2,644
Pritchett WSC	54	57	58	59	61	63

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Quitman	2,214	2,216	2,217	2,162	2,112	2,065
Ramey WSC	3,637	4,176	4,795	5,506	6,322	7,259
Sharon WSC	3,008	3,201	3,315	3,548	3,781	4,016
Shirley WSC	119	121	122	124	125	127
Winnsboro	1,322	1,366	1,391	1,429	1,466	1,506
County-Other	4,274	4,207	3,901	3,740	3,490	3,133
Region D Population Total	**873,433**	**904,455**	**928,548**	**947,851**	**964,080**	**983,981**

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Bowie County Total	**29,111**	**28,929**	**28,809**	**28,611**	**28,489**	**28,409**
Bowie County / Red Basin Total	**11,068**	**11,024**	**10,996**	**10,957**	**10,947**	**10,951**
Burns Redbank WSC	260	274	291	310	329	349
Central Bowie County WSC	118	118	119	120	121	122
De Kalb	48	48	47	47	46	45
Hooks	317	313	310	305	301	296
New Boston	403	399	396	389	383	377
Riverbend Water Resources District	211	209	206	203	200	196
Texarkana	840	832	825	813	802	790
County-Other	468	455	444	425	407	387
Manufacturing	295	306	317	329	341	354
Mining	753	760	794	823	846	864
Livestock	487	442	379	325	303	303
Irrigation	6,868	6,868	6,868	6,868	6,868	6,868
Bowie County / Sulphur Basin Total	**18,043**	**17,905**	**17,813**	**17,654**	**17,542**	**17,458**
Central Bowie County WSC	651	651	657	663	669	675
De Kalb	218	215	214	210	208	205
Macedonia Eylau MUD 1	710	705	698	688	677	666
Maud	164	162	161	158	156	153
Nash	314	309	306	302	297	292
New Boston	906	898	889	876	862	848
Redwater	403	399	395	389	383	377
Riverbend Water Resources District	169	166	165	162	159	157
Texarkana	5,929	5,870	5,824	5,741	5,657	5,572
Wake Village	649	641	635	625	615	605
County-Other	1,129	1,098	1,070	1,027	981	935
Manufacturing	1,540	1,597	1,657	1,718	1,782	1,848
Mining	1,228	1,238	1,294	1,341	1,379	1,408
Livestock	834	757	649	555	518	518
Irrigation	3,199	3,199	3,199	3,199	3,199	3,199
Camp County Total	**3,080**	**3,092**	**3,098**	**3,113**	**3,129**	**3,145**
Camp County / Cypress Basin Total	**3,080**	**3,092**	**3,098**	**3,113**	**3,129**	**3,145**
Bi County WSC	632	634	636	641	647	652
Cypress Springs SUD	10	10	10	10	10	10
Pittsburg	841	848	850	857	864	872
Sharon WSC	4	4	4	4	4	4

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	96	97	97	98	99	100
Manufacturing	44	46	48	50	52	54
Livestock	1,448	1,448	1,448	1,448	1,448	1,448
Irrigation	5	5	5	5	5	5
Cass County Total	**40,437**	**41,597**	**42,807**	**44,102**	**45,453**	**46,858**
Cass County / Cypress Basin Total	**3,790**	**3,641**	**3,491**	**3,372**	**3,257**	**3,139**
Atlanta	977	931	882	844	805	766
Avinger	100	95	90	86	82	77
E M C WSC	37	36	34	32	31	29
Eastern Cass WSC	282	291	305	321	343	368
Holly Springs WSC	75	71	67	64	61	58
Hughes Springs	378	360	341	326	311	296
Linden	347	331	315	302	289	276
Mims WSC	15	14	14	13	12	12
Queen City	153	147	142	139	137	136
Western Cass WSC	209	197	186	178	169	161
County-Other	497	447	394	345	294	237
Manufacturing	14	15	15	16	17	17
Mining	35	35	35	35	35	35
Livestock	671	671	671	671	671	671
Cass County / Sulphur Basin Total	**36,647**	**37,956**	**39,316**	**40,730**	**42,196**	**43,719**
Atlanta	4	3	3	3	3	3
Eastern Cass WSC	23	23	24	26	27	29
Queen City	87	83	81	79	77	77
Western Cass WSC	74	71	67	63	60	57
County-Other	200	180	158	139	118	95
Manufacturing	36,138	37,475	38,862	40,299	41,790	43,337
Livestock	121	121	121	121	121	121
Delta County Total	**4,319**	**4,316**	**4,311**	**4,303**	**4,295**	**4,286**
Delta County / Sulphur Basin Total	**4,319**	**4,316**	**4,311**	**4,303**	**4,295**	**4,286**
Cooper	464	461	458	452	446	440
Delta County MUD*	191	194	196	199	201	204
North Hunt SUD*	30	30	29	29	29	28
County-Other	74	71	68	63	59	54
Livestock	511	511	511	511	511	511

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Irrigation	3,049	3,049	3,049	3,049	3,049	3,049
Franklin County Total	**3,293**	**3,273**	**3,249**	**3,261**	**3,275**	**3,286**
Franklin County / Cypress Basin Total	**1,550**	**1,542**	**1,530**	**1,536**	**1,544**	**1,550**
Cornersville WSC	3	4	4	4	5	5
Cypress Springs SUD	732	724	714	719	725	730
Winnsboro	150	149	147	148	149	150
County-Other	4	4	4	4	4	4
Livestock	615	615	615	615	615	615
Irrigation	46	46	46	46	46	46
Franklin County / Sabine Basin Total	**46**	**46**	**46**	**46**	**46**	**46**
Irrigation	46	46	46	46	46	46
Franklin County / Sulphur Basin Total	**1,697**	**1,685**	**1,673**	**1,679**	**1,685**	**1,690**
Cypress Springs SUD	373	369	364	367	369	372
Mount Vernon	481	475	469	472	476	479
County-Other	58	56	55	55	55	54
Livestock	739	739	739	739	739	739
Irrigation	46	46	46	46	46	46
Gregg County Total	**35,503**	**35,898**	**36,144**	**36,051**	**35,953**	**35,877**
Gregg County / Cypress Basin Total	**878**	**882**	**873**	**855**	**836**	**819**
East Mountain Water System	52	52	52	51	50	49
Glenwood WSC	14	14	14	14	13	13
Tryon Road SUD	710	715	710	698	686	675
County-Other	65	64	60	55	50	45
Mining	10	10	10	10	10	10
Livestock	27	27	27	27	27	27
Gregg County / Sabine Basin Total	**34,625**	**35,016**	**35,271**	**35,196**	**35,117**	**35,058**
Chalk Hill SUD*	2	2	2	2	2	2
Clarksville City	126	126	126	124	122	120
Cross Roads SUD*	45	46	47	48	49	50
East Mountain Water System	40	41	41	40	39	39
Elderville WSC*	528	533	529	521	512	504
Gladewater	851	856	850	836	823	809
Kilgore*	3,186	3,208	3,187	3,136	3,085	3,034

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Liberty City WSC	543	544	540	531	523	514
Longview	22,779	23,053	23,311	23,323	23,329	23,352
Starrville-Friendship WSC	64	64	64	63	62	61
Tryon Road SUD	212	213	212	208	205	201
West Gregg SUD*	350	363	380	399	419	440
White Oak	2,656	2,678	2,659	2,616	2,572	2,529
County-Other	494	482	456	420	382	343
Manufacturing	1,552	1,610	1,670	1,732	1,796	1,863
Mining	72	72	72	72	72	72
Steam Electric Power	940	940	940	940	940	940
Livestock	152	152	152	152	152	152
Irrigation	33	33	33	33	33	33
Harrison County Total	**64,682**	**65,873**	**66,970**	**68,058**	**69,194**	**70,307**
Harrison County / Cypress Basin Total	**5,188**	**5,221**	**5,247**	**5,200**	**5,160**	**5,095**
Blocker Crossroads WSC	15	15	15	15	16	16
Cypress Valley WSC	162	165	166	168	169	170
Diana SUD	38	39	39	40	41	42
Gum Springs WSC	398	429	434	464	493	521
Harleton WSC	284	292	293	298	302	306
Leigh WSC	399	357	352	289	228	169
Marshall	827	807	806	760	716	673
North Harrison WSC	163	170	171	175	180	184
Panola-Bethany WSC*	31	25	20	17	14	11
Scottsville	102	113	115	126	137	147
Talley WSC	75	76	76	76	75	75
Tryon Road SUD	327	397	407	487	565	641
Waskom	288	268	265	232	200	169
West Harrison WSC	42	47	48	54	60	65
County-Other	604	570	570	510	452	394
Manufacturing	12	12	13	13	14	14
Mining	732	732	732	732	732	732
Livestock	353	371	389	408	430	430
Irrigation	336	336	336	336	336	336
Harrison County / Sabine Basin Total	**59,494**	**60,652**	**61,723**	**62,858**	**64,034**	**65,212**
Blocker Crossroads WSC	137	139	140	141	141	142
Elysian Fields WSC*	165	191	195	224	252	279

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Gill WSC*	202	200	200	193	186	180
Gum Springs WSC	1,279	1,380	1,396	1,492	1,585	1,675
Hallsville	653	701	708	753	796	837
Longview	777	861	896	1,022	1,151	1,255
Marshall	3,829	3,737	3,730	3,518	3,312	3,112
Panola-Bethany WSC*	51	41	34	27	22	18
Scottsville	236	261	264	290	315	339
Talley WSC	54	54	55	54	54	53
West Harrison WSC	153	172	175	196	216	236
County-Other	382	360	360	323	285	249
Manufacturing	25,974	26,940	27,941	28,980	30,057	31,175
Mining	1,959	1,959	1,959	1,959	1,959	1,959
Steam Electric Power	23,145	23,145	23,145	23,145	23,145	23,145
Livestock	274	287	301	317	334	334
Irrigation	224	224	224	224	224	224
Hopkins County Total	**16,394**	**16,631**	**16,849**	**17,050**	**17,244**	**17,449**
Hopkins County / Cypress Basin Total	**432**	**436**	**439**	**443**	**446**	**449**
Cornersville WSC	45	46	47	49	50	51
Cypress Springs SUD	70	73	75	77	79	81
Livestock	308	308	308	308	308	308
Irrigation	9	9	9	9	9	9
Hopkins County / Sabine Basin Total	**2,839**	**2,887**	**2,922**	**2,962**	**2,995**	**3,037**
Brashear WSC	106	114	115	119	124	128
Cash SUD*	27	31	34	42	44	53
Como	88	87	87	87	87	87
Cornersville WSC	46	48	49	50	51	53
Cumby	88	85	89	89	88	87
Jones WSC	12	11	12	12	12	12
Lake Fork WSC	20	21	21	22	22	23
Martin Springs WSC	399	410	420	428	437	445
Miller Grove WSC	193	202	206	211	217	222
Shady Grove No 2 WSC	64	68	69	72	74	77
Shirley WSC	243	254	259	266	273	280
County-Other	134	137	142	145	147	151
Mining	2	2	2	2	2	2
Livestock	1,293	1,293	1,293	1,293	1,293	1,293

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Irrigation	124	124	124	124	124	124
Hopkins County / Sulphur Basin Total	**13,123**	**13,308**	**13,488**	**13,645**	**13,803**	**13,963**
Brashear WSC	104	111	113	117	121	125
Brinker WSC	425	450	458	472	487	501
Como	24	24	24	24	24	24
Cornersville WSC	6	6	6	6	6	6
Cumby	10	10	10	10	10	10
Cypress Springs SUD	110	115	117	120	123	126
Gafford Chapel WSC	130	133	136	139	141	144
Martin Springs WSC	81	83	85	87	89	91
North Hopkins WSC	1,152	1,192	1,218	1,246	1,275	1,304
Shady Grove No 2 WSC	53	57	57	59	61	63
Sulphur Springs	3,440	3,497	3,590	3,646	3,701	3,757
County-Other	117	120	124	127	130	132
Manufacturing	1,042	1,081	1,121	1,163	1,206	1,251
Livestock	2,652	2,652	2,652	2,652	2,652	2,652
Irrigation	3,777	3,777	3,777	3,777	3,777	3,777
Hunt County Total	**33,739**	**36,860**	**39,444**	**41,384**	**42,959**	**44,993**
Hunt County / Sabine Basin Total	**30,117**	**33,237**	**35,809**	**37,771**	**39,372**	**41,432**
Ables Springs SUD*	42	45	48	51	53	56
B H P WSC	568	656	736	811	887	963
Caddo Basin SUD*	1,989	1,786	2,086	2,152	2,133	2,325
Caddo Mills	153	155	158	161	164	167
Cash SUD*	2,448	2,769	3,090	3,312	3,310	3,480
Celeste	109	114	119	123	127	130
Combined Consumers SUD	726	754	783	802	822	842
Greenville	19,410	21,807	23,203	24,371	25,554	26,751
Hickory Creek SUD*	265	302	347	398	455	522
Josephine*	33	38	43	47	52	56
MacBee SUD*	37	38	40	41	42	43
Poetry WSC*	236	269	297	317	264	266
Quinlan	240	258	276	292	307	322
Royse City*	619	881	1,111	1,337	1,565	1,795
Shady Grove SUD	164	207	263	335	428	545
West Tawakoni	323	354	383	408	433	459

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	675	700	697	659	596	503
Manufacturing	635	659	684	709	735	762
Steam Electric Power	373	373	373	373	373	373
Livestock	835	835	835	835	835	835
Irrigation	237	237	237	237	237	237
Hunt County / Sulphur Basin Total	**3,438**	**3,421**	**3,412**	**3,365**	**3,312**	**3,254**
Commerce	1,590	1,537	1,497	1,436	1,375	1,314
Hickory Creek SUD*	182	209	239	274	314	360
North Hunt SUD*	342	336	331	322	312	303
Shady Grove SUD	10	13	17	22	27	35
Texas A&M University Commerce	433	432	432	432	432	432
Wolfe City*	163	165	168	169	170	171
County-Other	310	321	320	302	274	231
Livestock	339	339	339	339	339	339
Irrigation	69	69	69	69	69	69
Hunt County / Trinity Basin Total	**184**	**202**	**223**	**248**	**275**	**307**
Frognot WSC*	2	3	3	4	4	5
Hickory Creek SUD*	119	136	156	179	206	236
West Leonard WSC*	5	5	6	7	7	8
County-Other	0	0	0	0	0	0
Livestock	48	48	48	48	48	48
Irrigation	10	10	10	10	10	10
Lamar County Total	**28,486**	**28,673**	**28,852**	**29,036**	**29,231**	**29,433**
Lamar County / Red Basin Total	**11,790**	**11,829**	**11,858**	**11,891**	**11,926**	**11,961**
Bois D Arc MUD*	2	2	2	2	2	2
Lamar County WSD	2,079	2,077	2,067	2,058	2,048	2,038
Paris	1,452	1,448	1,441	1,434	1,427	1,420
Reno (Lamar)	27	26	26	26	26	26
County-Other	35	35	34	34	34	34
Manufacturing	1,231	1,277	1,324	1,373	1,425	1,477
Steam Electric Power	386	386	386	386	386	386
Livestock	579	579	579	579	579	579
Irrigation	5,999	5,999	5,999	5,999	5,999	5,999

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Lamar County / Sulphur Basin Total	**16,696**	**16,844**	**16,994**	**17,145**	**17,305**	**17,472**
Blossom	137	136	136	135	134	134
Lamar County WSD	827	826	822	818	814	811
Paris	2,246	2,239	2,230	2,219	2,209	2,198
Reno (Lamar)	375	375	373	371	370	368
County-Other	367	365	364	362	361	359
Manufacturing	4,279	4,438	4,604	4,775	4,952	5,137
Steam Electric Power	5,320	5,320	5,320	5,320	5,320	5,320
Livestock	1,049	1,049	1,049	1,049	1,049	1,049
Irrigation	2,096	2,096	2,096	2,096	2,096	2,096
Marion County Total	**5,661**	**5,595**	**5,529**	**5,486**	**5,442**	**5,399**
Marion County / Cypress Basin Total	**5,661**	**5,595**	**5,529**	**5,486**	**5,442**	**5,399**
Diana SUD	49	40	34	29	24	20
E M C WSC	130	116	101	91	80	69
Harleton WSC	65	55	44	37	30	22
Jefferson	443	412	380	358	336	315
Kellyville-Berea WSC	125	122	119	117	116	115
Mims WSC	123	128	135	139	143	149
Ore City	15	19	25	29	33	37
County-Other	105	91	73	62	50	36
Manufacturing	151	157	163	169	175	181
Mining	24	24	24	24	24	24
Steam Electric Power	4,257	4,257	4,257	4,257	4,257	4,257
Livestock	169	169	169	169	169	169
Irrigation	5	5	5	5	5	5
Morris County Total	**29,856**	**30,845**	**31,863**	**32,935**	**34,046**	**35,193**
Morris County / Cypress Basin Total	**29,394**	**30,387**	**31,408**	**32,483**	**33,596**	**34,745**
Bi County WSC	122	110	97	89	81	72
Daingerfield	452	463	479	487	496	505
Holly Springs WSC	52	47	41	37	33	30
Lone Star	206	190	172	160	149	136
Naples	93	92	92	91	91	90
Omaha	87	85	82	81	79	77
Tri SUD	200	198	183	175	164	147
Western Cass WSC	6	5	5	5	5	5
County-Other	191	187	184	183	180	179

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Manufacturing	27,561	28,586	29,649	30,751	31,894	33,080
Steam Electric Power	50	50	50	50	50	50
Livestock	371	371	371	371	371	371
Irrigation	3	3	3	3	3	3
Morris County / Sulphur Basin Total	**462**	**458**	**455**	**452**	**450**	**448**
Naples	89	88	87	87	86	86
Omaha	68	66	65	63	62	61
Western Cass WSC	10	10	10	10	10	10
County-Other	73	72	71	70	70	69
Livestock	215	215	215	215	215	215
Irrigation	7	7	7	7	7	7
Rains County Total	**2,915**	**3,022**	**3,136**	**3,261**	**3,383**	**3,508**
Rains County / Sabine Basin Total	**2,915**	**3,022**	**3,136**	**3,261**	**3,383**	**3,508**
Bright Star Salem SUD	407	435	458	489	521	554
Cash SUD*	116	127	150	185	214	248
East Tawakoni	183	185	189	188	187	186
Emory	732	745	766	772	777	781
Golden WSC	5	6	6	6	6	6
Miller Grove WSC	39	42	44	47	51	54
Point	229	233	239	240	241	241
Shirley WSC	115	124	131	142	153	164
South Rains SUD	271	290	305	326	348	370
County-Other	254	271	284	302	321	340
Manufacturing	1	1	1	1	1	1
Livestock	503	503	503	503	503	503
Irrigation	60	60	60	60	60	60
Red River County Total	**7,208**	**7,055**	**6,907**	**6,789**	**6,670**	**6,547**
Red River County / Red Basin Total	**2,066**	**2,044**	**2,023**	**2,007**	**1,991**	**1,975**
410 WSC	153	145	138	132	127	121
Red River County WSC	140	132	126	123	122	125
County-Other	45	39	31	24	14	1
Manufacturing	3	3	3	3	3	3
Livestock	498	498	498	498	498	498
Irrigation	1,227	1,227	1,227	1,227	1,227	1,227

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Red River County / Sulphur Basin Total	**5,142**	**5,011**	**4,884**	**4,782**	**4,679**	**4,572**
410 WSC	200	190	180	173	165	158
Bogata	170	160	151	143	136	129
Clarksville	623	550	477	420	361	302
Red River County WSC	363	342	329	321	319	324
Talco	4	5	5	5	6	6
County-Other	132	114	92	70	42	3
Livestock	1,094	1,094	1,094	1,094	1,094	1,094
Irrigation	2,556	2,556	2,556	2,556	2,556	2,556
Smith County Total	**9,995**	**10,575**	**11,012**	**11,321**	**11,637**	**11,955**
Smith County / Sabine Basin Total	**9,995**	**10,575**	**11,012**	**11,321**	**11,637**	**11,955**
Carroll WSC*	48	50	51	52	52	53
Crystal Systems Texas*	1,489	1,552	1,599	1,623	1,649	1,675
East Texas MUD	1,328	1,541	1,693	1,834	1,976	2,118
Jackson WSC*	175	188	198	205	213	220
Liberty City WSC	24	26	28	30	32	34
Lindale Rural WSC*	1,302	1,430	1,525	1,605	1,686	1,767
Lindale*	865	889	909	916	923	931
Overton*	30	32	34	35	36	37
Pine Ridge WSC	199	222	239	253	268	282
Sand Flat WSC	319	331	339	343	346	350
Southern Utilities*	2,194	2,306	2,390	2,444	2,499	2,555
Star Mountain WSC	244	255	265	270	276	282
Starrville-Friendship WSC	158	156	156	153	150	147
Tyler*	233	209	194	173	153	133
West Gregg SUD*	104	109	114	116	119	122
Winona	180	199	212	224	235	246
County-Other*	308	284	269	247	225	203
Manufacturing*	19	20	21	22	23	24
Livestock*	465	465	465	465	465	465
Irrigation*	311	311	311	311	311	311
Titus County Total	**42,860**	**43,342**	**43,734**	**44,128**	**44,519**	**44,911**
Titus County / Cypress Basin Total	**40,287**	**40,697**	**41,049**	**41,395**	**41,745**	**42,103**
Bi County WSC	45	55	70	83	96	111
Cypress Springs SUD	41	48	59	67	75	86
Mount Pleasant	4,049	4,145	4,209	4,261	4,319	4,382

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Tri SUD	1,290	1,428	1,530	1,635	1,732	1,821
County-Other	73	66	54	44	33	21
Manufacturing	4,455	4,621	4,793	4,971	5,156	5,348
Steam Electric Power	29,541	29,541	29,541	29,541	29,541	29,541
Livestock	675	675	675	675	675	675
Irrigation	118	118	118	118	118	118
Titus County / Sulphur Basin Total	**2,573**	**2,645**	**2,685**	**2,733**	**2,774**	**2,808**
Cypress Springs SUD	30	35	42	48	55	62
Talco	119	118	114	111	107	103
Tri SUD	734	813	870	931	986	1,037
County-Other	118	107	87	71	54	34
Livestock	498	498	498	498	498	498
Irrigation	1,074	1,074	1,074	1,074	1,074	1,074
Upshur County Total	**7,098**	**7,119**	**7,092**	**7,006**	**6,917**	**6,827**
Upshur County / Cypress Basin Total	**4,455**	**4,476**	**4,474**	**4,439**	**4,404**	**4,366**
Bi County WSC	402	403	401	396	390	384
Diana SUD	517	563	618	677	743	815
East Mountain Water System	77	77	77	76	75	74
Gilmer	946	951	947	934	920	906
Glenwood WSC	327	328	327	322	318	313
Ore City	192	193	192	189	187	184
Pritchett WSC	255	256	255	252	248	244
Sharon WSC	230	231	230	227	224	221
Union Grove WSC	8	8	8	8	8	7
County-Other	517	481	432	370	302	228
Manufacturing	33	34	36	37	38	39
Livestock	808	808	808	808	808	808
Irrigation	143	143	143	143	143	143
Upshur County / Sabine Basin Total	**2,643**	**2,643**	**2,618**	**2,567**	**2,513**	**2,461**
Big Sandy	266	267	267	263	259	255
East Mountain Water System	297	299	298	294	289	285
Fouke WSC	10	10	10	10	10	10
Gladewater	525	528	526	519	511	503
Glenwood WSC	7	7	7	7	6	6
Pritchett WSC	623	626	623	614	605	596

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Union Grove WSC	224	226	225	221	218	216
County-Other	200	187	168	143	117	89
Manufacturing	52	54	55	57	59	62
Mining	139	139	139	139	139	139
Livestock	300	300	300	300	300	300
Van Zandt County Total	**12,140**	**13,130**	**14,125**	**15,147**	**16,207**	**17,286**
Van Zandt County / Neches Basin Total	**2,766**	**2,909**	**3,036**	**3,141**	**3,220**	**3,273**
Ben Wheeler WSC*	291	330	369	411	453	496
Bethel Ash WSC*	134	146	159	172	185	198
Carroll WSC*	0	0	1	1	1	1
Edom WSC*	134	136	138	138	137	137
Little Hope Moore WSC	43	44	46	47	49	50
R P M WSC*	244	241	239	231	223	216
Van	311	315	321	320	320	320
County-Other	575	663	729	787	818	821
Livestock	628	628	628	628	628	628
Irrigation	406	406	406	406	406	406
Van Zandt County / Sabine Basin Total	**6,891**	**7,397**	**7,916**	**8,444**	**9,010**	**9,584**
Ables Springs SUD*	2	2	3	3	3	3
Canton	1,735	1,931	2,133	2,333	2,552	2,763
Carroll WSC*	58	66	72	81	89	97
Combined Consumers SUD	147	154	161	167	174	180
Edgewood	322	332	341	346	351	357
Fruitvale WSC	332	361	391	421	451	481
Golden WSC	82	91	101	111	121	131
Grand Saline	466	473	481	481	482	483
Little Hope Moore WSC	90	94	97	100	103	106
MacBee SUD*	385	476	589	729	902	1,116
Myrtle Springs WSC	79	97	114	134	154	174
Pine Ridge WSC	43	55	67	80	94	107
Pruitt Sandflat WSC	125	125	125	122	120	117
South Tawakoni WSC	295	236	191	151	119	95
Van	212	215	218	218	218	218
Wills Point	495	546	596	647	698	750
County-Other	631	730	802	864	900	903
Manufacturing	556	577	598	620	643	667

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Mining	6	6	6	6	6	6
Livestock	830	830	830	830	830	830
Van Zandt County / Trinity Basin Total	**2,483**	**2,824**	**3,173**	**3,562**	**3,977**	**4,429**
Bethel Ash WSC*	34	38	41	44	48	51
Mabank*	64	72	80	88	96	104
MacBee SUD*	591	732	906	1,120	1,386	1,715
Myrtle Springs WSC	196	240	283	333	382	432
Wills Point	546	602	657	713	770	828
County-Other	576	664	730	788	819	823
Livestock	476	476	476	476	476	476
Wood County Total	**12,773**	**13,200**	**13,537**	**14,012**	**14,503**	**15,009**
Wood County / Cypress Basin Total	**953**	**973**	**982**	**1,004**	**1,025**	**1,044**
Cypress Springs SUD	74	78	80	85	90	94
Sharon WSC	160	170	176	188	201	213
Winnsboro	249	256	261	269	275	283
County-Other	59	58	54	51	48	43
Livestock	346	346	346	346	346	346
Irrigation	65	65	65	65	65	65
Wood County / Sabine Basin Total	**11,820**	**12,227**	**12,555**	**13,008**	**13,478**	**13,965**
Bright Star Salem SUD	301	330	348	389	430	471
Cornersville WSC	26	28	30	32	35	37
Fouke WSC	783	815	837	875	913	952
Golden WSC	306	317	324	335	347	358
Hawkins	354	360	364	365	367	369
Jones WSC	590	625	646	690	734	778
Lake Fork WSC	297	315	326	348	370	392
Liberty Utilities Silverleaf Water*	704	729	743	764	785	807
Mineola	937	979	1,007	1,058	1,109	1,161
New Hope SUD	533	528	526	507	488	471
Pritchett WSC	6	7	7	7	7	7
Quitman	345	344	344	335	328	320
Ramey WSC	581	664	763	876	1,006	1,155
Sharon WSC	345	365	378	405	431	458
Shirley WSC	17	17	17	17	17	18
Winnsboro	262	270	275	282	290	297

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	390	381	353	339	316	284
Manufacturing	2,912	3,020	3,132	3,248	3,368	3,493
Mining	347	349	351	352	353	353
Livestock	1,324	1,324	1,324	1,324	1,324	1,324
Irrigation	460	460	460	460	460	460
Region D Demand Total	**389,550**	**399,025**	**407,468**	**415,054**	**422,546**	**430,678**

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APPENDIX C3

EVALUATION OF CURRENT WATER SUPPLIES IN THE REGION

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APPENDIX C3

TABLE OF CONTENTS

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System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
410 WSC	RED RIVER	903-674-4555	supplywater410@yahoo.com	Ms.	Beverly	Eudy	Yes	Yes	06/22/23 CDH Call back in an hour, she was going to look through email. Called back and sent survey again and described what we are looking for
Ables Springs SUD	-	-	-	-	-	-	-	-	Region C Primary POC
Atlanta	CASS	903-796-2192	dcockrell@atlantatexas.org	Mr	David	Cockrell	Yes	Yes	-
Avinger	CASS	903-562-1000	-	Mr.	Marvin	Parvino	Yes	Yes	-
B H P WSC	HUNT	972-636-2154	bhpwater@sbcglobal.net	Mr.	Mike	Krider	Yes	Yes	06/22/23 CDH Shelley called me back, resent her the survey and said she would send back. 6/23/23: TLS spoke with Shelley, she will send survey asap.
Ben Wheeler WSC	VAN ZANDT	903-515-0149	bwwsc@earthlink.net	Mr.	Allen	Wheeler	Yes	Yes	6/12/23 Spoke w Mr. Wheeler, resent survey in case he can not find original.
Bethel Ash WSC	-	-	-	-	-	-	-	-	Region I Primary POC
Bi County WSC	CAMP	903-856-5840 EXT 204	bicounty.answer.you@mail.com	Mr.	Harleton	Taylor	Yes	Yes	Information acquired.
Big Sandy	UPSHUR	903-636-4343	publicworks@bigsandytx.gov	Mr.	R	Ware	Yes	Yes	Information acquired.
Blocker Crossroads WSC	HARRISON	903-410-0010	waterdept2019@gmail.com	Mrs.	Angelia	Mason	Yes	Yes	Information acquired.
Blossom	LAMAR	903-982-5900	cityofblossom@blossomtel.com	Mr	Jeff	Stover	Yes	Yes	06/22/23 CDH Walked them through survey, Said they will send back. 6/22/23: Survey received.
Bogata	RED RIVER	903-632-5315	lhinsley@cityofbogata.com	Mr	Larry	Hinsley	Yes	Yes	06/22/23 CDH Sent survey to secretary@cityofbogata.com, Jennifer said she would fill it out and email it back
Bois D Arc MUD	-	-	-	-	-	-	-	-	Region C Primary POC
Brashear WSC	HOPKINS	214-538-1306	brashearwater@yahoo.com	Mr.	James	Helterbrand	Yes	Yes	06/22/23 CDH Sent another email, going to fill out this evening. Mr. Helterbrand said his secretary was going to fill out
Bright Star Salem SUD	RAINS	903-765-2701	brightstarsud@yahoo.com	Ms	Wanda	Gaby	Yes	Yes	6/12/23: JMP left message.
Brinker WSC	HOPKINS	903-885-8888	brinkerwsc@yahoo.com	Mr	Scott	Courson	Yes	Yes	6/12/23: JMP left message. 6/26/23: TLS Survey Received.
Burns Redbank WSC	BOWIE	903-547-3068	-	Mr.	Doug	Kyles	Yes	Yes	6/9/23: TLS spoke with RWRD.
Caddo Basin SUD	HUNT	903-527-3504	webadmin@caddobasin.com	Mr.	Leahmon	Bryant	Yes	Yes	06/22/23 CDH Left a Message, They called back while I was on another call. Called back after and left another message

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Caddo Mills	HUNT	903-527-3116	mattmcmahan11@outlook.com	Mr	Matt	McMahan	Yes	Yes	06/22/23 CDH Left a message
Canton	VAN ZANDT	903-567-1841	lcluck@cantontx.gov	Mr	Lonny	Cluck	Yes	Yes	6/21/23: TLS left msg w/L. Cluck. 6/22/23: TLS spoke w/Steve Ruppenthal, walked through survey, they are performing a master plan, will send info by early
Carroll WSC	SMITH	903-963-5559	carrollwatersupply@gmail.com	Ms.	Lynn	Gilmer	Yes	Yes	0
Cash SUD	HUNT	903-883-2695	chodges@cashwater.org	Mr	Clay	Hodges	Yes	Yes	Survey completed.
Celeste	HUNT	(903) 568-4512	citysecretary@cityofceleste.org	Ms.	Cherie	Hubbard	Yes	Yes	06/22/23 CDH Cherie said she sent it to the Water manager, would check in and get back to me
Central Bowie County WSC	BOWIE	903-628-5601	cbcwsc@windstream.net	Mr	Hal	Harris	Yes	Yes	6/21/23: TLS spoke w/Hal Harris, all information same as in 2021 Plan.
Chalk Hill SUD	-	-	-	-	-	-	-	-	Region I Primary POC
Clarksville	RED RIVER	903-427-3834 ext 261	citymanager@suddenlinkmail.com	Ms.	Deana	Smith	Yes	Yes	6/21/23: TLS spoke w/Ms. Smith, no info on pop/demand, will review supply/strategy/infeasible and provide info. It sounds like they have built the new well WMS rec. from the 2021 Plan and it is
Clarksville City	GREGG	903-845-2681	citymgr@suddenlinkmail.com	Mr	Matt	Maines	Yes	Yes	-
Combined Consumers SUD	HUNT	903-356-3321 ext 201	drccsud@gmail.com	Mr	Drew	Roberts	Yes	Yes	6/12/23: resent email to drccsud@gmail.com, will respond this week. Received Water Use Survey for the Entity.
Commerce	HUNT	903-886-1134	howdy.lisenbee@commercetx.org	Mr.	Howdy	Lisenbee	Yes	Yes	6/21/23: TLS spoke w/Mr. Lisenbee. Will provide info by early next week. Meeting.
Como	HOPKINS	903-488-3434	cityofcomo@outlook.com	Mr.	Jerry	Radney	Yes	Yes	06/22/23 CDH Called, will call again
Cooper	DELTA	903-395-2217	coopercityhall@yahoo.com	Mr	Darren	Braddy	Yes	Yes	6/21/23: TLS resent to updated email address.
Cornersville WSC	HOPKINS	903-866-3000	cornersvillewsc@yahoo.com	Ms.	Julia	Kaufman	Yes	Yes	06/22/23 CDH Hit by storms, told me they will get it to us next week
County-Other, Bowie	BOWIE	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Camp	CAMP	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
County-Other, Cass	CASS	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Delta	DELTA	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Franklin	FRANKLIN	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Gregg	GREGG	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Harrison	HARRISON	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Hopkins	HOPKINS	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Hunt	HUNT	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Lamar	LAMAR	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Marion	MARION	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Morris	MORRIS	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
County-Other, Rains	RAINS	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Red River	RED RIVER	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Smith	SMITH	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Titus	TITUS	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Upshur	UPSHUR	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Van Zandt	VAN ZANDT	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
County-Other, Wood	WOOD	-	-	-	-	-	Yes	Yes Sub-WUGs with identified needs.	-
Cross Roads SUD	-	-	-	-	-	-	-	-	Region I Primary POC
Crystal Systems Texas	SMITH	903-592-8509	kathy.baker@crystalsystemstx.com	Ms.	Kathy	Baker	Yes	Yes	Information acquired.
Cumby	HOPKINS	903-994-2272	utilities@cityofcumby.com	Ms.	Debbie	Hudson	Yes	Yes	06/22/23 CDH Called, they said they would call me back. Water department flooded and they are now in the Fire Department
Cypress Springs SUD	FRANKLIN	903-588-2081	office@cssud.org	Mr.	Kevin	Spence	Yes	Yes	Information acquired.
Cypress Valley WSC	HARRISON	903-938-4426	0	0	Jody	Maloney	Yes	Yes	Information acquired.
Daingerfield	MORRIS	903 645 3906	keith.whitfield@cityofdaingerfield.com	Mr.	Kieth	Whitfield	Yes	Yes	Information acquired.
De Kalb	BOWIE	903-667-2410	markeng@dktx.org	Mr	Mark	Engelhardt	Yes	Yes	6/21/23: TLS spoke w/ Mr. Engelhart, resent survey.
Delta County MUD	DELTA	903-395-4471	h2omud@gmail.com	Mr.	Matt	Ingram	Yes	Yes	6/21/23: TLS no response.
Diana SUD	UPSHUR	903-663-4837	suwhitfield@etex.net	Ms.	Susan	Whitfield	Yes	Yes	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
E M C WSC	MARION	903-665-7727	emcwsc@gmail.com	Mr.	David	Rohrbaugh	Yes	Yes	-
East Mountain Water System	UPSHUR	903-297-6041	marc.covington@eastmountaintx.gov	Mr.	Marc	Covington	Yes	Yes	Information acquired.
East Tawakoni	RAINS	903-447-2444	waterclerk@easttawakonitx.com	Ms.	Cody	Ramsey	Yes	Yes	6/12/23: resent email, will review.
East Texas MUD	SMITH	903-877-3644	-	Mr.	Lane	Thompson	Yes	Yes	-
Eastern Cass WSC	CASS	903-796-3901	-	Mr.	Mitchell	McCasland	Yes	Yes	-
Edgewood	VAN ZANDT	903-896-7144	marley.cityofedgewood@hotmail.com	Ms.	Petra	Marley	Yes	Yes	6/12/23: Spoke to Ms Ramsey she will try to respond to the survey this week. City no longer uses Edgewood lake and has not for approximately 5 years. Backup supply only, all water suppply
Edom WSC	VAN	903-852-5055	lmoore@edomwsc.com	Ms.	Lindsey	Moore	Yes	Yes	6/13/23: JMP left Message
Elderville WSC	GREGG	903-643-2692	0	Mr.	Mark	Rogers	Yes	Yes	-
Elysian Fields WSC	HARRISON	903-410-0010	waterdept2019@gmail.com	Ms.	Angelia	Mason	Yes	Yes	-
Emory	RAINS	903-473-2465 ext 100	bbrumit@emorytx.com	Mr	Blake	Brumit	Yes	Yes	6/13/23: JMP left Message
Fouke WSC	WOOD	903-967-3304	foukewsc@peoplescom.net	Ms	Kristi	Hirsch	Yes	Yes	6/13/23: JMP left Message
Frognot WSC	-	-	-	-	-	-	-	-	Region C Primary POC
Fruitvale WSC	VAN ZANDT	903-896-1224	fruitvale_wsc@yahoo.com	Ms.	Judy	Woodrum	Yes	Yes	6/13/23: Spoke to Mrs Woodrum, she will work on survey and return later this week.
Gafford Chapel WSC	HOPKINS	903-885-6996	0	Mr.	Michael	Rawson	Yes	Yes	06/22/23 CDH Left a Message, They called back while I was on another call. Called back after and left another message
Gill WSC	HARRISON	903-938-5130	gillwsc23@yahoo.com	Mr.	Dan	Fogle	Yes	Yes	-
Gilmer	UPSHUR	903-843-2552	citymgr@etex.net	Mr.	Greg	Hutson	Yes	Yes	-
Gladewater	GREGG	903-845-2196	info@cityofgladewater.com	Mr	Charlie	Smith	Yes	Yes	-
Glenwood WSC	UPSHUR	903-734-5445	0	Ms.	Kim	Jenkins	Yes	Yes	-
Golden WSC	WOOD	903-768-2861	goldcorp75444@gmail.com	Mr.	Scott	Reynolds	Yes	Yes	6/13/23: Spoke to Mr. Reynolds, resent survey he will get back to us. Survey Received
Grand Saline	VAN ZANDT	903-962-3122	lcraft@grandsalinetx.gov	Mr	Logan	Craft	Yes	Yes	Survey completed. Presently seeing the 0.5 model growth.
Greenville	HUNT	903-457-3152	sspurlock@ci.greenville.tx.us	Ms.	Summer	Spurlock	Yes	Yes	6/21/23: TLS resent survey, spoke with operator, they have recent completed Master Plan, want to increase pop, will send response asap. 6/26/23: Survey received. Meeting.
Gum Springs WSC	HARRISON	903-660-3420	derrick@gswsc.com	Mr.	Derrick	Todd	Yes	Yes	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Hallsville	HARRISON	903-668-2313	citysecretary@hallsville.us	Mr	Jesse	Casey	Yes	Yes	-
Harleton WSC	HARRISON	903-256-7031	psmcgill@etex.net	Mr.	Pat	Mcgill	Yes	Yes	-
Hawkins	WOOD	903-769-2224	hawkinsmayor@hawkinstx.org	Ms.	Susan	Hubbard	Yes	Yes	6/13/23: Got updated email address, resent survey email to hawkinsmayor@hawkinstx.org
Hickory Creek SUD	HUNT	903-217-7902	hickorycreeksud@yahoo.com	Mr	Mike	Wemhoene	Yes	Yes	6/13/23: JMP left Message
Holly Springs WSC	CASS	903-639-2054	0	Mr.	Randy	Russell	Yes	Yes	-
Hooks	BOWIE	903-547-2261	citysecretary@cityofhooks.org	Ms.	Cindi	Norton	Yes	Yes	6/9/23: TLS spoke with RWRD.
Hughes Springs	CASS	903-639-7519	city@hughesspringstxusa.com	Mr	Robert	Duck	Yes	Yes	-
Jackson WSC	-	-	-	-	-	-	-	-	Region I Primary POC
Jefferson	MARION	903-665-3922	rbaker@cityhallofjefferson.com	Mr.	Rob	Baker	Yes	Yes	-
Jones WSC	WOOD	903-967-2840	joneswatersupplycorp@gmail.com	Ms	Frances	Delk	Yes	Yes	Survey completed.
Josephine	-	-	-	-	-	-	-	-	Region C Primary POC
Kellyville-Berea WSC	MARION	903-665-6590	0	Mr.	Robert	Davidson	Yes	Yes	-
Kilgore	GREGG	903-984-5081	Josh.Selleck@cityofkilgore.com	Mr	Josh	Selleck	Yes	Yes	-
Lake Fork WSC	WOOD	903-383-7643	lfws@peoplescom.net; lakeforkSUD_jeremy@peoplescom.net	Mr.	Jeremy	Harris	Yes	Yes	6/13/23: JMP left Message, got an additional email address (lakeforkSUD_jeremy@peoplescom.net). 6/26/23: TLS survey received.
Lamar County WSD	LAMAR	903-785-5586	lcwsd@lamarcountywatersupply.com	Mr.	David	Pitcock	Yes	Yes	6/13/23: JMP left Message
Leigh WSC	HARRISON	903-930-1581	0	Mr.	William	Power	Yes	Yes	-
Liberty City WSC	GREGG	903-984-9593	0	Mr	Craig	Sherwood	Yes	Yes	-
Liberty Utilities Silverleaf Water	WOOD	903-730-4840	shana.wright@libertyutilities.com	Ms.	Shana	Wright	Yes	Yes	6/13/23: JMP left Message
Lindale	SMITH	903-882-4948	Corym@lindaletx.gov	Mr.	Cory	Moose	Yes	Yes	Meeting
Lindale Rural WSC	SMITH	903-882-3335	0	Mr	Carlos	0	Yes	Yes	-
Linden	CASS	903-756-7502	Lindencity@outlook.com	Mr	Lynn	Reynolds	Yes	Yes	-
Little Hope Moore WSC	VAN ZANDT	903-253-5565	lhmwsc@gmail.com	Mr.	Kevin Wayne	Perkins	Yes	Yes	6/14/23: Spoke with Mr. Perkins who indicated he had sent the survey back in, JMP asked about migration scenario, they indicated using the 1.0 migration scenario.
Lone Star	MORRIS	903-656-2311	0	Mr	Randy	Hodges	Yes	Yes	-
Longview	GREGG	903-237-1021	0	Mr.	Rolin	Mcphee	Yes	Yes	-
Mabank	-	-	-	-	-	-	-	-	Region C Primary POC
Macbee SUD	VAN	903-873-2109	macbee.s@att.net	Mr	Darron	Thorn	Yes	Yes	6/14/23: JMP left Message
Macedonia Eylau MUD 1	BOWIE	903-832-1691	info@macedonia-eylau.com	Ms.	Debra	Elijah	Yes	Yes	6/9/23: TLS spoke with RWRD.
Marshall	HARRISON	903-935-4488	citymanager@marshalltexas.net	Mr.	Terrell	Smith	Yes	Yes	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Martin Springs WSC	HOPKINS	903-951-6059	waterboy@1starnet.com	Mr	Brad	Thomas	Yes	Yes	06/22/23 CDH Spoke to Brad Thomas, said he will get it to me tomorrow, 06/23/23 and would call me back. 5/17/23: TLS survey received.
Maud	BOWIE	903-585-2294	vmay@maudtexas.org	Ms.	Vikki	May	Yes	Yes	6/21/23: TLS spoke w/staff, resent to updated email address.
Miller Grove WSC	HOPKINS	903-459-3383	mgwater@cumbytel.com	Mr.	Mac	Garrett	Yes	Yes	06/22/23 CDH Called left a
Mims WSC	MARION	903-755-3185	0	Mr.	George	Morris, Jr.	Yes	Yes	-
Mineola	WOOD	903-569-6183	info@mineola.com	Mr.	Kyle	Mccoy	Yes	Yes	6/21/23: TLS called for followup, left msg.
Mount Pleasant	TITUS	903-575-4000	arasor@mpcity.org	Mr	Anthony	Rasor	Yes	Yes	6/21/23: TLS left msg.
Mount Vernon	FRANKLIN	903-537-2252	cityhall@comvtx.com	Mr.	Brad	Hyman	Yes	Yes	-
Myrtle Springs WSC	VAN	903-865-8402	shelly.mswsc@yahoo.com	0	Shelly	Granberry	Yes	Yes	6/14/23: email resent
Naples	MORRIS	903-305-4893	cityofnaples@valornet.com	Mr	Kent	Stacks	Yes	Yes	-
Nash	BOWIE	903-838-0751	ljacobs@nashtx.org	Ms	Laura	Jacobs	Yes	Yes	6/9/23: TLS spoke with RWRD.
New Boston	BOWIE	903-628-5596	brandon.walker@nbcity.org	Mr	Brandon	Walker	Yes	Yes	6/9/23: TLS spoke with RWRD.
New Hope SUD	WOOD	903-569-3820	newhopesud05@gmail.com	Mr.	Jim	Slayton	Yes	Yes	Survey completed.
North Harrison WSC	HARRISON	903-938-1018	nhwsc@ymail.com	Mr.	Butch	Graves	Yes	Yes	-
North Hopkins WSC	HOPKINS	903-945-2619	NHWSC@hotmail.com	Mr.	Casey	Janway	Yes	Yes	06/22/23 CDH Talked to Casey Janway, he was working on it and sending it by the end of today. 6/23/23: TLS spoke w/Mr. Janway, answered questions, will return survey info asap. 6/27/23: Survey received.
North Hunt SUD	HUNT	903-886-3458	northhuntsud@aol.com	Ms.	Stacey	Nicholson	Yes	Yes	6/14/23: email resent
Omaha	MORRIS	903-884-2302	cityofomaha@prodigy.net	Mr.	Ernest	Pewitt	Yes	Yes	-
Ore City	UPSHUR	903-968-2517	orecitywaterutilities@gmail.com	Mr.	Kenneth	Riddle	Yes	Yes	-
Overton	-	-	-	-	-	-	-	-	Region I Primary POC
Panola-Bethany WSC	PANOLA	903-766-3514	-	Mr.	James	Youngblood	Yes	Yes	Region I Primary POC
Paris	LAMAR	903-784-2464	dharris@paristexas.gov	Mr.	Doug	Harris	Yes	Yes	Survey completed.
Pine Ridge WSC	SMITH	903-963-5101	-	Mr.	Darlene	Tunnell	Yes	Yes	-
Pittsburg	CAMP	903-856-3621	treynolds@pittsburgtx.gov	Mr	Tim	Reynolds	Yes	Yes	-
Poetry WSC	HUNT	972-563-7471	poetrywsc@yahoo.com	Mr.	Philip	Keys	Yes	Yes	06/22/23 CDH Talked with Philip, said he would look through email, fill it out and if he had questions, he would call me
Point	RAINS	903-598-3296 ext 4	waterclerk@cityofpoint.org	0	Cori	Vest	Yes	Yes	6/14/23: JMP left Message

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Pritchett WSC	UPSHUR	903-734-5438	pwscl@hotmail.com	Mr.	Charles	Meador	Yes	Yes	-
Pruitt Sandflat WSC	VAN	903-539-8214	gdenton70@icloud.com	Mr.	Gerald	Denton	Yes	Yes	6/14/23: JMP left Message
Queen City	CASS	903-796-7986	queencitywaterworks@gmail.com	Mr	Harold	Martin	Yes	Yes	-
Quinlan	HUNT	903-356-3306	pwdirector@cityofquinlan.net	Mr	Tyler	Davis	Yes	Yes	06/22/23 CDH Mr. Davis said he was out in field but would fill it out friday and send to us
Quitman	WOOD	903-763-2223	jattaway@quitmantx.org	Mr	0	Attaway	Yes	Yes	6/14/23: JMP left Message, 6/15 call returned: jattaway@quitmantx.org City Administrator, email resent to new email address. 6/22/23: Survey
R P M WSC	VAN ZANDT	903-852-3115	rpmwsc@yahoo.com	Mr.	Robert	Young	Yes	Yes	6/14/23: email resent, care of Robert Young General Manager
Ramey WSC	WOOD	903-569-6502	rameywatersupply1971@yahoo.com	Ms.	Gloria	0	Yes	Yes	6/14/23: email resent, Attention Gloria
Red River County WSC	RED RIVER	903-427-2891	rrcwsc@yahoo.com	Mr.	Donnie	Mitchell	Yes	Yes	06/22/23 CDH 903 428 3014 - Told to call on Monday morning to get Donnie
Redwater	BOWIE	903-671-2775	joes@redwatertexas.com	Mr	Joe	Snyder	Yes	Yes	6/9/23: TLS spoke with RWRD.
Reno (Lamar)	LAMAR	903-785-6581	jerry@renotexas.us	Mr.	Jerry	Reavis	Yes	Yes	06/22/23 CDH Called and was told Jerry would call me when he got back
Riverbend Water Resources District	BOWIE	903-831-0091	kyledooley@rwrd.org	Mr.	Kyle	Dooley	Yes	Yes	6/9/23: TLS spoke with RWRD.
Royse City	-	-	-	-	-	-	-	-	Region C Primary POC
Sand Flat WSC	SMITH	903-526-5243	-	Mr	Larry	Wintters	Yes	Yes	-
Scottsville	HARRISON	903-935-3441	-	Mr.	Kerry	Cade	Yes	Yes	-
Shady Grove No 2 WSC	HOPKINS	(903) 885-7339	shadygwsc2@gmail.com	Ms.	Jennifer	Poteet	Yes	Yes	06/22/23 CDH Called and left a message
Shady Grove SUD	HUNT	903-454-8733	shadygrovesud@gmail.com	Mr.	Jeremy	Whitson	Yes	Yes	06/22/23 CDH Called and left a message
Sharon WSC	WOOD	903-342-3525	d.stout.sws@gmail.com	Mr.	David	Stout	Yes	Yes	6/14/23: JMP left Message
Shirley WSC	HOPKINS	903-485-5811	swatercorp@hotmail.com	Ms.	Jennifer	Poteet	Yes	Yes	06/22/23 CDH Called and left a message
South Rains SUD	RAINS	903-473-2122	srwsc@verizon.net	Ms.	Rachel	Webb	Yes	Yes	6/15/23: JMP spoke to Ms Webb, resent email to southrainssud@outlook.com.
South Tawakoni WSC	VAN ZANDT	903-873-2509	stwsc@yahoo.com; stwsc@sbcglobal.net	Mr.	Ken	Roberts	Yes	Yes	6/15/23: JMP spoke to Ken Roberts General Manager, 5/31/23 survey returned, re-emailing to JMP. 1.0 scenario
Southern Utilities	-	-	-	-	-	-	-	-	Region I Primary POC

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Star Mountain WSC	SMITH	903-877-3096	0	Mr.	Charlie	Martin	Yes	Yes	-
Starrville-Friendship WSC	SMITH	-	0	Mr.	Ryan	Cocker	Yes	Yes	-
Sulphur Springs	HOPKINS	903-885-7541	dreed@sulphurspringstx.org	Mr	Dave	Reed	Yes	Yes	6/21/23: TLS spoke w/Mr. Reed. They've not done any pop/demand study but will look if they have growth data and get back by end of week. Will review survey and respond if anything needs updating. 6/22/23: Sent website link with estimated growth rate
Talco	TITUS	903-379-3731	cityoftalco@gmail.com	Mr.	0	0	Yes	Yes	6/14/23: email resent. 6/21/23: TLS spoke with City staff, have 3 wells that each can go up to 300 gpm, but only run 1 well at a time. Will submit survey asap.
Talley WSC	HARRISON	903-935-2545	-	Mr.	Johnnie	Taylor	Yes	Yes	-
Texarkana	BOWIE	903-798-3900	gsmith@txkusa.org	Mr.	Gary	Smith	Yes	Yes	6/9/23: TLS spoke with RWRD.
Texas A and M University	-	903-468-3129	john.harris@tamuc.edu	Mr.	John	Harris	-	-	6/5/23: TLS Survey received.
Tri SUD	TITUS	903-572-3676	aaron@trisud.com	Mr.	Aaron	Gann	Yes	Yes	6/22/23: TLS left msg w/Mr. Gann. 6/27/23: Information on projections received.
Tryon Road SUD	GREGG	903-663-1447	-	Mr.	Lee	Pigeon	Yes	Yes	-
Tyler	-	-	-	-	-	-	-	-	Region I Primary POC
Union Grove WSC	UPSHUR	903-845-2834	-	Mr.	Bruce	Ogilvie	Yes	Yes	-
Van	VAN	903-963-7216	kjohnson@vantx.gov	Mr	Kevin	Johnson	Yes	Yes	6/15/23: JMP left Message
Wake Village	BOWIE	903-838-0515	jim.roberts@cityofwakevillage.com	Mr.	Jim	Roberts	Yes	Yes	6/9/23: TLS spoke with RWRD.
Waskom	HARRISON	903-687-3374	cityofwaskom@eastex.net	-	Jesse	Moore	Yes	Yes	Survey received.
West Gregg SUD	GREGG	903-983-1816	-	Mr.	Neill	Flemister	Yes	Yes	-
West Harrison WSC	HARRISON	-	-	Ms.	Deborah	Jones	Yes	Yes	Survey received.
West Leonard WSC	-	-	-	-	-	-	-	-	Region C Primary POC
West Tawakoni	HUNT	903-513-0616	wt1publicworks@gmail.com	Mr	Mike	Stafford	Yes	Yes	06/22/23 CDH Mr. Stafford said he would get it back to me tomorrow
Western Cass WSC	CASS	-	-	Mr.	Robert	Moore	Yes	Yes	-
White Oak	GREGG	903-759-3936	jpurcell@cityofwhiteoak.com	Mr.	Jimmy	Purcell	Yes	Yes	Survey received.
Wills Point	VAN ZANDT	903-873-2578	ppearson@willspointtx.gov	Ms.	Pam	Pearson	Yes	Yes	6/15/23: JMP left Message, Call returned, survey returned to tlsmith on 6/1 by a Ms Brown with the city engineers office.
Winnsboro	WOOD	903-342-3654	anewsom@winnsborotexas.com	Ms.	Andrea	Newsom	Yes	Yes	6/14/23: email resent, Derick Lacaze (Dlacaze@winnsborotexas.com)
Winona	SMITH	903-877-3381	cityhall@winonatexas.com	Mr	Rusty	Smith	Yes	Yes	-

System Name	County	Phone Number	Email	Salutation	First Name	Last Name	Survey Emailed?	Call	Follow up Notes
Wolfe City	HUNT	903-496-2251	info@wolfecitytx.org	Ms.	Sharion	Scott	Yes	Yes	06/22/23 CDH Secretary said new mayor, but to send survey and they would reach out with questions and get it to me

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Groundwater Source Availability Total				**215,427**	**215,426**	**215,448**	**215,803**	**216,282**	**216,986**
Blossom Aquifer	Bowie	Red	Fresh	21	21	21	21	21	21
Blossom Aquifer	Bowie	Sulphur	Fresh	180	180	180	180	180	180
Blossom Aquifer	Lamar	Red	Fresh	323	323	323	323	323	323
Blossom Aquifer	Lamar	Sulphur	Fresh	71	71	71	71	71	71
Blossom Aquifer	Red River	Red	Fresh	665	665	665	665	665	665
Blossom Aquifer	Red River	Sulphur	Fresh	1,013	1,013	1,013	1,013	1,013	1,013
Carrizo-Wilcox Aquifer	Bowie	Sulphur	Fresh	9,645	9,645	9,645	9,645	9,645	9,645
Carrizo-Wilcox Aquifer	Camp	Cypress	Fresh	3,862	3,862	3,862	3,862	3,862	3,862
Carrizo-Wilcox Aquifer	Cass	Cypress	Fresh	12,865	12,865	12,865	12,865	12,865	12,865
Carrizo-Wilcox Aquifer	Cass	Sulphur	Fresh	2,190	2,190	2,190	2,190	2,190	2,190
Carrizo-Wilcox Aquifer	Franklin	Cypress	Fresh	5,334	5,334	5,334	5,334	5,334	5,334
Carrizo-Wilcox Aquifer	Franklin	Sulphur	Fresh	2,594	2,594	2,594	2,594	2,594	2,594
Carrizo-Wilcox Aquifer	Gregg	Cypress	Fresh	726	726	726	726	726	726
Carrizo-Wilcox Aquifer	Gregg	Sabine	Fresh	8,841	8,841	8,841	8,841	8,841	8,841
Carrizo-Wilcox Aquifer	Harrison	Cypress	Fresh	4,636	4,636	4,636	4,636	4,636	4,636
Carrizo-Wilcox Aquifer	Harrison	Sabine	Fresh	4,460	4,460	4,460	4,460	4,460	4,460
Carrizo-Wilcox Aquifer	Hopkins	Cypress	Fresh	309	309	309	309	309	309
Carrizo-Wilcox Aquifer	Hopkins	Sabine	Fresh	4,677	4,677	4,677	4,677	4,677	4,677
Carrizo-Wilcox Aquifer	Hopkins	Sulphur	Fresh	3,125	3,125	3,125	3,125	3,125	3,125
Carrizo-Wilcox Aquifer	Marion	Cypress	Fresh	1,966	1,966	1,966	1,966	1,966	1,966
Carrizo-Wilcox Aquifer	Morris	Cypress	Fresh	2,156	2,156	2,156	2,156	2,156	2,156

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Carrizo-Wilcox Aquifer	Morris	Sulphur	Fresh	769	769	769	769	769	769
Carrizo-Wilcox Aquifer	Rains	Sabine	Fresh	1,411	1,411	1,411	1,411	1,411	1,411
Carrizo-Wilcox Aquifer	Red River	Sulphur	Fresh	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	Smith	Sabine	Fresh	11,743	11,743	11,743	11,743	11,743	11,743
Carrizo-Wilcox Aquifer	Titus	Cypress	Fresh	7,330	7,330	7,330	7,330	7,330	7,330
Carrizo-Wilcox Aquifer	Titus	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox Aquifer	Upshur	Cypress	Fresh	6,918	6,918	6,918	6,918	6,918	6,918
Carrizo-Wilcox Aquifer	Upshur	Sabine	Fresh	1,948	1,948	1,948	1,948	1,948	1,948
Carrizo-Wilcox Aquifer	Van Zandt	Neches	Fresh	4,136	4,136	4,136	4,136	4,136	4,136
Carrizo-Wilcox Aquifer	Van Zandt	Sabine	Fresh	5,033	5,033	5,033	5,033	5,033	5,033
Carrizo-Wilcox Aquifer	Van Zandt	Trinity	Fresh	1,651	1,651	1,651	1,651	1,651	1,651
Carrizo-Wilcox Aquifer	Wood	Cypress	Fresh	925	925	925	925	925	925
Carrizo-Wilcox Aquifer	Wood	Sabine	Fresh	18,206	18,206	18,206	18,206	18,206	18,206
Nacatoch Aquifer	Bowie	Red	Fresh	3,071	3,071	3,071	3,071	3,071	3,071
Nacatoch Aquifer	Bowie	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Nacatoch Aquifer	Delta	Sulphur	Fresh	575	575	575	575	575	575
Nacatoch Aquifer	Franklin	Sulphur	Fresh	30	30	30	30	30	30
Nacatoch Aquifer	Hopkins	Sabine	Fresh	291	291	291	291	291	291
Nacatoch Aquifer	Hopkins	Sulphur	Fresh	916	916	916	916	916	916
Nacatoch Aquifer	Hunt	Sabine	Fresh	3,303	3,303	3,303	3,303	3,303	3,303
Nacatoch Aquifer	Hunt	Sulphur	Fresh	491	491	513	868	1,347	2,052
Nacatoch Aquifer	Lamar	Sulphur	Fresh	110	110	110	110	110	110

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Nacatoch Aquifer	Rains	Sabine	Fresh	1	1	1	1	1	1
Nacatoch Aquifer	Red River	Red	Fresh	58	58	58	58	58	58
Nacatoch Aquifer	Red River	Sulphur	Fresh	2,924	2,923	2,923	2,923	2,923	2,923
Queen City Aquifer	Camp	Cypress	Fresh	1,810	1,810	1,810	1,810	1,810	1,810
Queen City Aquifer	Cass	Cypress	Fresh	15,855	15,855	15,855	15,855	15,855	15,855
Queen City Aquifer	Cass	Sulphur	Fresh	758	758	758	758	758	758
Queen City Aquifer	Gregg	Cypress	Fresh	456	456	456	456	456	456
Queen City Aquifer	Gregg	Sabine	Fresh	2,056	2,056	2,056	2,056	2,056	2,055
Queen City Aquifer	Harrison	Cypress	Fresh	2,976	2,976	2,976	2,976	2,976	2,976
Queen City Aquifer	Harrison	Sabine	Fresh	561	561	561	561	561	561
Queen City Aquifer	Marion	Cypress	Fresh	7,389	7,389	7,389	7,389	7,389	7,389
Queen City Aquifer	Morris	Cypress	Fresh	3,308	3,308	3,308	3,308	3,308	3,308
Queen City Aquifer	Smith	Sabine	Fresh	12,457	12,457	12,457	12,457	12,457	12,457
Queen City Aquifer	Titus	Cypress	Fresh	0	0	0	0	0	0
Queen City Aquifer	Upshur	Cypress	Fresh	6,215	6,215	6,215	6,215	6,215	6,215
Queen City Aquifer	Upshur	Sabine	Fresh	5,949	5,949	5,949	5,949	5,949	5,949
Queen City Aquifer	Van Zandt	Neches	Fresh	2,343	2,343	2,343	2,343	2,343	2,343
Queen City Aquifer	Wood	Cypress	Fresh	779	779	779	779	779	779
Queen City Aquifer	Wood	Sabine	Fresh	5,731	5,731	5,731	5,731	5,731	5,731
Sparta Aquifer	Cass	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Marion	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Smith	Sabine	Fresh	0	0	0	0	0	0

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sparta Aquifer	Upshur	Sabine	Fresh	0	0	0	0	0	0
Sparta Aquifer	Wood	Sabine	Fresh	0	0	0	0	0	0
Trinity Aquifer	Delta	Sulphur	Fresh	56	56	56	56	56	56
Trinity Aquifer	Hunt	Sabine	Fresh	213	213	213	213	213	213
Trinity Aquifer	Hunt	Sulphur	Fresh	3	3	3	3	3	3
Trinity Aquifer	Hunt	Trinity	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Red	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Sulphur	Fresh	8	8	8	8	8	8
Trinity Aquifer	Red River	Red	Fresh	52	52	52	52	52	52
Trinity Aquifer	Red River	Sulphur	Fresh	233	233	233	233	233	233
Woodbine Aquifer	Hunt	Sabine	Fresh	268	268	268	268	268	268
Woodbine Aquifer	Hunt	Sulphur	Fresh	165	165	165	165	165	165
Woodbine Aquifer	Hunt	Trinity	Fresh	330	330	330	330	330	330
Woodbine Aquifer	Lamar	Red	Fresh	22	22	22	22	22	22
Woodbine Aquifer	Lamar	Sulphur	Fresh	49	49	49	49	49	49
Woodbine Aquifer	Red River	Red	Fresh	2	2	2	2	2	2

Reuse Source Availability Total				**72,993**	**67,677**	**68,933**	**77,807**	**71,581**	**71,581**
Direct Reuse	Gregg	Sabine	Fresh	6,161	6,161	6,161	6,161	6,161	6,161
Direct Reuse	Lamar	Red	Fresh	12	12	12	12	12	12
Direct Reuse	Morris	Cypress	Fresh	66,660	61,344	62,600	71,474	65,248	65,248
Direct Reuse	Titus	Cypress	Fresh	160	160	160	160	160	160

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
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DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Indirect Reuse	Van Zandt	Sabine	Fresh	0	0	0	0	0	0

Surface Water Source Availability Total				**1,264,022**	**1,245,481**	**1,227,072**	**1,208,666**	**1,190,255**	**1,171,846**
Big Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	940	752	564	376	188	0
Big Sandy Creek Lake/Reservoir	Reservoir**	Sabine	Fresh	2,680	2,680	2,680	2,680	2,680	2,680
Bob Sandlin Lake/Reservoir	Reservoir**	Cypress	Fresh	26,200	25,660	25,120	24,580	24,040	23,500
Brandy Branch Lake/Reservoir	Reservoir**	Sabine	Fresh	19,889	19,889	19,889	19,889	19,889	19,889
Caddo Lake/Reservoir	Reservoir**	Cypress	Fresh	10,000	10,000	10,000	10,000	10,000	10,000
Caney Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	792	792	792	792	792	792
Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir**	Sulphur	Fresh	63,901	62,381	60,861	59,341	57,821	56,301
Crook Lake/Reservoir	Reservoir**	Red	Fresh	5,000	4,800	4,600	4,400	4,200	4,000
Cypress Livestock Local Supply	Camp	Cypress	Fresh	3,083	3,083	3,083	3,083	3,083	3,083
Cypress Livestock Local Supply	Cass	Cypress	Fresh	2,371	2,371	2,371	2,371	2,371	2,371
Cypress Livestock Local Supply	Franklin	Cypress	Fresh	792	792	792	792	792	792
Cypress Livestock Local Supply	Harrison	Cypress	Fresh	707	707	707	707	707	707
Cypress Livestock Local Supply	Hopkins	Cypress	Fresh	201	201	201	201	201	201
Cypress Livestock Local Supply	Morris	Cypress	Fresh	991	991	991	991	991	991
Cypress Livestock Local Supply	Upshur	Cypress	Fresh	1,052	1,052	1,052	1,052	1,052	1,052
Cypress Livestock Local Supply	Wood	Cypress	Fresh	642	642	642	642	642	642
Cypress Run-of-River	Camp	Cypress	Fresh	270	270	270	270	270	270

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Cypress Run-of-River	Cass	Cypress	Fresh	174	174	174	174	174	174
Cypress Run-of-River	Gregg	Cypress	Fresh	40	40	40	40	40	40
Cypress Run-of-River	Harrison	Cypress	Fresh	9,722	9,722	9,722	9,722	9,722	9,722
Cypress Run-of-River	Marion	Cypress	Fresh	1,066	1,066	1,066	1,066	1,066	1,066
Cypress Run-of-River	Morris	Cypress	Fresh	58	58	58	58	58	58
Cypress Run-of-River	Titus	Cypress	Fresh	403	403	403	403	403	403
Cypress Run-of-River	Upshur	Cypress	Fresh	21	21	21	21	21	21
Cypress Springs Lake/Reservoir	Reservoir**	Cypress	Fresh	10,500	10,040	9,580	9,120	8,660	8,200
Edgewood City Lake/Reservoir	Reservoir**	Sabine	Fresh	160	160	160	160	160	160
Elliot Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	1,318	1,318	1,318	1,318	1,318	1,318
Ellison Creek Lake/Reservoir	Reservoir**	Cypress	Fresh	33,640	33,640	33,640	33,640	33,640	33,640
Fork Lake/Reservoir	Reservoir**	Sabine	Fresh	168,966	167,119	165,272	163,424	161,577	159,730
Gilmer Lake/Reservoir	Reservoir**	Cypress	Fresh	6,300	6,300	6,300	6,300	6,300	6,300
Gladewater Lake/Reservoir	Reservoir**	Sabine	Fresh	4,540	3,944	3,348	2,752	2,156	1,560
Grays Creek Run-of-River	Harrison	Cypress	Fresh	12	12	12	12	12	12
Greenville City Lake/Reservoir	Reservoir**	Sabine	Fresh	3,420	3,420	3,420	3,420	3,420	3,420
Johnson Creek Lake/Reservoir	Reservoir**	Cypress	Fresh	2,280	2,280	2,280	2,280	2,280	2,280
Langford Lake/Reservoir	Reservoir**	Sulphur	Fresh	130	0	0	0	0	0
Loma Lake/Reservoir	Reservoir**	Sabine	Fresh	880	880	880	880	880	880
Mill Creek Lake/Reservoir	Reservoir**	Sabine	Fresh	1,190	1,190	1,190	1,190	1,190	1,190
Monticello Lake/Reservoir	Reservoir**	Cypress	Fresh	5,000	4,560	4,120	3,680	3,240	2,800

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** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Neches Livestock Local Supply	Van Zandt	Neches	Fresh	500	500	500	500	500	500
Neches Run-of-River	Van Zandt	Neches	Fresh	150	150	150	150	150	150
O' the Pines Lake/Reservoir	Reservoir**	Cypress	Fresh	159,000	157,500	156,000	154,500	153,000	151,500
Pat Mayse Lake/Reservoir	Reservoir**	Red	Fresh	50,490	50,252	50,014	49,776	49,538	49,300
Peacock Site 1A Tailings Lake/Reservoir	Reservoir**	Cypress	Fresh	877	874	871	867	864	861
Red Livestock Local Supply	Bowie	Red	Fresh	752	752	752	752	752	752
Red Livestock Local Supply	Lamar	Red	Fresh	532	532	532	532	532	532
Red Livestock Local Supply	Red River	Red	Fresh	549	549	549	549	549	549
Red Run-of-River	Bowie	Red	Fresh	4,820	4,820	4,820	4,820	4,820	4,820
Red Run-of-River	Lamar	Red	Fresh	2,855	2,855	2,855	2,855	2,855	2,855
Red Run-of-River	Red River	Red	Fresh	1,015	1,015	1,015	1,015	1,015	1,015
Rhines Lake/Reservoir	Reservoir**	Neches	Fresh	1,170	1,170	1,170	1,170	1,170	1,170
River Crest Lake/Reservoir	Reservoir**	Sulphur	Fresh	5,300	5,300	5,300	5,300	5,300	5,300
Sabine Livestock Local Supply	Franklin	Sabine	Fresh	1	1	1	1	1	1
Sabine Livestock Local Supply	Hopkins	Sabine	Fresh	846	846	846	846	846	846
Sabine Livestock Local Supply	Hunt	Sabine	Fresh	854	854	854	854	854	854
Sabine Livestock Local Supply	Rains	Sabine	Fresh	544	544	544	544	544	544
Sabine Livestock Local Supply	Upshur	Sabine	Fresh	391	391	391	391	391	391
Sabine Livestock Local Supply	Van Zandt	Sabine	Fresh	660	660	660	660	660	660
Sabine Livestock Local Supply	Wood	Sabine	Fresh	2,457	2,457	2,457	2,457	2,457	2,457

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sabine Other Local Supply	Gregg	Sabine	Fresh	2,500	2,500	2,500	2,500	2,500	2,500
Sabine Other Local Supply	Van Zandt	Sabine	Fresh	847	1,007	1,170	1,337	1,498	1,661
Sabine Run-of-River	Gregg	Sabine	Fresh	12,786	12,786	12,786	12,786	12,786	12,786
Sabine Run-of-River	Harrison	Sabine	Fresh	94,870	94,870	94,870	94,870	94,870	94,870
Sabine Run-of-River	Hopkins	Sabine	Fresh	19	19	19	19	19	19
Sabine Run-of-River	Hunt	Sabine	Fresh	19	19	19	19	19	19
Sabine Run-of-River	Rains	Sabine	Fresh	57	57	57	57	57	57
Sabine Run-of-River	Smith	Sabine	Fresh	889	889	889	889	889	889
Sabine Run-of-River	Upshur	Sabine	Fresh	205	205	205	205	205	205
Sabine Run-of-River	Van Zandt	Sabine	Fresh	1,332	1,332	1,332	1,332	1,332	1,332
Sabine Run-of-River	Wood	Sabine	Fresh	1,025	1,025	1,025	1,025	1,025	1,025
Sulphur Livestock Local Supply	Bowie	Sulphur	Fresh	1,287	1,287	1,287	1,287	1,287	1,287
Sulphur Livestock Local Supply	Cass	Sulphur	Fresh	427	427	427	427	427	427
Sulphur Livestock Local Supply	Delta	Sulphur	Fresh	582	582	582	582	582	582
Sulphur Livestock Local Supply	Franklin	Sulphur	Fresh	951	951	951	951	951	951
Sulphur Livestock Local Supply	Hopkins	Sulphur	Fresh	1,735	1,735	1,735	1,735	1,735	1,735
Sulphur Livestock Local Supply	Hunt	Sulphur	Fresh	347	347	347	347	347	347
Sulphur Livestock Local Supply	Lamar	Sulphur	Fresh	468	468	468	468	468	468
Sulphur Livestock Local Supply	Morris	Sulphur	Fresh	574	574	574	574	574	574
Sulphur Livestock Local Supply	Red River	Sulphur	Fresh	1,207	1,207	1,207	1,207	1,207	1,207
Sulphur Livestock Local Supply	Titus	Sulphur	Fresh	2,433	2,433	2,433	2,433	2,433	2,433

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** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sulphur Other Local Supply	Delta	Sulphur	Fresh	25	26	26	26	26	26
Sulphur Run-of-River	Bowie	Sulphur	Fresh	242	242	242	242	242	242
Sulphur Run-of-River	Delta	Sulphur	Fresh	5,111	5,111	5,111	5,111	5,111	5,111
Sulphur Run-of-River	Franklin	Sulphur	Fresh	353	353	353	353	353	353
Sulphur Run-of-River	Hopkins	Sulphur	Fresh	85	85	85	85	85	85
Sulphur Run-of-River	Hunt	Sulphur	Fresh	0	0	0	0	0	0
Sulphur Run-of-River	Lamar	Sulphur	Fresh	997	997	997	997	997	997
Sulphur Run-of-River	Red River	Sulphur	Fresh	5,133	5,133	5,133	5,133	5,133	5,133
Sulphur Run-of-River	Titus	Sulphur	Fresh	1,205	1,205	1,205	1,205	1,205	1,205
Sulphur Springs Lake/Reservoir	Reservoir**	Sulphur	Fresh	7,730	7,730	7,730	7,730	7,730	7,730
Tankersley Lake/Reservoir	Reservoir**	Cypress	Fresh	1,500	1,500	1,500	1,500	1,500	1,500
Tawakoni Lake/Reservoir	Reservoir**	Sabine	Fresh	226,239	224,543	222,847	221,152	219,456	217,760
Trinity Livestock Local Supply	Hunt	Trinity	Fresh	49	49	49	49	49	49
Trinity Livestock Local Supply	Van Zandt	Trinity	Fresh	379	379	379	379	379	379
Turkey Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	190	190	190	190	190	190
Welsh Lake/Reservoir	Reservoir**	Cypress	Fresh	2,900	2,620	2,340	2,060	1,780	1,500
Wright Patman Lake/Reservoir	Reservoir**	Sulphur	Fresh	264,230	255,166	246,102	237,038	227,974	218,910

Region D Source Availability Total	**1,552,442**	**1,528,584**	**1,511,453**	**1,502,276**	**1,478,118**	**1,460,413**

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
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Tony Smith

From: Tony Smith
Sent: Friday, October 18, 2024 12:41 PM
To: Ron Ellis - TWDB (Ron.Ellis@twdb.texas.gov)
Cc: Kyle Dooley (kyledooley@rwrd.org); Jim Thompson (JimThompson@WardTimber.com); Stan Hayes (stan@hayesengineering.net); james.beach@advancedgw.com; Jennifer Jackson; David Harkins; Michael Pinckney; Carli Brucker; Riya Jadhav
Subject: Submittal of Region D Groundwater Availability Analysis
Attachments: AGS_Region_D_Availability_Analysis_final_20241016.pdf

Hello Ron -

Attached is a technical memorandum submitted on behalf of the NETRWPG presenting recommended updates for Region D groundwater availability. This submittal is built upon our previous discussions and analyses regarding groundwater source availability for the purposes of the 2026 Regional Water Plan, and incorporate the lessons learned from development of the 2021 Region D Plan as well.

The input and assistance of the TWDB staff is greatly appreciated. If there are any questions or concerns, please feel free to contact me and I will our team in addressing them.

Have a great weekend,

-Tony

Tony Smith, PE*
Vice President
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**Professional registration(s) in specific states* TX, OK, AR

Advanced Groundwater Solutions, LLC
www.advancedgw.com

Technical Memorandum

TO: Tony Smith, Carollo
Region D Water Planning Group

FROM: Andrew Donnelly, P.G., Meghan Puente, and James Beach, P.G.

COPY: Jennifer Jackson

SUBJECT: Recommended Updates to Region D Groundwater Availability

DATE: October 16, 2024

Introduction

This memo summarizes the recommended 2027 modeled available groundwater (MAG) availability updates in Region D. These recommended updates are for the Carrizo-Wilcox, Queen City, Trinity, and Woodbine aquifers. The methodologies used to derive the recommended changes to the MAG availabilities, as well as the recommended updated MAGs, are described below.

Carrizo-Wilcox and Queen City Aquifers

Evaluation of Supplies, Historic Pumping, and Availabilities

The current (DB27) MAG availabilities decreased significantly in the Carrizo-Wilcox and Queen City aquifers compared to the previous regional water planning cycle (DB22). This appears to be the result of the use of a new groundwater availability model (GAM) during the most recent cycle of joint groundwater planning conducted by Groundwater Management Area (GMA) 11. The aquifer properties used in the new GAM have resulted in the model automatically reducing pumping in order to keep cells from going dry during the final MAG model run. This reduction in pumping in the model simulation resulted in reduced MAGs for use in regional water planning for the Carrizo-Wilcox and Queen City aquifers. In many aquifer-county-basin splits, the new availabilities are less than the current or historic pumping volumes.

Each aquifer-county-basin split in the most recent final MAG run was evaluated to determine which splits had current MAGs that warranted a detailed evaluation to determine if an increase in the MAG is both justifiable and necessary. In many cases, the new MAGs- even ones that had decreased significantly- were significantly higher than the currently assigned supplies and recommended water management strategies (WMSs) included in the 2022 State Water Plan for that aquifer-county-basin split. Therefore, the new MAGs did not cause any issues of concern for most of the aquifer-county-basin splits.

However, there are 19 aquifer-county-basin splits that have been identified where the 2027 MAG availabilities are lower, or only slighter higher, than the sum of the 2026 assigned supplies and 2022 WMSs. These 19 aquifer-county-basin splits (summarized in Table 1) have been included in a more detailed evaluation by the NETRWPG. Also included in Table 1 are the current and previous MAG availabilities, the 2026 assigned groundwater supplies, and the 2022 recommended WMSs, all by aquifer-county-basin. The 2022 recommended WMSs have been utilized as the surrogate maximum starting point from which the 2026 WMSs are based.

Each water user group (WUG) in the 19 splits shown in Table 1 was evaluated to determine the supply that has been assigned to it in DB27 as well as the historic groundwater pumping for that WUG from the TWDB water use survey. Historic pumping for public water supply (PWS) WUGs was based on the historic municipal intake estimates available from the TWDB water use survey (https://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/index.asp). Municipal intake data is available on an aquifer-county-basin basis. Irrigation, livestock, manufacturing, mining, and steam-electric power historic pumping estimates were also obtained from the TWDB water use survey (https://www.twdb.texas.gov/waterplanning/waterusesurvey/historical-pumpage.asp). However, these historic groundwater pumping estimates are only available on an aquifer-county basis. The TWDB provided County-Other groundwater pumping estimates for this evaluation based on a data request. County-Other estimates provided by the TWDB were on an aquifer-county-basin basis.

Once the assigned supply and historic pumping was gathered for each WUG, they were compared to determine whether the assigned supply was less than the maximum amount of historic pumping that occurred in a single year. This comparison allowed the identification where historic pumping could support increased availability from the aquifer. The difference between the assigned supply and the maximum historic pumping is the amount that is recommended for the MAG availability to be increased. The sum of the increases in each aquifer-county-basin split is added to the current MAG availability to determine the new recommended MAG availability for use in this cycle of regional water planning. Note that irrigation, livestock, manufacturing, mining, and steam-electric power historic pumping estimates were not available by aquifer-county-basin. Therefore, the supplies from other basins with each county for these uses were added to the supply to obtain a county total supply to compare to the historic pumping.

Table 2 summarizes the WUGs in the 19 aquifer-county-basin splits that have historic pumping that are higher than the assigned supply, and Table 3 summarizes the total recommended increase in MAG in each aquifer-county-basin split based on the increases shown in Table 2. All but 2 of the 19 aquifer-county-basin splits have a recommended increase in the MAG, with increases ranging from 30 to 3,804 ac-ft/yr. A total of 24,063 ac-ft/yr of additional MAG is recommended for all of Region D. The recommended increases in Table 3 were added to the current MAGs for each aquifer-county-basin split to generate new recommended MAGs for the 19 aquifer-county-basin splits, which are shown in Table 4.

Trinity and Woodbine Aquifers

Previous Adjustment of MAG Availabilities

MAG availabilities in four aquifer-county-basin splits were adjusted in the previous cycle of regional water planning by Region D. These adjustments were reviewed and approved by the

TWDB in 2019. The relevant correspondence between Region D and the TWDB from 2019 is included as an attachment to this report.

However, the MAG availabilities in three of these splits were reset to their original values in the current cycle of regional water planning. Region D is recommending that these MAGs be set to the value established in the 2022 plan, summarized in Table 5. As noted, these recommended MAG availabilities were previously reviewed and approved by the TWDB during the last cycle of regional water planning.

Nacatoch Aquifer

Previous Adjustment of non-MAG Availabilities

Non-MAG availabilities in two aquifer-county-basin splits were adjusted in the previous cycle of regional water planning by Region D. These adjustments were reviewed and approved by the TWDB in 2019. The relevant correspondence between Region D and the TWDB is included as attachments to this report. The previous adjustment for the Red River-Sulphur split was carried over to the current cycle of regional water planning. However, the previous adjustment for the Hunt-Sulphur split was inadvertently decreased in the current cycle. To simplify this non-MAG availability, we recommend that a single value of 2,052 acre-feet/year be assigned as the non-MAG availability for the Nacatoch Aquifer in the Sulphur basin in Hunt County for all decades in the planning cycle.

Summary

MAGs in 19 aquifer-county-basin splits in the Carrizo-Wilcox and Queen City aquifers in Region D were decreased in the current planning cycle due to the use of an updated GAM by GMA 11 in the most recent round of joint groundwater planning. We evaluated the assigned supplies for WUGs in these 19 splits and compared them to the maximum annual estimated historic groundwater pumping for each WUG to determine if the maximum historic pumping was greater than the assigned supply. The splits with an historic pumping that was greater than the assigned supply were identified, and the difference between the pumping and supply was recommended as an increase in the MAG. The sum of all recommended increases in each of the 19 aquifer-county-basin splits was used to update the current MAGs in these two aquifers.

The MAGs in three aquifer-county-basin splits in the Trinity and Woodbine aquifers were updated in the last cycle of regional water planning. These changes were reviewed and approved by the TWDB at that time. However, the MAGs in these splits were reset to their original values. We recommend that the changes made and approved during the last cycle be restored for the current cycle of regional water planning. One non-MAG availability in the Nacatoch Aquifer was inadvertently decreased in the current cycle of regional water planning. We recommend that a single value of 2,052 acre-feet/year be assigned for all decades for this split in the current cycle of regional water planning.

Table 1. Summary of Carrizo-Wilcox and Queen City Aquifer-County-Basin Splits Evaluated.

Aquifer	County	Basin	2022 Availability (ac-ft/yr)	2027 Availability (ac-ft/yr)	Decrease in Availability (ac-ft/yr)	Percent Decrease in Availability	Sum of 2026 Assigned Supplies (ac-ft/yr)	Sum of 2022 Recommended WMSs (ac-ft/yr)
Carrizo-Wilcox	Cass	Sulphur	2,532	777	1,755	69%	479	216
Carrizo-Wilcox	Franklin	Sulphur	2,021	398	1,623	80%	371	1,129
Carrizo-Wilcox	Gregg	Sabine	7,179	5,346	1,833	26%	5,215	135
Carrizo-Wilcox	Hopkins	Sabine	2,842	2,426	416	15%	1,625	931
Carrizo-Wilcox	Hopkins	Sulphur	6,795	2,017	4,778	70%	1,193	5,606
Carrizo-Wilcox	Morris	Sulphur	402	415	-13	-3%	384	0
Carrizo-Wilcox	Smith	Sabine	13,196	7,939	5,257	40%	4,770	646
Carrizo-Wilcox	Titus	Cypress	7,194	5,594	1,600	22%	3,258	560
Carrizo-Wilcox	Titus	Sulphur	2,838	1,942	896	32%	918	1,445
Carrizo-Wilcox	Upshur	Cypress	5,442	5,107	335	6%	4,614	216
Carrizo-Wilcox	Upshur	Sabine	1,689	1,550	139	8%	1,487	0
Carrizo-Wilcox	Van Zandt	Neches	4,317	2,616	1,701	39%	2,616	298
Carrizo-Wilcox	Van Zandt	Sabine	4,370	3,286	1,084	25%	3,272	172
Carrizo-Wilcox	Van Zandt	Trinity	1,384	1,030	354	26%	1,030	143
Carrizo-Wilcox	Wood	Sabine	19,360	16,977	2,383	12%	14,059	214
Queen City	Camp	Cypress	4,150	1,594	2,556	62%	136	4,000
Queen City	Cass	Sulphur	3,010	624	2,386	79%	496	966
Queen City	Harrison	Sabine	2,310	561	1,749	76%	151	1,949
Queen City	Morris	Cypress	9,362	3,278	6,084	65%	3,247	1,127

Table 2. Comparison of Maximum Supply to Maximum Historic Pumping by Water User Group in the Carrizo-Wilcox and Queen City Aquifers (in acre-feet per year).

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
COUNTY-OTHER, CASS	Carrizo-Wilcox	Cass	Sulphur	80	282	202
LIVESTOCK, CASS	Carrizo-Wilcox	Cass	Sulphur	39	188	149
MINING, CASS	Carrizo-Wilcox	Cass	Sulphur	33	902	869
QUEEN CITY	Carrizo-Wilcox	Cass	Sulphur	100	293	193
LIVESTOCK, FRANKLIN	Carrizo-Wilcox	Franklin	Sulphur	361	1,149	788
MINING, FRANKLIN	Carrizo-Wilcox	Franklin	Sulphur	0	1,408	1,408
COUNTY-OTHER, GREGG	Carrizo-Wilcox	Gregg	Sabine	1,134	1,530	396
ELDERVILLE WSC	Carrizo-Wilcox	Gregg	Sabine	38	148	110
KILGORE	Carrizo-Wilcox	Gregg	Sabine	1,504	1,733	229
MANUFACTURING, GREGG	Carrizo-Wilcox	Gregg	Sabine	30	250	220
MINING, GREGG	Carrizo-Wilcox	Gregg	Sabine	411	2,672	2,261
STEAM ELECTRIC POWER, GREGG	Carrizo-Wilcox	Gregg	Sabine	242	267	25
TRYON ROAD SUD	Carrizo-Wilcox	Gregg	Sabine	128	382	254
LIVESTOCK, HOPKINS	Carrizo-Wilcox	Hopkins	Sabine	549	2,800	2,251
BRINKER WSC	Carrizo-Wilcox	Hopkins	Sulphur	253	311	58
COUNTY-OTHER, HOPKINS	Carrizo-Wilcox	Hopkins	Sulphur	124	514	390
IRRIGATION, HOPKINS	Carrizo-Wilcox	Hopkins	Sulphur	49	330	281

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
MARTIN SPRINGS WSC	Carrizo-Wilcox	Hopkins	Sulphur	446	825	379
LIVESTOCK, MORRIS	Carrizo-Wilcox	Morris	Sulphur	150	162	12
NAPLES	Carrizo-Wilcox	Morris	Sulphur	109	411	302
OMAHA	Carrizo-Wilcox	Morris	Sulphur	125	165	40
COUNTY-OTHER, SMITH	Carrizo-Wilcox	Smith	Sabine	0	1,900	1,900
IRRIGATION, SMITH	Carrizo-Wilcox	Smith	Sabine	0	251	251
LIBERTY CITY WSC	Carrizo-Wilcox	Smith	Sabine	23	428	405
LINDALE RURAL WSC	Carrizo-Wilcox	Smith	Sabine	1,011	1,034	23
MINING, SMITH	Carrizo-Wilcox	Smith	Sabine	0	506	506
STAR MOUNTAIN WSC	Carrizo-Wilcox	Smith	Sabine	213	254	41
STARRVILLE-FRIENDSHIP WSC	Carrizo-Wilcox	Smith	Sabine	130	214	84
WEST GREGG SUD	Carrizo-Wilcox	Smith	Sabine	132	726	594
MINING, TITUS	Carrizo-Wilcox	Titus	Cypress	0	1,736	1,736
COUNTY-OTHER, UPSHUR	Carrizo-Wilcox	Upshur	Cypress	194	747	553
DIANA SUD	Carrizo-Wilcox	Upshur	Cypress	598	695	97
GILMER	Carrizo-Wilcox	Upshur	Cypress	1,226	1,652	426
MANUFACTURING, UPSHUR	Carrizo-Wilcox	Upshur	Cypress	6	296	290
ORE CITY	Carrizo-Wilcox	Upshur	Cypress	214	260	46

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
PRITCHETT WSC	Carrizo-Wilcox	Upshur	Cypress	441	636	195
UNION GROVE WSC	Carrizo-Wilcox	Upshur	Cypress	72	277	205
COUNTY-OTHER, UPSHUR	Carrizo-Wilcox	Upshur	Sabine	157	280	123
EAST MOUNTAIN WATER SYSTEM	Carrizo-Wilcox	Upshur	Sabine	154	254	100
PRITCHETT WSC	Carrizo-Wilcox	Upshur	Sabine	580	756	176
EDOM WSC	Carrizo-Wilcox	Van Zandt	Neches	102	158	56
LITTLE HOPE MOORE WSC	Carrizo-Wilcox	Van Zandt	Neches	121	211	90
LIVESTOCK, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Neches	477	848	371
MINING, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Neches	1,117	1,795	678
R P M WSC	Carrizo-Wilcox	Van Zandt	Neches	130	455	325
CANTON	Carrizo-Wilcox	Van Zandt	Sabine	298	728	430
COUNTY-OTHER, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Sabine	827	1,122	295
GRAND SALINE	Carrizo-Wilcox	Van Zandt	Sabine	374	841	467
MACBEE SUD	Carrizo-Wilcox	Van Zandt	Sabine	66	68	2
MANUFACTURING, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Sabine	163	684	521
MYRTLE SPRINGS WSC	Carrizo-Wilcox	Van Zandt	Sabine	157	190	33
COUNTY-OTHER, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Trinity	604	635	31
IRRIGATION, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Trinity	33	623	590

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
ALGONQUIN WATER RESOURCES OF TEXAS	Carrizo-Wilcox	Wood	Sabine	0	439	439
FOUKE WSC	Carrizo-Wilcox	Wood	Sabine	1,026	1,233	207
IRRIGATION, WOOD	Carrizo-Wilcox	Wood	Sabine	147	400	253
PRITCHETT WSC	Carrizo-Wilcox	Wood	Sabine	5	102	97
SHARON WSC	Carrizo-Wilcox	Wood	Sabine	471	705	234
LIVESTOCK, CAMP	Queen City	Camp	Cypress	136	352	216
LIVESTOCK, CASS	Queen City	Cass	Sulphur	115	249	134
LIVESTOCK, MORRIS	Queen City	Morris	Cypress	84	114	30

Table 3. Total Recommended Increase in MAG for Each Aquifer-County-Basin Split in the Carrizo-Wilcox and Queen City Aquifers (in acre-feet per year)

Aquifer	County	Basin	Increase in MAG
Carrizo-Wilcox	Cass	Sulphur	1,413
Carrizo-Wilcox	Franklin	Sulphur	2,196
Carrizo-Wilcox	Gregg	Sabine	3,495
Carrizo-Wilcox	Hopkins	Sabine	2,251
Carrizo-Wilcox	Hopkins	Sulphur	1,108
Carrizo-Wilcox	Morris	Sulphur	354
Carrizo-Wilcox	Smith	Sabine	3,804
Carrizo-Wilcox	Titus	Cypress	1,736
Carrizo-Wilcox	Titus	Sulphur	0
Carrizo-Wilcox	Upshur	Cypress	1,811
Carrizo-Wilcox	Upshur	Sabine	398
Carrizo-Wilcox	Van Zandt	Neches	1,520
Carrizo-Wilcox	Van Zandt	Sabine	1,747
Carrizo-Wilcox	Van Zandt	Trinity	621
Carrizo-Wilcox	Wood	Sabine	1,229
Queen City	Camp	Cypress	216
Queen City	Cass	Sulphur	134
Queen City	Harrison	Sabine	0
Queen City	Morris	Cypress	30

Table 4. Current and Recommended MAGs for the Carrizo-Wilcox and Queen City Aquifers in Region D (in acre-feet per year).

Aquifer	County	Basin	Current MAG (ac-f/yr)						Recommended Increase in MAG (ac-f/yr)						Recommended MAG (ac-f/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Carrizo-Wilcox	Cass	Sulphur	777	777	777	777	777	777	1,413	1,413	1,413	1,413	1,413	1,413	2,190	2,190	2,190	2,190	2,190	2,190
Carrizo-Wilcox	Franklin	Sulphur	398	398	398	398	398	398	2,196	2,196	2,196	2,196	2,196	2,196	2,594	2,594	2,594	2,594	2,594	2,594
Carrizo-Wilcox	Gregg	Sabine	5,346	5,346	5,346	5,346	5,346	5,346	3,495	3,495	3,495	3,495	3,495	3,495	8,841	8,841	8,841	8,841	8,841	8,841
Carrizo-Wilcox	Hopkins	Sabine	2,426	2,426	2,426	2,426	2,426	2,426	2,251	2,251	2,251	2,251	2,251	2,251	4,677	4,677	4,677	4,677	4,677	4,677
Carrizo-Wilcox	Hopkins	Sulphur	2,017	2,017	2,017	2,017	2,017	2,017	1,108	1,108	1,108	1,108	1,108	1,108	3,125	3,125	3,125	3,125	3,125	3,125
Carrizo-Wilcox	Morris	Sulphur	415	415	415	415	415	415	354	354	354	354	354	354	769	769	769	769	769	769
Carrizo-Wilcox	Smith	Sabine	7,939	7,939	7,939	7,939	7,939	7,939	3,804	3,804	3,804	3,804	3,804	3,804	11,743	11,743	11,743	11,743	11,743	11,743
Carrizo-Wilcox	Titus	Cypress	5,594	5,594	5,594	5,594	5,594	5,594	1,736	1,736	1,736	1,736	1,736	1,736	7,330	7,330	7,330	7,330	7,330	7,330
Carrizo-Wilcox	Titus	Sulphur	1,942	1,942	1,942	1,942	1,942	1,942	0	0	0	0	0	0	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox	Upshur	Cypress	5,107	5,107	5,107	5,107	5,107	5,107	1,811	1,811	1,811	1,811	1,811	1,811	6,918	6,918	6,918	6,918	6,918	6,918
Carrizo-Wilcox	Upshur	Sabine	1,550	1,550	1,550	1,550	1,550	1,550	398	398	398	398	398	398	1,948	1,948	1,948	1,948	1,948	1,948
Carrizo-Wilcox	Van Zandt	Neches	2,616	2,616	2,616	2,616	2,616	2,616	1,520	1,520	1,520	1,520	1,520	1,520	4,136	4,136	4,136	4,136	4,136	4,136
Carrizo-Wilcox	Van Zandt	Sabine	3,286	3,286	3,286	3,286	3,286	3,286	1,747	1,747	1,747	1,747	1,747	1,747	5,033	5,033	5,033	5,033	5,033	5,033
Carrizo-Wilcox	Van Zandt	Trinity	1,030	1,030	1,030	1,030	1,030	1,030	621	621	621	621	621	621	1,651	1,651	1,651	1,651	1,651	1,651
Carrizo-Wilcox	Wood	Sabine	16,977	16,977	16,977	16,977	16,977	16,977	1,229	1,229	1,229	1,229	1,229	1,229	18,206	18,206	18,206	18,206	18,206	18,206
Queen City	Camp	Cypress	1,594	1,594	1,594	1,594	1,594	1,594	216	216	216	216	216	216	1,810	1,810	1,810	1,810	1,810	1,810
Queen City	Cass	Sulphur	624	624	624	624	624	624	134	134	134	134	134	134	758	758	758	758	758	758
Queen City	Harrison	Sabine	561	561	561	561	561	561	0	0	0	0	0	0	561	561	561	561	561	561
Queen City	Morris	Cypress	3,278	3,278	3,278	3,278	3,278	3,278	30	30	30	30	30	30	3,308	3,308	3,308	3,308	3,308	3,308

Table 5. Current and Recommended MAGs for the Trinity and Woodbine Aquifers.

Aquifer	County	Basin	Current Modeled Available Groundwater (ac-ft/yr)						Recommended Modeled Available Groundwater (ac-ft/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Trinity	Hunt	Sabine	0	0	0	0	0	0	213	213	213	213	213	213
Trinity	Red River	Sulphur	125	125	125	125	125	125	233	234	233	234	233	233
Woodbine	Lamar	Red	0	0	0	0	0	0	22	22	22	22	22	22

Table 6. Current and Recommended non-MAG Availabilities for the Nacatoch Aquifer.

Aquifer	County	Basin	Current Modeled Available Groundwater (ac-ft/yr)						Recommended Modeled Available Groundwater (ac-ft/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Nacatoch	Hunt	Sulphur	491	491	513	868	1,347	2,052	2,052	2,052	2,052	2,052	2,052	2,052
Nacatoch	Red River	Sulphur	2,924	2,923	2,923	2,923	2,923	2,923	2,924	2,923	2,923	2,923	2,923	2,923

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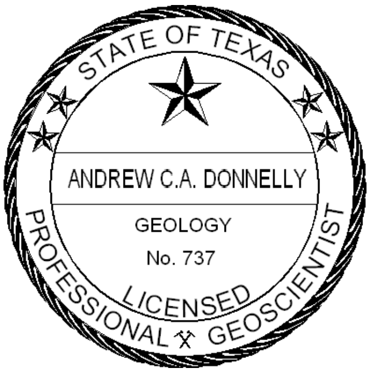

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ATTACHMENTS

MEMO

TO: **Ms. Sarah Backhouse**

FROM: **Kristie Laughlin, P.G., James Beach, P.G. and Jennifer Herrera**

SUBJECT: **Proposed Methodology for Determining Groundwater Availability in Region D on behalf of the North East Texas Regional Water Planning Group**

DATE: **Revised May 21, 2019**

Introduction

There are no Groundwater Conservation Districts (GCDs) in Region D. Chapter 357 states:

> *If no groundwater conservation district exists within the RWPA, then the RWPG shall determine the Availability of groundwater for regional planning purposes. The Board shall review and consider approving the RWPG-Estimated Groundwater Availability, prior to inclusion in the IPP, including determining if the estimate is physically compatible with the desired future conditions for relevant aquifers in groundwater conservation districts in the co-located groundwater management area or areas. The EA shall use the Board's groundwater availability models as appropriate to conduct the compatibility review.*

Because there are no GCDs in Region D, the region wanted to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB were appropriate for the region. Region D believes that local entities that operate wells and wellfields in the region have insight and information that may be helpful in refining the groundwater availability estimates. The refined evaluation is deemed necessary to ensure that historical use and local aquifer characteristics and conditions are properly considered when estimating local groundwater availability. Without local GCD representation and data, it is difficult for Groundwater Management Area (GMA) 11 and GMA 8 to assess groundwater availability at the level that may be required for local groundwater sources. Refinement of the groundwater availability estimates entailed comparing the MAGs for each county-aquifer-basin and calculated municipal pumpage in nine county-aquifer-basins. The term "relevant" as applied to groundwater aquifers, determines whether they are considered critical to joint groundwater planning. The 'relevant' designation can change from one planning cycle to the next.

Based on an initial evaluation, the county-aquifer-basins listed below appear to have historical pumping estimates that exceed the TWDB assigned MAG volumes, and thus have been analyzed herein:

1. Hunt County – Nacatoch Aquifer – Sulphur Basin
2. Delta County – Trinity Aquifer – Sulphur Basin
3. Hunt County – Trinity Aquifer – Trinity Basin
4. Lamar County – Trinity Aquifer – Red Basin
5. Hunt County – Woodbine Aquifer – Sabine Basin
6. Hunt County – Woodbine Aquifer – Sulphur Basin
7. Lamar County – Woodbine Aquifer – Red River Basin
8. Lamar County – Woodbine Aquifer – Sulphur Basin
9. Red River County – Woodbine Aquifer – Red River Basin

Data

To investigate these nine county-aquifer-basin areas, WSP reviewed the following data:

- public water supply well locations, well depths, well tested capacities, and public water supply system average daily consumption volumes available via the Texas Commission on Environmental Quality (TCEQ) Texas Drinking Water Watch;
- groundwater well locations, depths and well yields available via TCEQ water well databases;
- groundwater well locations, depths and well yields available via the Texas Water Development Board (TWDB);
- TWDB groundwater availability model (GAM) run reports requested by GMA-8 for both the 2016 and 2021 planning cycles;
- structure surfaces derived for either the Northern Trinity Woodbine Groundwater Availability Model (NTWGAM) (Kelley and others, 2013) or the Nacatoch Brackish Availability Study (Laughlin and others, 2017; and
- TWDB historical groundwater pumping; (as described on the TWDB website):

  > *"Each year the Texas Water Development Board conducts an annual survey of ground and surface water use by municipal and industrial entities within the state of Texas. The information obtained, as well as water use estimates for irrigation, livestock and mining is then utilized by the Texas Water Development Board for water resources planning. The historical water use estimates and survey information is subject to revision as additional data and corrections are made available to the TWDB."*

Methodology

Municipal Pumping

The focus of the analyses is primarily on municipal pumping because it accounts for 65 percent of all groundwater used in Region D, based on 2016 historical pumping estimates. Additionally, the municipal estimates are the actual pumping reported by PWS entities to TWDB via annual surveys. To determine if the MAG volumes were adequate to support public water supply (PWS) pumping, PWS locations were verified to be active and to have the correct aquifer designation based on geologic structure. River basin splits, where applicable, were noted for each public system, so that pumping could be properly allocated to compare to MAG volumes split out by basin.

Total tested well capacities were then summed for PWS wells per county-aquifer-basin. Total tested well capacity actually represents maximum system capacity, which is how much a system could pump if it pumped its wells 24 hours a day, seven days a week, for 365 days a year at full capacity. To adjust the total system capacity to a more realistic pumping volume, it is assumed that wells typically pump for only six hours a day. Thus, the maximum system capacity is divided by four to derive the expected average annual pumping for the system. The average daily consumption of the system, if reported, is also converted to an annual volume to represent the average annual PWS system pumping. The estimates of average annual pumping volume are then compared to the MAG volume.

Non-municipal Pumping

The only non-municipal estimates that are based on annual surveys are pumping estimates reported by industrial users, which accounted for approximately four percent of Region D pumping in 2016. To verify non-municipal historical pumping estimates, existing non-municipal well locations were verified (when possible) to be active and aquifer designations were either determined (from state well reports) or verified (for TWDB historical wells) using the geologic structure sources mentioned previously. Non-surveyed estimates were then evaluated to determine if they can be substantiated by existing active wells found within the county-aquifer-basin. Note that the non-surveyed estimates for irrigation and livestock are calculated by the TWDB as follows:

> *Livestock water-use estimates are derived from annual livestock population estimates produced by the Texas Agricultural Statistics Service. Estimated water use per animal unit is based on research conducted by the Texas Agricultural Experiment Station.*
>
> *Irrigated agriculture water-use estimates are based on annual crop acreage from the Natural Resources Conservation Service (prior to 2001) and the Farm Service Administration*

(2001 and later). Irrigation rates per acre are estimated based on potential evapotranspiration, with final estimates reviewed by local authorities.

Since the non-surveyed volumes are county-wide estimates and are not location-specific, in some areas they can erroneously assign pumping to water users that cannot be substantiated using the publicly-available state well databases and other resources. WSP considered the non-surveyed historical pumping estimates to be questionable when there is no well data to support the assumption that the demands are supplied by wells in that specific county-aquifer-basin. TWDB's non-surveyed historical estimates may not have any direct relationship to MAG volumes or regional supply estimates but they can be provide insight for water resource planning.

The above analyses identify where and by how much WUGs within Region D have existing groundwater supplies that exceed MAG amounts, with recommendations for two specific county-aquifer-basins to be increased based on a local hydrogeologic assessment based on available information base. Additional consideration has been given by Region D to the identification of amounts of groundwater available for future water management strategies (WMSs) in the region.

At present, the evaluation of potentially feasible WMSs is underway, but are not yet complete. An analysis has been performed to develop an estimate of the maximum amount of groundwater for individual county-aquifer-basins that may be identified as an available source for Region D. The approach proposed herein is that these estimated maximums be reviewed and possibly approved by TWDB, with an acknowledgement that local hydrogeologic analyses similar to the methods presented herein for existing groundwater availability in Region D will be performed which may further limit the amount of groundwater availabilities for each county-aquifer-basin combination within the region. Said another way, the estimates presented within this memorandum represent the maximum amount of groundwater available within Region D above the MAG, and if the local hydrogeological assessment performed by Region D during WMS evaluations indicates an amount lower than these estimated maximums, then whichever between the two is the lower amount becomes the limiting factor that establishes the availability to be employed for characterizing groundwater availability for the purposes of the 2021 Region D Plan.

To derive the estimated maximum amounts of groundwater availability above existing MAG amounts for each county-aquifer-basin, the following analyses were performed:

1. WUG second-tier needs were evaluated to determine whether groundwater is a potential source of supply. If groundwater was identified as a potential source, the second-tier WUG needs were summed by county and basin.
2. Source water balances for each county-aquifer-basin combination were then summed to represent the amount of MAG available after allocation of existing groundwater supplies to Region D entities.
3. The summed second tier need by county-basin for each Region D WUG (from Item 1) was then compared to the remaining available MAG amount by county-aquifer-basin (from Item 2) to determine the amount of water, by county-aquifer-basin, potentially needed above the MAG.
4. Those instances where the summed second tier need exceeds MAG availability were then tabulated by county-aquifer-basin by the total amount over the MAG.
5. The maximum amount over the MAG over the 50-year planning period was then calculated for each county-aquifer-basin.

This approach results in a conservative estimate of the amount of water to be identified by Region D as being potentially available above the MAG, and is conservative in two aspects:

a) WUGs may have alternative sources more viable than groundwater; and
b) WUGs may utilize one county-aquifer-basin over another, but for the present purposes it has been assumed that either county-aquifer-basin may be used, so the resultant maximum amounts may be higher than the application of a specific source to meet an identified need.

Results

Table 1 is a summary of findings for existing groundwater use using the methods described above. MAG volumes for two of the nine county-aquifer basins are probably not sufficient. It is recommended that further communication with TWDB be made regarding these areas. Table 2 details the recommended existing supply volumes for all county-aquifer-basins, while Table 3 presents the recommended additional maximum amounts of availability of groundwater to meet potential future water management strategies within Region D. It should be noted that the amounts presented in Table 3 are *in addition* to the amounts recommended in Table 2.

For the purposes of the 2021 Region D Water Plan, the methodologies used herein are proposed for estimating groundwater availability in Region D. Using these methods, for the identified county-aquifer-basins where existing supplies potentially exceed the TWDB MAG volumes, it appears that the MAG volumes are sufficient for existing supply amounts for seven of the county-aquifer-basins.

It is proposed that these methods be used to comparatively assess and evaluate TWDB MAG volumes and groundwater availabilities for potentially feasible Water Management Strategies within the Region D Planning Area. While Region D has not completed a thorough assessment of local aquifer conditions for each WUG that may need a groundwater strategy, conservative estimates of the maximum amount above the MAG for each county-aquifer-basin have been derived and are presented herein. Local hydrogeologic evaluations consistent with the methods described herein are proposed to be completed on a case-by-case basis for WUGs with identified needs, and where a potential groundwater strategy is considered, the lower of either the requested maximums presented herein or the result of the local evaluation will be employed to establish groundwater availability for the specific county-aquifer-basin for the purposes of the 2021 Region D Plan.

Table 1. Summary of Findings: Source Water Evaluation and MAGs, in acre-feet per year

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Findings
Hunt – Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	The MAG is not sufficient. Cumulative pumping volumes for non-municipal users is unknown.
Delta – Trinity – Sulphur	56	145 (IRR, STK)	41 (Ben Franklin and West Delta WSCs)	The MAG is sufficient for municipal supply. Historical pumping estimates are not substantiated. The only existing Trinity wells are public water supply wells and over 3,000 feet deep. Professional judgement indicates that 3000 feet deep wells are not economically feasible to meet irrigation and livestock demands.
Hunt – Trinity – Trinity -	0	0	No Trinity municipal pumping	Historical pumping erroneously reported in Hunt County but should be reported in Fannin County.
Lamar – Trinity – Red	0	0	No Trinity municipal pumping	There are no Trinity wells in Lamar County in the Red River basin.
Hunt - Woodbine - Sabine	269	79 (MUN)	267 (Celeste, Hickory Creek SUD – 1 well)	The MAG should be sufficient for municipal supply. There are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110 This is 22 percent of the total volume reported for Hickory Creek SUD system (405 afy). Pumpage is weighted by basin based on tested well capacities.	The MAG should be sufficient for municipal supply. Only one of the four system wells is located in the Sulphur Basin. There are no other uses reported.
Lamar - Woodbine – Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	The MAG is probably not sufficient. No active public supply wells. There are a few newer domestic wells, livestock and irrigation wells drilled within the last 6 years. Cumulative pumping is unknown, but is likely greater than 18 afy.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	This MAG should be sufficient. No active public supply wells. No active livestock wells.
Red River - Woodbine – Red	2	1 (MUN)	No Woodbine PWS pumping	The MAG is probably adequate. Historical pumping is questionable based on existing well data. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock

Table 2. Recommended Availability Volumes, in acre-feet per year

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Recommended Volume	Justification
Hunt - Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	**1,092** 730 municipal pumping plus 362 other uses	There are approximately 50 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 18 gpm. Assume wells pump 6 hours a day. Total of 225 gpm is 362 acre-feet/year.
Delta – Trinity - Sulphur	56	145 (IRR, STK)	41	**56**	MAG volume is recommended. It is sufficient for municipal supply. The only Trinity wells are for public supply (over 3,000 ft. deep).
Hunt – Trinity -Trinity -	0	0	0	**0**	MAG of zero is recommended, since the North Hunt SUD pumping is in Fannin County.
Lamar – Trinity – Red	0	0	0	**0**	MAG of zero is recommended, since there are no Trinity wells.
Hunt - Woodbine - Sabine	269	79 (MUN)	267	**269**	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110	**165**	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Lamar - Woodbine - Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	**60**	There are approximately 10 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 15 gpm. Assume wells pump 6 hours a day. Total of 37.5 gpm is 60 acre-feet/year.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	**49**	MAG volume recommended. No active public supply wells. No active domestic, irrigation or livestock wells.
Red River - Woodbine - Red	2	1 (MUN)	No Woodbine PWS pumping	**2**	MAG volume recommended. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock

Table 3. Region D Maximum Requested Groundwater Availability above MAG by County-Aquifer-Basin Combination (ac-ft)

County/Aquifer/Basin	Maximum Amount (ac-ft)
BOWIE/BLOSSOM AQUIFER/RED	231
BOWIE/BLOSSOM AQUIFER/SULPHUR	237
CAMP/CARRIZO-WILCOX AQUIFER/CYPRESS	2,120
DELTA/TRINITY AQUIFER/SULPHUR	15
HARRISON/CARRIZO-WILCOX AQUIFER/CYPRESS	1,058
HOPKINS/NACATOCH AQUIFER/SABINE	100
HOPKINS/CARRIZO-WILCOX AQUIFER/SULPHUR	4,305
HOPKINS/NACATOCH AQUIFER/SULPHUR	6,353
HUNT/NACATOCH AQUIFER/SABINE	16,533
HUNT/TRINITY AQUIFER/SABINE	19,262
HUNT/WOODBINE AQUIFER/SABINE	19,262
HUNT/NACATOCH AQUIFER/SULPHUR	2,425
HUNT/TRINITY AQUIFER/SULPHUR	2,425
HUNT/WOODBINE AQUIFER/SULPHUR	2,405
HUNT/TRINITY AQUIFER/TRINITY	124
LAMAR/BLOSSOM AQUIFER/RED	1,565
LAMAR/TRINITY AQUIFER/RED	1,888
LAMAR/WOODBINE AQUIFER/RED	1,888
LAMAR/BLOSSOM AQUIFER/SULPHUR	370
LAMAR/NACATOCH AQUIFER/SULPHUR	331
LAMAR/TRINITY AQUIFER/SULPHUR	435
LAMAR/WOODBINE AQUIFER/SULPHUR	441
RAINS/NACATOCH AQUIFER/SABINE	149
RED RIVER/NACATOCH AQUIFER/RED	134
RED RIVER/TRINITY AQUIFER/RED	155
RED RIVER/WOODBINE AQUIFER/RED	184

County/Aquifer/Basin	Maximum Amount (ac-ft)
RED RIVER/BLOSSOM AQUIFER/SULPHUR	2,391
RED RIVER/CARRIZO-WILCOX AQUIFER/SULPHUR	2,391
RED RIVER/NACATOCH AQUIFER/SULPHUR	2,212
RED RIVER/TRINITY AQUIFER/SULPHUR	2,326
TITUS/CARRIZO-WILCOX AQUIFER/CYPRESS	2,207
TITUS/QUEEN CITY AQUIFER/CYPRESS	2,063
VAN ZANDT/CARRIZO-WILCOX AQUIFER/SABINE	132

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Kelley, V., Jones, T., Young, S., Hamlin, S., Pinkard, J., Harding, J., Jigmond, M., Yan, T., Scanlon, B., Reedy, B., Beach, J., Davidson, T., and Laughlin, K., 2013. Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers: Conceptual Model Report; prepared by Intera, The University of Texas at Austin Bureau of Economic Geology, and LBG-Guyton Associates for the Texas Water Development Board.

Laughlin, K., Fleischhauer, L., Wise, M., Hamlin, S.,, Banerji, D., and Beach, J., 2017. Identification of Potential Brackish Groundwater Production Areas – Nacatoch Aquifer, TWDB Contract Number 1600011952; prepared by LBG-Guyton Associates, Collier Consulting, Inc. and The University of Texas at Austin Bureau of Economic Geology, July 2017, 154 pages.

Texas Water Development Board

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THROUGH: John T. Dupnik, P.G., Deputy Executive Administrator for Water Sciences and Conservation JTD
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FROM: Jerry Shi, Ph.D., P.G., Groundwater Availability Modeling J. S.
Shirley Wade, Ph.D., P.G., Groundwater Availability Modeling S. W.

DATE: August 27, 2019

SUBJECT: Technical Review of North East Texas Regional Water Planning Group Proposed Methodology for Determining Groundwater Availability in Region D

SUMMARY

Groundwater modeling of the methodology for groundwater availability proposed by the North East Texas Regional Water Planning Group results in widespread exceedances of desired future conditions and in some areas dewatering of multiple aquifers. Therefore, groundwater staff do not recommend approval of the submitted groundwater availability estimates for the Carrizo-Wilcox, Trinity, Queen City, and Woodbine aquifers. Although modeling results for the Carrizo-Wilcox and Queen City aquifers do not generate water-level drawdowns that exceed the desired future conditions in any groundwater conservation district adjacent to Region D, modeling results do suggest that these aquifers may not be able to produce the proposed groundwater availability amounts requested by the Northeast Texas Regional Water Planning Group (Region D) in some areas within Region D. For the Trinity and Woodbine aquifers, the modeling results suggest the desired future conditions in Upper Trinity, North Texas, Prairielands, Red River, Southern Trinity, Middle Trinity, and Northern Trinity groundwater conservation districts may be exceeded.

BACKGROUND

On May 24, 2019, Kristie Laughlin, James Beach, and Jennifer Herrera from WSP on behalf of Region D, submitted a proposed methodology for determining groundwater availability in Region D to Sarah Backhouse, manager of the TWDB Regional Water Planning

Department. Because there are no groundwater conservation districts in Region D, the planning group estimated groundwater availability for the aquifers in Region D. Aquifers in Region D include the Carrizo-Wilcox, Queen City, Nacatoch, Blossom, Trinity, and Woodbine aquifers. TWDB Groundwater Availability Modeling Department staff have reviewed the proposed groundwater availability estimates to determine whether they are compatible with the desired future conditions of the aquifers in Groundwater Management Areas 8 and 11. The Blossom and Nacatoch aquifers were declared nonrelevant in Groundwater Management Area 8 and they do not have desired future conditions, so their compatibility does not need to be reviewed. The Trinity and Woodbine aquifers have desired future conditions in Groundwater Management Area 8 and the Carrizo-Wilcox and Queen City aquifers have desired future conditions in Groundwater Management Area 11.

KEY ISSUES

The technical review of the proposed groundwater availability estimates consisted of verifying that the pumping rates will not generate drawdowns that exceed the desired future conditions for the Trinity and Woodbine aquifers in Groundwater Management Area 8 and for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11.

Our review of the technical materials provided by Region D showed several inconsistencies. For example, proposed estimates of groundwater availability for the Carrizo-Wilcox and Queen City aquifers in Region D are not discussed in the text of the WSP memo; however, proposed estimates for these aquifers are listed in Table 3 of the WSP memo. In addition, some of the groundwater availability estimates proposed in the text of the WSP memo for the Trinity and Woodbine aquifers were also listed at higher levels in Table 3.

ANALYSIS

Groundwater Management Area 11: Carrizo-Wilcox and Queen City aquifers

Groundwater staff revised the model pumping file for "Scenario 4" – the model simulation that resulted in values of modeled available groundwater for the adopted desired future conditions in the Groundwater Management Area 11 (Wade, 2017). The revision to Scenario 4 increased the groundwater availability amounts for the county/basin combinations shown in Tables 1 through 3. In areas where no pumping was present in Scenario 4, the requested county/basin pumping volume was evenly distributed. Factors were applied where pumping in Scenario 4 were less than the Region D requested pumping volumes. Groundwater staff then ran the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers (version 2.01; Figure 1) using the modified pumping file. Drawdowns from 2000 through 2070 were extracted from the model results and averaged by county and overall (Table 4). The methods and assumptions are the same as those discussed in the Groundwater Management Area 11 modeled available groundwater report (Wade, 2017). The drawdowns are consistent with the desired future conditions if the difference between the modeled drawdown is within a 1-foot variance. The drawdown averages were compared with the Groundwater Management Area 11 desired future conditions (Table 4). While the desired future conditions were not exceeded in a groundwater conservation district, the overall desired future condition for Groundwater Management Area 11 and several counties without a groundwater conservation district were exceeded.

In addition to analyzing county average drawdowns from the proposed groundwater availability model run, groundwater staff also analyzed the model water budget to verify the groundwater availability values. Some of the pumping discharge volumes were reduced in the model run because of model cells going dry. A model cell going dry suggests that the aquifer may not be able to produce the modeled amount of pumping in a particular area. The maximum number of dry cells in 2070 were noted for each county basin for the desired future condition/modeled available groundwater run and for the revised groundwater availability model run (Table 2). The pumping values listed in Tables 2 and 3, Region D Actual Groundwater Availability, suggest the maximum amount of pumping that appears feasible in a particular aquifer, county, and basin.

Groundwater Management Area 8: Trinity and Woodbine aquifers

The groundwater availability model simulation that met the desired future conditions (Shi, 2018) was revised to accommodate the increased pumping in the Trinity (Figure 2) and Woodbine (Figure 3) aquifers requested by Region D. The increased pumping was evenly distributed in the official boundary extent of the Trinity and Woodbine aquifers by county, basin, and regional planning area. In applying the additional pumping, we used 365 days in a year except for 366 days in leap years. Pumping is slightly more in leap years to account for one more additional day of pumping.

After the model run, the pumping information extracted from the revised model budget file was compared with the modeled available groundwater from Shi (2018) as a quality control measure. The comparisons are presented in Table 5 for the Trinity Aquifer and Table 6 for the Woodbine Aquifer. The comparisons indicate that the revised model reflected the increased pumping requested by Region D, with slightly more pumping in leap years.

Using the same approach by Shi (2018), the simulated head values from the revised model were used to calculate drawdown values between 2070 and 2009 for both aquifers by counties (Tables 7 and 8), groundwater conservation districts (Table 9), and Groundwater Management Area 8 (Table 10). A desired future condition is exceeded if the drawdown from the revised model changes more than five feet and five percent relative to the desired future condition at the same time. Tables 7 through 10 indicate that, with the increased pumping in Region D, the desired future conditions would be exceeded in several counties and groundwater conservation districts within Groundwater Management Area 8.

Additional model simulations were performed to estimate the optimal pumping rates that could be used by Region D and still do not exceed the desired future conditions by county, groundwater conservation district, and Groundwater Management Area 8.

CONCLUSIONS

The proposed groundwater availability estimates for the Queen City Aquifer do not affect the model estimated 2070 desired future conditions for Groundwater Management Area 11. Drawdown results are not presented for the Queen City Aquifer because the drawdowns with the revised pumping were within 1 foot of the desired future conditions listed in Table 1 of the modeled available groundwater report (Wade, 2017). The proposed groundwater availability estimates for the Carrizo-Wilcox Aquifer cause modeled average drawdowns which exceed the desired future conditions for Groundwater Management Area 11 in eight counties and overall (Table 4). However, none of the desired future conditions that are exceeded are in groundwater conservation districts.

Note, drawdown results are not presented for Red River County in Table 4 because Groundwater Management Area 11 did not adopt a desired future condition for the Carrizo-Wilcox Aquifer in Red River County. Although Red River County is not specifically mentioned in the joint resolution for Groundwater Management Area 11, the resolution did note that all counties with less than 200 square miles were considered non-relevant due to size.

An additional finding of concern is that the Region D proposed availability for the Carrizo-Wilcox Aquifer groundwater availability estimates also cause some model cells to go dry. The dry cells suggest that the aquifer may not be able to produce the proposed groundwater availability amounts in these areas.

The proposed groundwater availability estimates for the Trinity and Woodbine aquifers are expected to cause water level declines. The declines may be greater than the desired future conditions for both Trinity and Woodbine aquifer in several counties and groundwater conservation districts within Groundwater Management Area 8 where the desired future conditions were defined (Tables 7 through 10).

The maximum feasible amount of pumping for Region D for the Carrizo-Wilcox and Queen City aquifers is noted in Table 3 and the optimal amount of pumping in Groundwater Management Area 8 that meets the desired future condition for the Trinity and Woodbine aquifers is noted in Table 11.

REFERENCES

Wade, S.C., 2017, GAM Run 17-024 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11, Texas Water Development Board, 24 p., http://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-024_MAG.pdf

Shi, J., 2018, Gam Run 17-029 MAG: Modeled Available Groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, And Hickory Aquifers in Groundwater Management Area 8, Texas Water Development Board, 102 p., https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-029_MAG.pdf

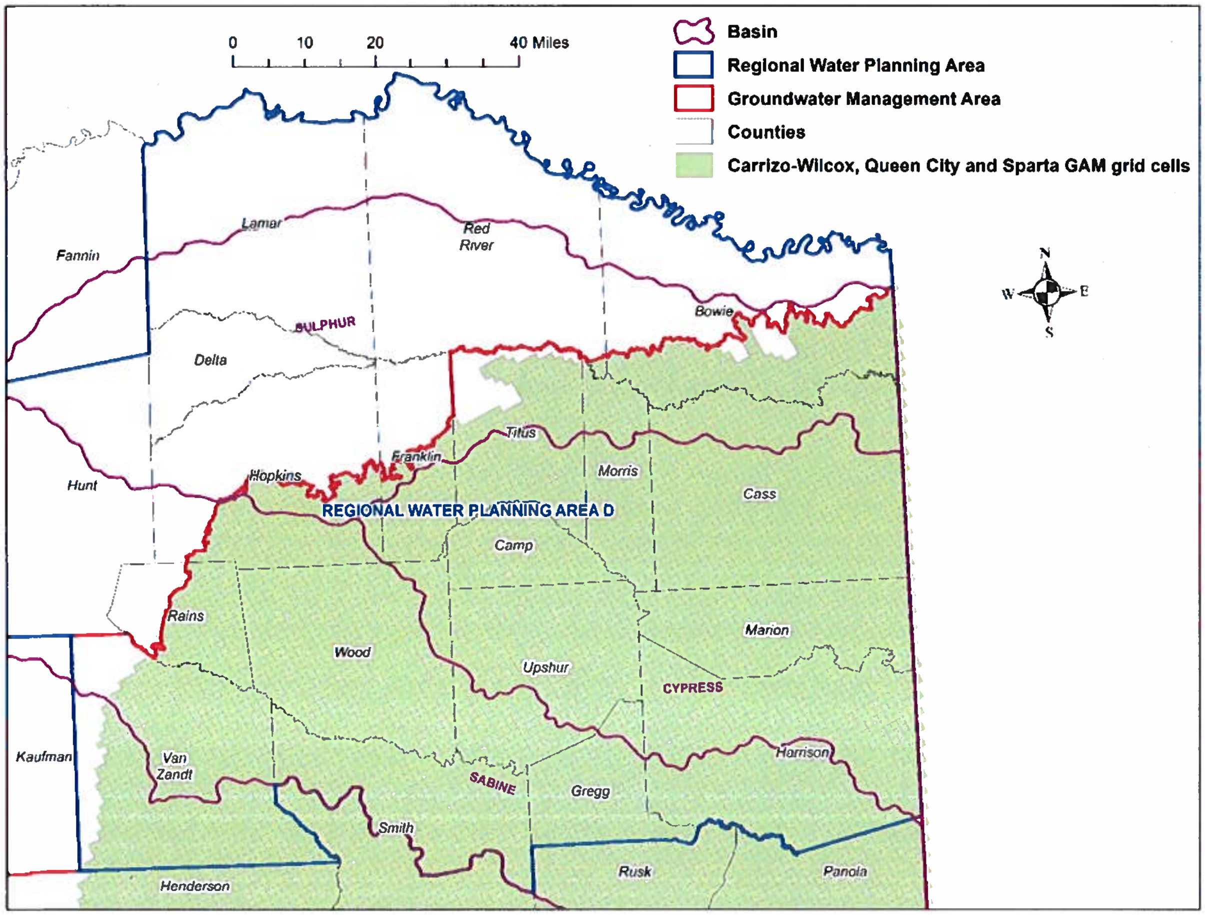

Figure 1 **Groundwater Availability Model for the Northern Part of the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11 and Region D.**

Table 1 Region D Proposed Groundwater Availability Compared with Modeled Available Groundwater (MAG) for Groundwater Management Area 11. All values in acre-feet per year.

County	Basin	Aquifer	Region D	MAG (2020)	Factor	Additional
Camp	Cypress	Carrizo-Wilcox	6,170	4,050	1.52	NA
Harrison	Cypress	Carrizo-Wilcox	7,241	6,183	1.17	NA
Hopkins	Sulphur	Carrizo-Wilcox	7,542	3,237	2.33	NA
Red River	Sulphur	Carrizo-Wilcox	2,391	0	NA	2,391
Titus	Cypress	Queen City	2,207	144	NA	2,063
Titus	Cypress	Carrizo-Wilcox	9,422	7,215	1.31	NA
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,629	1.03	NA

NA: not applicable

Table 2 Reductions of Modeled Groundwater Pumping Due to Dry Cells in Groundwater Management Area 11 and Region D. All values in acre-feet per year.

County	Basin	Aquifer	Region D request	Region D Actual (2070)	Region D dry cell count (2070)	MAG (2070)	MAG dry cell count (2070)
Camp	Cypress	Carrizo-Wilcox	6,170	6,101	4	4,050	0
Harrison	Cypress	Carrizo-Wilcox	7,241	6,951	29	5,990	25
Hopkins	Sulphur	Carrizo-Wilcox	7,542	6,907	16	3,237	9
Red River	Sulphur	Carrizo-Wilcox	2,391	478	4	0	0
Titus	Cypress	Queen City	2,207	490	14	144	0
Titus	Cypress	Carrizo-Wilcox	9,422	8,494	35	6,634	32
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,398	15	4,270	15

Table 3 Region D Actual Groundwater Availability (Region D request decreased by pumping from dry cells). All values in acre-feet per year.

County	Basin	Aquifer	Region D Actual Groundwater Availability					
			2020	2030	2040	2050	2060	2070
Camp	Cypress	Carrizo-Wilcox	6,156	6,127	6,127	6,101	6,101	6,101
Harrison	Cypress	Carrizo-Wilcox	7,188	7,115	7,028	6,994	6,951	6,951
Hopkins	Sulphur	Carrizo-Wilcox	7,228	7,228	7,228	7,057	7,057	6,907
Red River	Sulphur	Carrizo-Wilcox	478	478	478	478	478	478
Titus	Cypress	Queen City	2,207	1,716	1,226	1,103	735	490
Titus	Cypress	Carrizo-Wilcox	9,234	9,016	8,889	8,753	8,560	8,494
Van Zandt	Sabine	Carrizo-Wilcox	4,768	4,768	4,590	4,528	4,528	4,398

Table 4 **Desired Future Conditions for the Carrizo-Wilcox Aquifer compared with Results from GAM Run 17-024 for Groundwater Management Area 11 and estimated drawdowns resulting from simulation of the requested groundwater availability from Region D.**

County	Desired Future Conditions (feet)[1]	Scenario 4 (feet)	Region D (feet)
Anderson	90	90	90
Angelina	48	48	48
Bowie	5	5	5
Camp	33	33	44
Cass	68	68	69
Cherokee	99	99	99
Franklin	14	14	16
Gregg	58	58	59
Harrison	18	19	21
Henderson	50	50	50
Hopkins	3	3[2]	6[2]
Houston	80	80	80
Marion	45	45	47
Morris	46	46	51
Nacogdoches	29	29	29
Panola	3	2[2]	4[2]
Rains	1	1[2]	1[2]
Rusk	23	23	23
Sabine	9	9	9
San Augustine	7	7	7
Shelby	1	1	1
Smith	119	119	120
Titus	11	11	16
Trinity	51	51	51
Upshur	77	77	81
Van Zandt	21	21	21
Wood	89	89	90
Overall	**56**	**56**	**61**

[1] Drawdown in feet from 2000 to 2070.
[2] For county average drawdown calculations negative drawdowns were set to zero, but not for overall Groundwater Management Area 11 drawdown average.

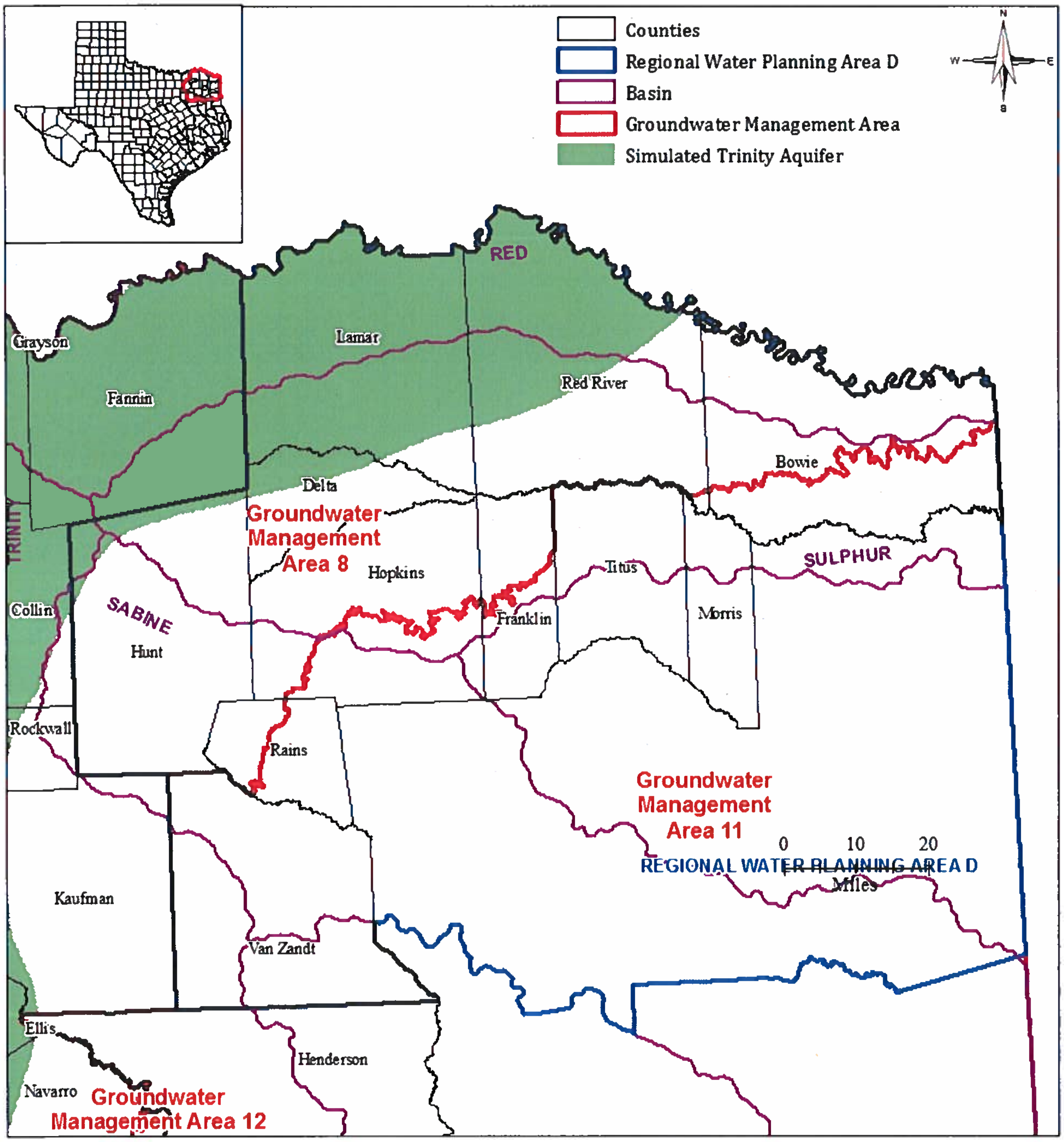

Figure 2 **Simulated Trinity Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.**

Table 5 Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Trinity Aquifer.

Pumping Scenario	County	Delta	Hunt	Hunt	Hunt	Lamar	Lamar	Red River	Red River
	Basin / Year	Sulphur	Sabine	Sulphur	Trinity	Red	Sulphur	Red	Sulphur
Modeled Available Groundwater[1]	2020	56	0	3	0	0	8	52	125
	2030	56	0	3	0	0	8	52	125
	2040	56	0	3	0	0	8	52	125
	2050	56	0	3	0	0	8	52	125
	2060	56	0	3	0	0	8	52	125
	2070	56	0	3	0	0	8	52	125
Requested Groundwater Availability[2]	2020	71	19,262	2,428	124	1,888	443	207	2,451
	2030	71	19,262	2,428	124	1,888	443	207	2,451
	2040	71	19,262	2,428	124	1,888	443	207	2,451
	2050	71	19,262	2,428	124	1,888	443	207	2,451
	2060	71	19,262	2,428	124	1,888	443	207	2,451
	2070	71	19,262	2,428	124	1,888	443	207	2,451
Re-Modeled Groundwater Availability[3]	2020	71	19,315	2,434	125	1,894	444	208	2,457
	2030	71	19,261	2,428	125	1,888	443	208	2,451
	2040	71	19,315	2,434	125	1,894	444	208	2,457
	2050	71	19,261	2,428	125	1,888	443	208	2,451
	2060	71	19,315	2,434	125	1,894	444	208	2,457
	2070	71	19,261	2,428	125	1,888	443	208	2,451

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.

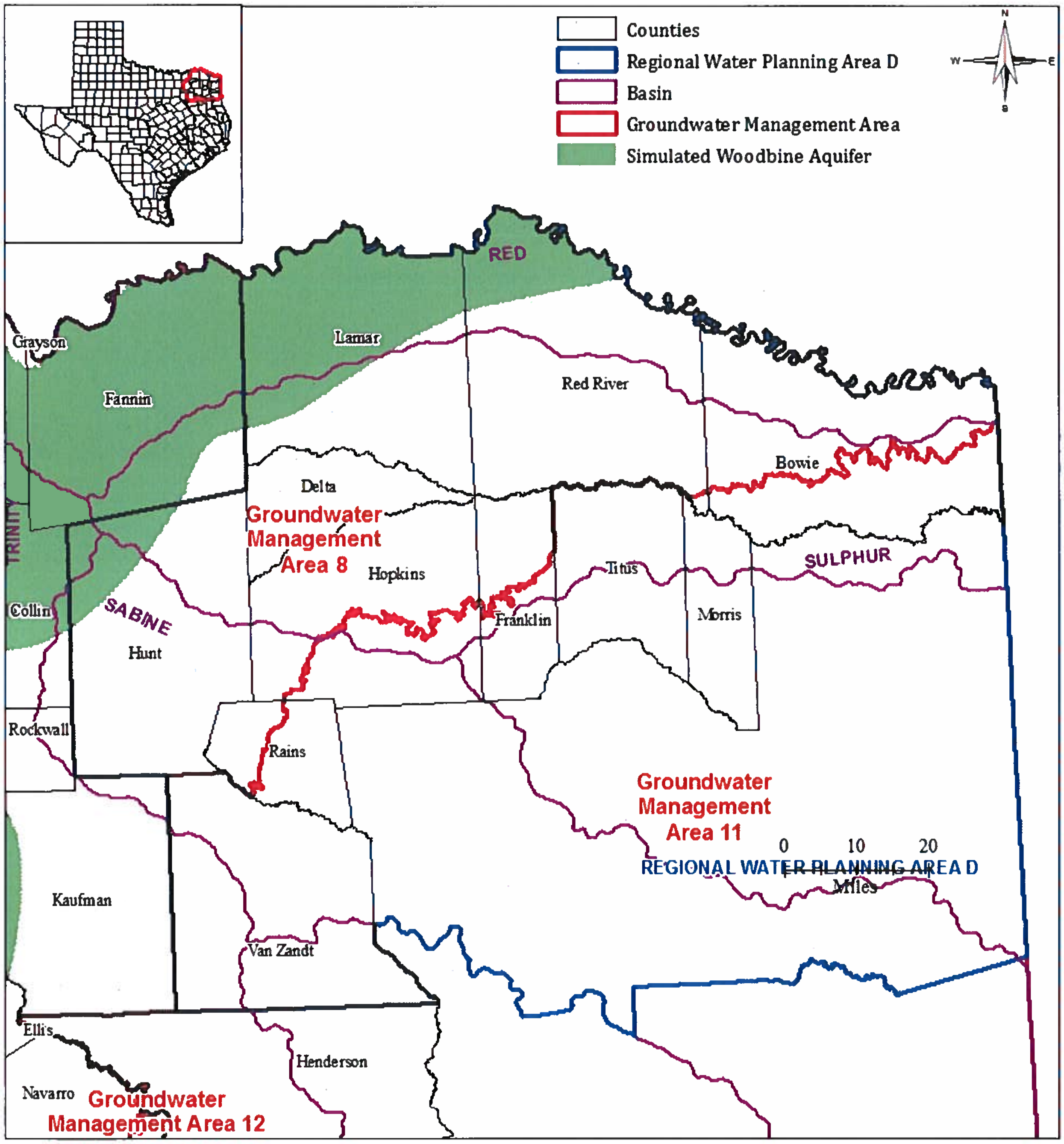

Figure 3 **Simulated Woodbine Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.**

Table 6 **Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Woodbine Aquifer.**

Pumping Scenario	County / Basin / Year	Hunt	Hunt	Lamar	Lamar	Red River
		Sabine	Sulphur	Red	Sulphur	Red
Modeled Available Groundwater[1]	2020	269	165	0	49	2
	2030	268	165	0	49	2
	2040	269	165	0	49	2
	2050	268	165	0	49	2
	2060	269	165	0	49	2
	2070	268	165	0	49	2
Requested Groundwater Availability[2]	2020	19,531	2,570	1,948	490	186
	2030	19,530	2,570	1,948	490	186
	2040	19,531	2,570	1,948	490	186
	2050	19,530	2,570	1,948	490	186
	2060	19,531	2,570	1,948	490	186
	2070	19,530	2,570	1,948	490	186
Re-Modeled Groundwater Availability[3]	2020	19,584	2,577	1,953	492	187
	2030	19,530	2,570	1,948	490	187
	2040	19,584	2,577	1,953	492	187
	2050	19,530	2,570	1,948	490	187
	2060	19,584	2,577	1,953	492	187
	2070	19,530	2,570	1,948	490	187

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.

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Table 7 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity And Woodbine Aquifers by Counties Not in Upper Trinity Groundwater Conservation District.

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
			Woodbine			
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	459	459	977	518	113%	Yes
Comanche	—	—	—	—	—	—
Cooke	2	2	2	0	0%	No
Coryell	—	—	—	—	—	—
Dallas	123	123	282	159	129%	Yes
Delta	—	—	—	—	—	—
Denton	22	19	44	22	100%	Yes
Eastland	—	—	—	—	—	—
Ellis	61	61	112	51	84%	Yes
Erath	—	—	—	—	—	—
Falls	—	—	—	—	—	—
Fannin	247	247	644	397	161%	Yes
Grayson	160	157	272	112	70%	Yes
Hamilton	—	—	—	—	—	—
Hill	20	16	21	1	5%	No
Hunt	598	598	1,652	1,054	176%	Yes
Johnson	2	3	4	2	100%	No
Kaufman	208	208	500	292	140%	Yes
Lamar	38	38	266	228	600%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	6	6	7	1	17%	No
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Navarro	92	92	125	33	36%	Yes
Red River	2	2	11	9	450%	Yes
Rockwall	243	243	744	501	206%	Yes
Somervell	—	—	—	—	—	—
Tarrant	7	6	7	0	0%	No
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
Paluxy						
Bell	19	19	19	0	0%	No
Bosque	6	6	7	1	17%	No
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	705	705	1,391	686	97%	Yes
Comanche	—	—	—	—	—	—
Cooke		—	—	—	—	—
Coryell	7	7	7	0	0%	No
Dallas	324	324	542	218	67%	Yes
Delta	264	264	854	590	223%	Yes
Denton	552	552	603	51	9%	Yes
Eastland	—	—	—	—	—	—
Ellis	107	107	215	108	101%	Yes
Erath	1	1	1	0	0%	No
Falls	144	144	150	6	4%	No
Fannin	688	688	1,811	1,123	163%	Yes
Grayson	922	922	1,712	790	86%	Yes
Hamilton	2	2	2	0	0%	No
Hill	38	38	51	13	34%	Yes
Hunt	586	586	2,199	1,613	275%	Yes
Johnson	-61	-61	-48	13	-21%	No
Kaufman	276	276	599	323	117%	Yes
Lamar	93	93	349	256	275%	Yes
Lampasas	—	—	—	—	—	—
Limestone	178	178	195	17	10%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
McLennan	35	35	39	4	11%	No
Milam	—	—	—	—	—	—
Mills	1	1	1	0	0%	No
Navarro	119	119	175	56	47%	Yes
Red River	21	21	150	129	614%	Yes
Rockwall	401	401	981	580	145%	Yes
Somervell	1	1	1	0	0%	No
Tarrant	101	101	122	21	21%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
Glen Rose						
Bell	83	83	85	2	2%	No
Bosque	49	49	53	4	8%	No
Brown	2	2	2	0	0%	No
Burnet	2	2	2	0	0%	No
Callahan	—	—	—	—	—	—
Collin	339	339	1,122	783	231%	Yes
Comanche	1	1	1	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	14	14	15	1	7%	No
Dallas	263	263	551	288	110%	Yes
Delta	181	181	823	642	355%	Yes
Denton	349	349	551	202	58%	Yes
Eastland	—	—	—	—	—	—
Ellis	194	194	336	142	73%	Yes
Erath	5	5	5	0	0%	No
Falls	215	215	225	10	5%	No
Fannin	280	280	1,421	1,141	408%	Yes
Grayson	337	337	1,264	927	275%	Yes
Hamilton	4	4	4	0	0%	No
Hill	133	133	166	33	25%	Yes
Hunt	299	299	1,900	1,601	535%	Yes
Johnson	58	58	90	32	55%	Yes
Kaufman	269	269	607	338	126%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Lamar	97	97	514	417	430%	Yes
Lampasas	1	1	1	0	0%	No
Limestone	271	271	305	34	13%	Yes
McLennan	133	133	146	13	10%	Yes
Milam	212	212	216	4	2%	No
Mills	1	1	1	0	0%	No
Navarro	232	232	337	105	45%	Yes
Red River	36	36	253	217	603%	Yes
Rockwall	311	311	925	614	197%	Yes
Somervell	4	4	4	0	0%	No
Tarrant	148	148	217	69	47%	Yes
Taylor	—	—	—	—	—	—
Travis	85	85	85	0	0%	No
Williamson	77	76	77	0	0%	No
Twin Mountains						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	526	526	1244	718	137%	Yes
Comanche	—	—	—	—	—	—
Cooke	—	—	—	—	—	—
Coryell	—	—	—	—	—	—
Dallas	463	463	823	360	78%	Yes
Delta	—	—	—	—	—	—
Denton	716	716	1,017	301	42%	Yes
Eastland	—	—	—	—	—	—
Ellis	333	333	511	178	53%	Yes
Erath	6	6	6	0	0%	No
Falls	—	—	—	—	—	—
Fannin	372	372	1,380	1,008	271%	Yes
Grayson	417	417	1,287	870	209%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Hunt	370	370	1,509	1,139	308%	Yes
Johnson	156	156	199	43	28%	Yes
Kaufman	381	381	841	460	121%	Yes
Lamar	—	—	—	—	—	—
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	—	—	—	—	—	—
Rockwall	426	426	1,036	610	143%	Yes
Somervell	31	31	34	3	10%	No
Tarrant	315	315	409	94	30%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
Travis Peak						
Bell	300	294	297	-3	-1%	No
Bosque	167	167	178	11	7%	Yes
Brown	1	1	1	0	0%	No
Burnet	16	16	16	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	99	100	102	3	3%	No
Dallas	348	350	655	307	88%	Yes
Delta	186	186	822	636	342%	Yes
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	301	305	496	195	65%	Yes
Erath	19	19	19	0	0%	No
Falls	462	460	473	11	2%	No
Fannin	269	269	1,181	912	339%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Grayson	—	—	—	—	—	—
Hamilton	24	24	25	1	4%	No
Hill	298	299	351	53	18%	Yes
Hunt	324	324	1,426	1,102	340%	Yes
Johnson	179	184	243	64	36%	Yes
Kaufman	323	323	672	349	108%	Yes
Lamar	114	114	549	435	382%	Yes
Lampasas	6	6	6	0	0%	No
Limestone	392	393	433	41	10%	Yes
McLennan	471	468	488	17	4%	No
Milam	345	344	348	3	1%	No
Mills	7	7	7	0	0%	No
Navarro	290	291	413	123	42%	Yes
Red River	51	51	301	250	490%	Yes
Rockwall	—	—	—	—	—	—
Somervell	51	52	57	6	12%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	141	142	143	2	1%	No
Williamson	173	172	173	0	0%	No
Hensell						
Bell	137	137	138	1	1%	No
Bosque	129	129	136	7	5%	Yes
Brown	1	1	1	0	0%	No
Burnet	7	7	7	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke		—	—	—	—	—
Coryell	66	66	67	1	2%	No
Dallas	332	332	599	267	80%	Yes
Delta	—	—	—	—	—	—
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	263	263	409	146	56%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Erath	11	11	11	0	0%	No
Falls	271	271	280	9	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	13	13	13	0	0%	No
Hill	186	186	217	31	17%	Yes
Hunt	—	—	—	—	—	—
Johnson	126	126	167	41	33%	Yes
Kaufman	309	309	590	281	91%	Yes
Lamar	—	—	—	—	—	—
Lampasas	1	1	1	0	0%	No
Limestone	183	183	212	29	16%	Yes
McLennan	220	220	234	14	6%	Yes
Milam	229	229	231	2	1%	No
Mills	2	2	2	0	0%	No
Navarro	254	254	350	96	38%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	26	26	29	3	12%	No
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	50	51	51	1	2%	No
Williamson	74	73	73	-1	-1%	No
Hosston						
Bell	330	330	333	3	1%	No
Bosque	201	201	214	13	6%	Yes
Brown	1	1	1	0	0%	No
Burnet	20	20	20	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	3	3	3	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	130	130	133	3	2%	No
Dallas	351	351	665	314	89%	Yes
Delta	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	310	310	509	199	64%	Yes
Erath	31	31	32	1	3%	No
Falls	465	465	478	13	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	35	35	36	1	3%	No
Hill	337	337	396	59	18%	Yes
Hunt	—	—	—	—	—	—
Johnson	235	235	307	72	31%	Yes
Kaufman	295	295	584	289	98%	Yes
Lamar	—	—	—	—	—	—
Lampasas	11	11	11	0	0%	No
Limestone	404	404	445	41	10%	Yes
McLennan	542	542	564	22	4%	No
Milam	345	345	349	4	1%	No
Mills	13	13	13	0	0%	No
Navarro	291	291	415	124	43%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	83	83	91	8	10%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	146	148	148	2	1%	No
Williamson	177	176	177	0	0%	No
Antlers						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	2	2	2	0	0%	No
Burnet	—	—	—	—	—	—
Callahan	1	1	1	0	0%	No
Collin	570	570	1,046	476	84%	Yes
Comanche	9	9	9	0	0%	No
Cooke	176	179	236	60	34%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Coryell	—	—	—	—	—	—
Dallas	—	—	—	—	—	—
Delta	—	—	—	—	—	—
Denton	395	398	527	132	33%	Yes
Eastland	3	3	3	0	0%	No
Ellis	—	—	—	—	—	—
Erath	12	11	11	-1	-8%	No
Falls	—	—	—	—	—	—
Fannin	251	251	910	659	263%	Yes
Grayson	348	348	678	330	95%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—
Hunt	—	—	—	—	—	—
Johnson	—	—	—	—	—	—
Kaufman	—	—	—	—	—	—
Lamar	122	122	517	395	324%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	13	13	84	71	546%	Yes
Rockwall	—	—	—	—	—	—
Somervell	—	—	—	—	—	—
Tarrant	148	149	171	23	16%	Yes
Taylor	0	0	0	0	0%	No
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 8 **Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity Aquifer by Counties in Upper Trinity Groundwater Conservation District.**

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Paluxy						
Hood (outcrop)	5	5	5	0	0%	No
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	5	5	5	0	0%	No
Parker (downdip)	1	1	1	0	0%	No
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Glen Rose						
Hood (outcrop)	7	7	7	0	0%	No
Hood (downdip)	28	27	31	3	11%	No
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	10	10	10	0	0%	No
Parker (downdip)	28	28	37	9	32%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Twin Mountains						
Hood (outcrop)	4	4	4	0	0%	No
Hood (downdip)	46	46	51	5	11%	No

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	1	1	1	0	0%	No
Parker (downdip)	46	46	63	17	37%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Antlers						
Hood (outcrop)	—	—	—	—	—	—
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	18	18	21	3	17%	No
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	11	11	14	3	27%	No
Parker (downdip)	—	—	—	—	—	—
Wise (outcrop)	34	35	42	8	24%	Yes
Wise (downdip)	142	142	168	26	18%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 9 **Comparison of Simulated Drawdowns by Model with Desired Future Conditions (DFCs)of Trinity and Woodbine Aquifers by Groundwater Conservation Districts (GCDs).**

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Woodbine						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	—	—	—	—	—	—
North Texas GCD	278	251	534	256	92%	Yes
Northern Trinity GCD	7	6	7	0	0%	No
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	39	35	61	22	56%	Yes
Red River GCD	204	201	457	253	124%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	6	6	7	1	17%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Paluxy						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	19	19	19	0	0%	No
Middle Trinity GCD	6	6	7	1	17%	No
North Texas GCD	671	671	1,213	542	81%	Yes
Northern Trinity GCD	101	101	122	21	21%	Yes
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	35	35	82	47	134%	Yes

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Red River GCD	699	699	1,807	1,108	159%	Yes
Saratoga UWCD	—	—	—	—	—	No
Southern Trinity GCD	35	35	39	4	11%	No
Upper Trinity GCD (outcrop)	5	5	5	0	0%	No
Upper Trinity GCD (subcrop)	1	1	1	0	0%	No
Glen Rose						
Central Texas GCD	2	2	2	0	0%	No
Clear Water GCD	83	83	85	2	2%	No
Middle Trinity GCD	27	27	29	2	7%	No
North Texas GCD	341	341	993	652	191%	Yes
Northern Trinity GCD	148	148	217	69	47%	Yes
Post Oak Savanah GCD	212	212	216	4	2%	No
Prairielands GCD	126	126	193	67	53%	Yes
Red River GCD	283	283	1,414	1,131	400%	Yes
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	133	133	146	13	10%	Yes
Upper Trinity GCD (outcrop)	8	8	8	0	0%	No
Upper Trinity GCD (subcrop)	28	28	36	8	29%	Yes
Twin Mountains						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	6	6	6	0	0%	No
North Texas GCD	569	569	1,192	623	109%	Yes
Northern Trinity GCD	315	315	409	94	30%	Yes

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	142	142	183	41	29%	Yes
Red River GCD	377	377	1,369	992	263%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	3	3	3	0	0%	—
Upper Trinity GCD (subcrop)	46	46	59	13	28%	Yes
Travis Peak						
Central Texas GCD	16	16	16	0	0%	—
Clear Water GCD	300	294	297	-3	-1%	—
Middle Trinity GCD	88	88	92	4	5%	—
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	345	344	348	3	1%	No
Prairielands GCD	258	261	360	102	40%	Yes
Red River GCD	269	269	1,181	912	339%	Yes
Saratoga UWCD	6	6	6	0	0%	No
Southern Trinity GCD	471	468	488	17	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Hensell						
Central Texas GCD	7	7	7	0	0%	No
Clear Water GCD	137	137	138	1	1%	No
Middle Trinity GCD	72	72	75	3	4%	No

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	229	229	231	2	1%	No
Prairielands GCD	190	190	262	72	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	220	220	234	14	6%	Yes
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Hosston						
Central Texas GCD	20	20	20	0	0%	No
Clear Water GCD	330	330	333	3	1%	No
Middle Trinity GCD	111	111	116	5	5%	No
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	345	345	349	4	1%	No
Prairielands GCD	289	290	398	109	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	11	11	11	0	0%	No
Southern Trinity GCD	542	542	564	22	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Antlers						
Central Texas GCD	—	—	—	—	—	—

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	10	10	10	0	0%	No
North Texas GCD	290	293	403	113	39%	Yes
Northern Trinity GCD	148	149	171	23	16%	Yes
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	—	—	—	—	—	—
Red River GCD	304	304	782	478	157%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	24	25	29	5	21%	No
Upper Trinity GCD (subcrop)	142	142	168	26	18%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 10 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity and Woodbine Aquifers by Groundwater Management Area 8.

Aquifer	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Violation?[4]
Woodbine	146	136	316	170	117%	Yes
Paluxy	144	144	290	146	101%	Yes
Glen Rose	116	116	236	120	104%	Yes
Twin Mountain	313	313	575	262	84%	Yes
Travis Peak	177	177	246	69	39%	Yes
Hensell	118	118	139	21	18%	Yes
Hosston	206	206	235	29	14%	Yes
Antlers	177	177	350	173	98%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 11 Optimal amount of groundwater available that meets desired future conditions with an error tolerance of five percent or five feet, whichever is greater, for the Trinity and Woodbine aquifers.

County	Aquifer	River Basin	Simulated Pumping in Region D in Acre-Feet Per Year (Total Pumping that is compatible with the modeled available groundwater)					
			2020	2030	2040	2050	2060	2070
Delta	Trinity	Sulphur	56	56	56	56	56	56
Hunt	Trinity	Sabine	213	213	213	213	213	213
Hunt	Woodbine	Sabine	344	343	344	343	344	343
Hunt	Trinity	Sulphur	3	3	3	3	3	3
Hunt	Woodbine	Sulphur	165	165	165	165	165	165
Hunt	Trinity	Trinity	0	0	0	0	0	0
Lamar	Trinity	Red	0	0	0	0	0	0
Lamar	Woodbine	Red	22	22	22	22	22	22
Lamar	Trinity	Sulphur	8	8	8	8	8	8
Lamar	Woodbine	Sulphur	62	62	62	62	62	62
Red River	Trinity	Red	52	52	52	52	52	52
Red River	Woodbine	Red	251	251	251	251	251	251
Red River	Trinity	Sulphur	234	233	234	233	234	233

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October 23, 2019

Mr. Ron Ellis
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78711-3231

Subject: Revised Request for Review of Groundwater Availability in Region D for Draft Recommended Water Management Strategies

Dear Mr. Ellis:

This memorandum is a follow-up to the original May 24, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) detailing the proposed methodology for determining groundwater availability in Region D, and the subsequent August 27, 2019 response to that memo provided by the Texas Water Development Board (TWDB) providing a technical review of that proposed methodology.

Objective

The objective of this memorandum is to specify the exact quantities that have been identified by Region D as being potentially available (pending TWDB approval) for use as a source for draft recommended water management strategies for water users with identified projected needs within Region D.

Background

As there are no groundwater conservation districts (GCDs) within Region D, the NETRWPG has wished to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB are appropriate for the purposes of the 2021 Region D Water Plan. The first May 24, 2019 submittal on behalf of the NETRWPG identified two county-aquifer-basin locations recommended to be increased based on a local hydrogeologic assessment on available information, as well as provided estimates on maximum availability to be applied to identified needs for future water management strategies (WMSs). At that time, the evaluation of feasible WMSs was underway, but was not at a point where recommended and alternative WMSs had been identified, thus the use of estimated maximums by the NETRWPG at that time.

In response to that memorandum, the above referenced August 27, 2019, memorandum from TWDB was provided to the NETRWPG. The TWDB memorandum presented the TWDB's model-based review of the proposed availabilities to determine whether they are physically compatible with desired future conditions (DFCs) for relevant aquifers in GCDs in co-located groundwater management areas (GMAs). Alternative volumes proffered by TWDB as maximum availabilities for select county-aquifer-basins were then presented in the memorandum.

Status

The present work of the NETRWPG is in the development and identification of recommended and alternative water management strategies, which will be incorporated into the Initially Prepared Plan (IPP) to be submitted by March, 2020. As it is roughly five (5) months until the submittal of the IPP, the "recommended" and "alternative" strategies discussed herein represent the best available information at present as to the representation of these strategies for the purposes of the 2021 Region D Plan. It should be noted that these are thus draft representations of these strategies; however, as TWDB rules (357.32(d)(2)) require that TWDB review the proposed availabilities and determine whether they are physically compatible with the desired future conditions for relevant aquifers in GCDs in the co-located GMAs, this memo is submitted to initiate the final component of TWDB's review of groundwater availability for the North East Texas region.

Analysis

With the analyses of existing supplies in the region complete, and with draft recommended and alternative[1] water management strategies identified, the consultant team for the NETRWPG has performed a comparative analysis to identify the extent of availabilities identified as exceeding the MAGs and the TWDB's modeled maximum availabilities by county-aquifer-basin. Table 1 below presents the list of draft recommended and alternative WMSs that when compiled by similar county-aquifer-basin location may potentially exceed the present MAGs for the respective county-aquifer-basin. Presented in Table 2 are the individual sums of these strategies by county-aquifer-basin.

Using output from DB22, the NETRWPG has identified the remaining amount of MAG after accounting for allocations to existing WUG supplies, as shown in Table 3. These amounts, in effect, show how much MAG remains available for potential utilization as a source for potential WMSs.

Table 4 presents the results of a comparison between the recommended and alternative WMS amounts (by county-aquifer-basin as identified in Table 2) to the remaining MAGs after allocations have been made for existing supplies. The amounts presented in Table 4 represent the amounts (by county-aquifer-basin) in exceedance of the MAG. There are eight (8) county-aquifer-basins where the combined total recommended WMS amounts exceed the present MAG by a total amount of 6,453 ac-ft/yr in 2020 and 8,392 ac-ft/yr in 2070. The majority of these overages occurs in the portion of the Carrizo-Wilcox Aquifer-in the Sulphur River Basin in Hopkins County and the portion of the Nacatoch Aquifer in the Sulphur River Basin in Red River County. No overage occurs in the portion of the Queen City Aquifer in the Cypress River Basin in Camp County.

[1] It is noted that TWDB's review is focused upon recommended WMSs and the associated availability amounts for such strategies. Alternative WMSs are identified herein for informational purposes only, as they represent the present draft status of potentially feasible strategies that at a later date may be considered/discussed. These Alternative WMSs are *not* requested for TWDB review and approval at this time.

Table 1 Draft Recommended and Alternative Water Management Strategies Potentially Exceeding MAG and Increased Availabilities Identified by TWDB (August 27, 2019 memorandum)

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
CAMP	LIVESTOCK CAMP	3,962	3,962	3,962	3,962	3,962	3,962	DRILL NEW WELLS	QUEEN CITY AQUIFER	CAMP	CYPRESS
HOPKINS	IRRIGATION HOPKINS	4,627	4,627	4,516	4,240	4,052	3,696	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	LIVESTOCK HOPKINS	1,068	1,090	1,140	1,143	1,196	1,219	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MILLER GROVE WSC	8	16	23	29	40	52	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MINING HOPKINS	227	283	360	444	533	639	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HUNT	COMMERCE	0	0	22	377	856	1,561	DRILL NEW WELLS	NACATOCH AQUIFER	HUNT	SULPHUR
HUNT	HICKORY CREEK SUD	116	293	461	462	461	462	USE EXISTING WELL PRODUCTION CAPACITY BEYOND MAG	WOODBINE AQUIFER	HUNT	SULPHUR
HUNT	LIVESTOCK HUNT	2	2	2	2	2	2	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	MINING HUNT	73	64	35	19	7	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	WEST TAWAKONI	90	0	0	0	0	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
RED RIVER	IRRIGATION RED RIVER	2,057	2,057	2,057	2,057	2,057	2,057	DRILL NEW WELLS	NACATOCH AQUIFER	RED RIVER	SULPHUR
RED RIVER	IRRIGATION RED RIVER	185	185	185	185	185	185	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
RED RIVER	LIVESTOCK RED RIVER	174	173	174	173	174	173	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
TITUS	LIVESTOCK TITUS	275	334	379	425	517	560	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
VAN ZANDT	CANTON	100	100	100	100	100	100	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
VAN ZANDT	SOUTH TAWAKONI WSC	38	0	0	0	0	0	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
ALTERNATIVE WMS											
WOOD	COUNTY-OTHER, WOOD	8,716	9,751	10,285	14,121	20,856	32,060		CARRIZO-WILCOX AQUIFER	WOOD	SABINE
HOPKINS	BRINKER WSC	0	0	0	12	47	83	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR

Table 2 Sum of WMS Amounts by County-Aquifer-Basin

Source Name	Source County	Source Basin	DRAFT WMS SUPPLY (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	3,962	3,962	3,962	3,962	3,962	3,962
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,856	5,821	5,606
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561
WOODBINE	HUNT	SULPHUR	116	293	461	462	461	462
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	2,057	2,057	2,057	2,057	2,057	2,057
TRINITY AQUIFER	RED RIVER	SULPHUR	359	358	359	358	359	358
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	275	334	379	425	517	560
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,868	5,868	5,689
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	8,716	9,751	10,285	14,121	20,856	32,060

Table 3 Modeled Available Groundwater Remaining after Allocation to Existing Supplies

Source Name	Source County	Source Basin	MAG REMAINING AFTER EXISTING SUPPLY ALLOCATIONS (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	4,170	4,170	4,014	4,014	4,014	4,014
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	20	20	20	20	20	20
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
NACATOCH	RED RIVER	SULPHUR	179	180	181	181	181	181
TRINITY AQUIFER	RED RIVER	SULPHUR	65	65	65	65	65	65
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	1,587	878	239	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	5,583	5,495	5,397	5,340	5,266	5,164

Table 4 Total WMS Amount over MAG by County-Aquifer-Basin

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,808	3,773	3,558
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561
WOODBINE	HUNT	SULPHUR	96	273	441	442	441	442
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876
TRINITY AQUIFER	RED RIVER	SULPHUR	294	293	294	293	294	293
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	140	425	517	560
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100
		TOTAL	**6,453**	**6,577**	**6,901**	**7,342**	**7,866**	**8,392**
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,820	3,820	3,641
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Although the amounts above exceed the MAG, it is again noted that the TWDB's August 27, 2019 memorandum presents alternative volumes as maximum availabilities for select county-aquifer-basins that remain physically compatible with DFCs for relevant aquifers in GCDs in co-located GMAs. These maximums identified by TWDB, in a number of instances, represent an increase in modeled availability that achieves these objectives. These increases above the MAG identified by TWDB are presented in Table 5.

Table 5 Increase in Modeled Availability above MAG Identified by TWDB (August 27, 2019 Memorandum)

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	HUNT	SABINE	213	213	213	213	213	213
NACATOCH	RED RIVER	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	RED RIVER	SULPHUR	109	108	109	108	109	108
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	2,019	1,952	2,055	1,967	1,825	1,860
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	139	139	134	131	131	128
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	0	0	0	0	0	0

Results of a comparison between the WMS amounts exceeding the MAG (by county-aquifer-basin as shown in Table 4) to the increases in availabilities identified by the TWDB (as shown in Table 5) are shown in Table 6, which depicts the WMS amounts in excess of the increased availabilities identified by TWDB by county-aquifer-basin.

Table 6 WMS Amounts above Increased Availabilities Identified by TWDB

Source Name	Source County	Source Basin	EXCEEDANCE OF WMS ABOVE ADDITIONAL AVAILABILITY IDENTIFIED BY TWDB (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
NACATOCH	**HUNT**	**SULPHUR**	**0**	**0**	**22**	**377**	**856**	**1,561**
WOODBINE	**HUNT**	**SULPHUR**	**96**	**273**	**441**	**442**	**441**	**442**
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
NACATOCH	**RED RIVER**	**SULPHUR**	**1,878**	**1,877**	**1,876**	**1,876**	**1,876**	**1,876**
TRINITY AQUIFER	**RED RIVER**	**SULPHUR**	**185**	**185**	**185**	**185**	**185**	**185**
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Based on the results shown in Table 6, there are four (4) county-aquifer-basins (shown in bold) where the draft recommended strategies exceed the total groundwater availability identified by the MAG when incorporating the additional amounts identified by TWDB in its' August 27, 2019 memorandum. The totals (by county-aquifer-basin) of the remaining recommended strategies (non-bold) are within the total amounts of available groundwater supply when reflecting both the MAGs plus the additional amounts identified by TWDB. Thus, the recommended strategies within the non-bold county-aquifer-basins shown in Table 6 are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs.

The aforementioned analyses performed on behalf of the NETRWPG identifies eight (8) county-aquifer-basins wherein the total recommended WMSs exceed the present respective MAGs (Table 4). When the additional amounts identified by TWDB's analysis from its' August 27, 2019, memorandum are included in the comparison, the total amounts for recommended WMSs exceed the total available groundwater in four (4) county-aquifer-basins (Table 6).

Focusing upon the identified WMSs in Table 1, it is thus noted that the Camp County Livestock WMS (located in the Queen City Aquifer, Camp County, Cypress Creek Basin) is found to be within the MAG, which necessitates no further review. For the remaining strategies identified in Table 1 that are located in the below county-aquifer-basins, these WMSs are found to be within the total available groundwater supply when considering both the MAG and the additional availability identified by TWDB in its' August 27, 2019, memorandum:

1. Hopkins County, Carrizo-Wilcox Aquifer, Sulphur River Basin.
2. Hunt County, Trinity Aquifer, Sabine River Basin.
3. Titus County, Carrizo-Wilcox Aquifer, Cypress Creek River Basin.
4. Van Zandt County, Carrizo-Wilcox Aquifer, Sabine River Basin.

Based on the analyses by TWDB and the evaluation documented herein, the WMSs identified in Table 1 located in the above enumerated county-aquifer-basins are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs. If necessary, the amounts for these enumerated county-aquifer-basins that are above the MAG (as identified in Table 4) can be interpreted as being part of the requested review and approval to the TWDB from the NETRWPG, although it is noted that these results are within the amounts previously identified by TWDB.

There are four (4) remaining instances where recommended WMSs have amounts that exceed the total available groundwater when adding the MAGs with the additional availabilities identified by TWDB. Those four recommended WMSs are shown in Table 7 below by county-aquifer-basin, along with their respective amounts in exceedance of the total available groundwater. Note that the amounts shown in Table 7 are exceedances, and do not represent the total amount of the recommended WMS (which can be found in Table 1). A portion of the Hickory Creek SUD's recommended WMS is met by the existing MAG in Hunt County, Woodbine Aquifer, Sulphur Basin. Similarly, a portion of the Red River County Irrigation recommended WMS for the Sulphur River Basin is met by the existing MAG for the Red River County, Nacatoch Aquifer, Sulphur River Basin. Portions of the recommended amount for Red River County Irrigation in the Sulphur River Basin are met by both the remaining MAG for the Red River County, Trinity Aquifer, Sulphur River Basin, as well as additional availability amounts identified by the TWDB for that county-aquifer-basin.

A local hydrogeologic assessment of the available information base has been performed by the Region D consultant team (attached hereto). The results of this assessment applicable to the four county-aquifer-basins are summarized in the notes in Table 7.

Table 7 Recommended WMS Amounts in Exceedance of the MAG and the Additional Availability Identified by TWDB

WUG	County	Aquifer	Basin	Recommended Amount in Exceedance[2] of Additional Availability identified by TWDB (ac-ft/yr)						NOTE
				2020	2030	2040	2050	2060	2070	
COMMERCE	HUNT	NACATOCH	SULPHUR	0	0	22	377	856	1,561	Past maximum historic pumping exceeds the identified 2070 needs
HICKORY CREEK SUD	HUNT	WOODBINE	SULPHUR	96	273	441	442	441	442	Use of full production capacity from existing system
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	NACATOCH	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876	Based on a relatively low average annual water level decline and the potential for high-productivity wells in the portion of the Nacatoch Aquifer located in the Sulphur River Basin in Red River County, it has been determined that the future projected needs can likely be met with additional irrigation wells.
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	TRINITY	SULPHUR	185	185	185	185	185	185	Assessment did not identify sufficient available data to determine potential productivity; however, since there is little to no current production from this portion of the Trinity Aquifer, it has been determined that sufficient source availability is likely to meet the projected needs

[22] Remaining portion of recommended amount is within the total available amount identified by the MAG in addition to the available amount identified by TWDB in its' August 27, 2019 memorandum.

Request for TWDB Review

The amounts presented in Table 7, along with the supporting documentation, are recommended for the TWDB's review and possible approval to be used in addition to the additional amounts identified by the TWDB in its August 27 2019 memorandum. If approval is necessary for all amounts above the MAG, Table 4 represents the total amount of recommended WMS availability identified above the MAG by county-aquifer-basin for TWDB review.

The NETRWPG and its' consultant team appreciate the TWDB's efforts in support of these analyses, as they represent the first attempt at a Regional Water Planning Group identifying groundwater availability for planning purposes since there are no GCDs located within the region. It is the intent of this memorandum to document milestones of significance to the process as they have occurred to date, in the hope that such documentation will assist in refining the process for future rounds of planning.

If there are any questions whatsoever, please feel free to contact us at your convenience. We truly appreciate the opportunity to work with you and your staff on the planning process.

Sincerely,

CAROLLO ENGINEERS, INC.

Tony Smith

Tony L. Smith, P.E.
Associate Vice President
Water Resources

TLS:ckt

Enclosures: WSP Local Hydrogeological Assessment

cc: Mr. Walt Sears
Mr. James Beach
Mr. David K. Harkins

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Engineers...Working Wonders With Water®

5316 Highway 290 West, Suite 330, Austin, TX 78735-8931
P. 512.453.5383 F. 512.453.0101

November 1, 2019

Mr. Ron Ellis
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78711-3231

Subject: Addendum to Revised Request of Groundwater Availability in Region D for Draft Recommended Water Management Strategies

Dear Mr. Ellis:

This is an addendum to the October 23, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) regarding Groundwater Availability in Region D for Draft Water Management Strategies.

The attached table reflects the original Modeled Available Groundwater (MAG) amounts, total groundwater availabilities identified by TWDB that are physically compatible with desired future conditions for aquifers in GCDs in co-located groundwater management areas, and lastly the total groundwater availability identified by Region D for the specific aquifer, county and basin splits requested for review and approval by the TWDB. There are a total of nine splits with amounts identified above their current respective MAGs. Of these, there are five (5) splits that are higher than the availabilities identified in the August 27, 2019, memorandum from TWDB provided to the NETRWPG; however, two of these splits are within the Nacatoch Aquifer, a non-relevant aquifer for the purposes of regional water planning. Thus, there are three (3) identified splits remaining that are in relevant aquifers that exceed the availabilities identified by TWDB in its' August 27, 2019, memorandum, namely:

1. Woodbine Aquifer, Lamar County, Red River Basin;
2. Woodbine Aquifer, Hunt County, Sulphur River Basin; and
3. Trinity Aquifer, Red River County, Sulphur River Basin.

The supporting documentation for the Woodbine Aquifer, Lamar County, Red River Basin split's availability (i.e. No. 1 above), was submitted as part of the original May 24, 2019, memorandum submitted on behalf of the NETRWPG to Region D. Supporting documentation for the remaining splits was submitted in the revised request submitted in the NETRWPG's October 23, 2019, memorandum and supporting documentation.

We appreciate your staff's input in presenting this request in a manner that best facilitates TWDB's review of the groundwater availabilities identified herein. If there is anything we can do to assist further, please feel free to contact me at your convenience.

Sincerely,

Tony L. Smith, P.E.
Associate Vice President

TLS
Enclosures: Attached Table

Summary of Groundwater Availabilities

Source Name	Source County	Source Basin	Original Modeled Available Groundwater (MAG)						Total Availability Identified from August 27, 2019, TWDB Review						Groundwater Source Availability Requested by Region D for Review by the TWDB					
			2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
WOODBINE	LAMAR	RED	0	0	0	0	0	0	22	22	22	22	22	22	60	60	60	60	60	60
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,237	3,237	3,237	3,237	3,237	3,237	7,228	7,228	7,228	7,057	7,057	6,907	7,119	7,205	7,228	7,045	7,010	6,795
NACATOCH	HUNT	SULPHUR	491	491	491	491	491	491	491	491	491	491	491	491	491	491	513	868	1,347	2,052
WOODBINE	HUNT	SULPHUR	165	165	165	165	165	165	165	165	165	165	165	165	261	438	606	607	606	607
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0	213	213	213	213	213	213	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	2,925	2,924	2,923	2,923	2,923	2,923
TRINITY AQUIFER	RED RIVER	SULPHUR	125	125	125	125	125	125	234	233	234	233	234	233	419	418	419	418	419	418
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	7,215	7,064	6,834	6,786	6,735	6,634	9,234	9,016	8,889	8,753	8,560	8,494	7,215	7,064	6,974	7,211	7,252	7,194
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	4,629	4,629	4,456	4,397	4,397	4,270	4,768	4,768	4,590	4,528	4,528	4,398	4,767	4,729	4,556	4,497	4,497	4,370

Tony Smith

From:	Elizabeth McCoy <Elizabeth.McCoy@twdb.texas.gov>
Sent:	Thursday, January 16, 2025 10:26 AM
To:	Jim Thompson (JimThompson@WardTimber.com)
Cc:	Kyle Dooley (kyledooley@rwrd.org); Tony Smith; Stan Hayes; james.beach; Jennifer Jackson; David Harkins; Michael Pinckney; Carli Brucker; Riya Jadhav; acadonnelly
Subject:	Approval of Region D Groundwater Availability Request
Attachments:	Brd04_RegionD_GWAvailability.pdf

Good morning Chairman Thompson,

The TWDB Board has approved the groundwater availabilities requested by Region D for the Carrizo-Wilcox, Queen City, Trinity, and Woodbine aquifers. The requested availabilities have been updated in the regional water planning database.

Attached is a copy of the TWDB Board approval memorandum. Please be sure to include a copy of the TWDB Board approval memorandum as well as documentation of the request process in the IPP and final RWP.

Please let me know if you have any questions or need any other assistance.

Best,
Elizabeth

Elizabeth McCoy
Senior Regional Water Planner
Water Supply Planning Division
Texas Water Development Board
(512) 475-1852 | elizabeth.mccoy@twdb.texas.gov

From: Elizabeth McCoy
Sent: Wednesday, November 20, 2024 11:57 AM
To: 'Tony Smith' <tlsmith@carollo.com>
Cc: 'Kyle Dooley (kyledooley@rwrd.org)' <kyledooley@rwrd.org>; 'Jim Thompson (JimThompson@WardTimber.com)' <JimThompson@WardTimber.com>; 'Stan Hayes (stan@hayesengineering.net)' <stan@hayesengineering.net>; 'james.beach' <james.beach@advancedgw.com>; 'Jennifer Jackson' <JJackson@carollo.com>; 'David Harkins' <dharkins@carollo.com>; 'Michael Pinckney' <mpinckney@carollo.com>; 'Carli Brucker' <CBrucker@carollo.com>; 'Riya Jadhav' <RJadhav@carollo.com>; 'acadonnelly@advancedgw.com' <acadonnelly@advancedgw.com>
Subject: RE: Submittal of Region D Groundwater Availability Analysis

Hi Tony,

TWDB groundwater staff have completed their review of the Region D groundwater availability analysis and recommend approval of the proposed revisions to the Carrizo-Wilcox, Queen City, Trinity, and Woodbine aquifer availabilities. We plan to take a board item in January for the TWDB Board to approve the Region D groundwater availabilities.

For the Nacatoch aquifer availabilities, since the aquifer is non-relevant, TWDB Board approval is not required. The consultant team can go ahead and update those non-MAG availabilities in the planning database.

Please let me know if you have any questions.

Thanks,
Elizabeth

Elizabeth McCoy
Senior Regional Water Planner
Water Supply Planning Division
Texas Water Development Board
(512) 475-1852 | elizabeth.mccoy@twdb.texas.gov

From: Tony Smith <tlsmith@carollo.com>
Sent: Friday, October 18, 2024 12:41 PM
To: Ron Ellis <Ron.Ellis@twdb.texas.gov>
Cc: Kyle Dooley (kyledooley@rwrd.org) <kyledooley@rwrd.org>; Jim Thompson (JimThompson@WardTimber.com) <JimThompson@WardTimber.com>; Stan Hayes (stan@hayesengineering.net) <stan@hayesengineering.net>; james.beach <james.beach@advancedgw.com>; Jennifer Jackson <JJackson@carollo.com>; David Harkins <dharkins@carollo.com>; Michael Pinckney <mpinckney@carollo.com>; Carli Brucker <CBrucker@carollo.com>; Riya Jadhav <RJadhav@carollo.com>
Subject: Submittal of Region D Groundwater Availability Analysis

Hello Ron -

Attached is a technical memorandum submitted on behalf of the NETRWPG presenting recommended updates for Region D groundwater availability. This submittal is built upon our previous discussions and analyses regarding groundwater source availability for the purposes of the 2026 Regional Water Plan, and incorporate the lessons learned from development of the 2021 Region D Plan as well.

The input and assistance of the TWDB staff is greatly appreciated. If there are any questions or concerns, please feel free to contact me and I will our team in addressing them.

Have a great weekend,

-Tony

Tony Smith, PE*
Vice President
Carollo Engineers
512-799-4511
TLSmith@carollo.com / carollo.com

TEXAS WATER DEVELOPMENT BOARD

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

AGENDA ITEM MEMO

BOARD MEETING DATE: January 16, 2025

TO:	Board Members
THROUGH:	Bryan McMath, Executive Administrator Ashley Harden, General Counsel John Dupnik, P.G., Deputy Executive Administrator, Water Science & Conservation Matt Nelson, Deputy Executive Administrator, Office of Planning
FROM:	Sarah Lee, Manager, Regional Water Planning Elizabeth McCoy, P.G., Senior Planner, Regional Water Planning
SUBJECT:	Groundwater availabilities for the 2026 Region D Regional Water Plan

ACTION REQUESTED

Consider approving the groundwater availabilities requested by the Region D regional water planning group for regional water planning purposes in accordance with Texas Water Code (TWC) § 16.053(e)(2-a) and 31 Texas Administrative Code (TAC) § 357.32(d)(2).

BACKGROUND

Modeled available groundwater (MAG) is the amount of water that the Texas Water Development Board (TWDB) Executive Administrator determines may be produced on an average annual basis to achieve desired future conditions (DFC), which are established by groundwater conservation districts (GCD) within groundwater management areas (GMA) during the joint planning process.

TWC § 16.053(e)(2-a) requires regional water plans to be consistent with DFCs and authorizes a planning group with no GCDs within its planning area to determine its supply of groundwater for regional water planning purposes. Region D is the only planning group with no GCDs within its planning area.

The TWDB Board is required to review and consider approving the groundwater availability requested by Region D that exceeds the MAG. The availability must be determined to be physically compatible with the DFCs for the relevant aquifers in GCDs within co-located GMAs to ensure that the regional water plan is consistent with the DFCs developed during the joint planning process.

On September 18, 2024, the Region D planning group authorized its consultant, Carollo Engineers, to submit the methodology to be used to determine groundwater availability volumes in areas within Region D where existing water supply volumes or water management strategy supply volumes may exceed the MAG. On October 18, 2024, Region D submitted a request for the TWDB to consider allowing the use of specific availability volumes, which are greater than the MAG for 20 aquifer, county, basin splits. TWDB Groundwater Availability Modeling staff reviewed the Region D estimated availability volumes and determined that they are physically compatible with the DFCs for relevant aquifers in the GCDs in the co-located GMAs.

Table 1 lists the revised availability volumes for each aquifer, county, and river basin recommended for approval.

Table 1 Recommended groundwater availability values that exceed the MAG and are physically compatible with DFCs in Region D (acre-feet per year)

Source aquifer	**Source county**	**Source basin**	**Revised groundwater source availability values**					
			2030	**2040**	**2050**	**2060**	**2070**	**2080**
Carrizo-	Cass	Sulphur	2,190	2,190	2,190	2,190	2,190	2,190
Carrizo-	Franklin	Sulphur	2,594	2,594	2,594	2,594	2,594	2,594
Carrizo-	Gregg	Sabine	8,841	8,841	8,841	8,841	8,841	8,841
Carrizo-	Hopkins	Sabine	4,677	4,677	4,677	4,677	4,677	4,677
Carrizo-	Hopkins	Sulphur	3,125	3,125	3,125	3,125	3,125	3,125
Carrizo-	Morris	Sulphur	769	769	769	769	769	769
Carrizo-	Smith	Sabine	11,743	11,743	11,743	11,743	11,743	11,743
Carrizo-	Titus	Cypress	7,330	7,330	7,330	7,330	7,330	7,330
Carrizo-	Upshur	Cypress	6,918	6,918	6,918	6,918	6,918	6,918
Carrizo-	Upshur	Sabine	1,948	1,948	1,948	1,948	1,948	1,948
Carrizo-	Van Zandt	Neches	4,136	4,136	4,136	4,136	4,136	4,136
Carrizo-	Van Zandt	Sabine	5,033	5,033	5,033	5,033	5,033	5,033
Carrizo-	Van Zandt	Trinity	1,651	1,651	1,651	1,651	1,651	1,651
Carrizo-	Wood	Sabine	18,206	18,206	18,206	18,206	18,206	18,206
Queen City	Camp	Cypress	1,810	1,810	1,810	1,810	1,810	1,810
Queen City	Cass	Sulphur	758	758	758	758	758	758
Queen City	Morris	Cypress	3,308	3,308	3,308	3,308	3,308	3,308
Trinity	Hunt	Sabine	213	213	213	213	213	213
Trinity	Red River	Sulphur	233	234	233	234	233	233
Woodbine	Lamar	Red	22	22	22	22	22	22

RECOMMENDATION
The Executive Administrator recommends approval of this item because it meets the intent of the law and the recommended groundwater availability volumes are physically compatible with the DFCs for relevant aquifers.

Attachment:
TWDB technical review of revised groundwater availability in Region D (includes the Region D submittal as Attachment)

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P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

TO: Elizabeth McCoy, Project Manager, Region D Regional Water Planning Area

THROUGH: John T. Dupnik, P.G., Deputy Executive Administrator for Water Science and Conservation JTD
Natalie Ballew, P.G., Director, Groundwater njb
Daryn Hardwick, Ph.D., Manager, Groundwater Modeling DH

FROM: Shirley Wade, Ph.D., P.G., Groundwater Modeling SW

DATE: November 12, 2024

SUBJECT: Technical Review of Revised Groundwater Availability in Region D

SUMMARY

TWDB Groundwater Modeling staff reviewed a request for revisions to groundwater availability in Region D for regional water planning purposes and recommend approval of the request.

BACKGROUND

Texas Water Code § 16.053(e)(2-a) authorizes a regional water planning group with no groundwater conservation districts in its regional water planning area to estimate groundwater availability for planning purposes. Currently, North East Texas Regional Water Planning Group (Region D) is the only regional water planning group with no groundwater conservation districts in its planning area. The Texas Water Development Board (TWDB) is required to review and approve groundwater availability requests if the availability is physically compatible with the desired future conditions adopted for the relevant aquifers in groundwater conservation districts within co-located groundwater management areas. The TWDB uses groundwater availability models to determine physical compatibility.

Region D consultants submitted a technical memorandum on October 16, 2024 requesting revised groundwater availability values for the Carrizo-Wilcox, Queen City, Nacatoch, Trinity, and Woodbine aquifers (Tables 1, 2, and 3).

TECHNICAL REVIEW RESULTS

Groundwater modeling analyses conducted to support 2021 joint groundwater planning for Groundwater Management Area 11 identified areas where the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers could not sustain pumping equal to Region D groundwater availability (Hutchison, 2020). The modeling code dynamically reduces pumping to maintain saturated thickness in several aquifer-county-basin splits in Region D. Because of these model limitations, we cannot confirm compatibility with desired future conditions using the groundwater availability model. TWDB Groundwater Modeling and Regional Water Planning staff met with Region D consultants in April 2024 and agreed that an alternate analysis could be used to evaluate the groundwater availability for those areas.

Region D consultants (Donnelly and others, 2024) determined that the modeled available groundwater volumes from the groundwater availability model were less than current or historic pumping volumes in many Region D aquifer-county-basin splits (Donnelly and others, 2024). Nineteen aquifer-county-basin splits were identified where the 2026 regional water planning groundwater availability (2021 Groundwater Management Area 11 modeled available groundwater) is less than the 2026 assigned supplies plus the 2022 recommended water management strategies. These 19 aquifer-county-basin splits were evaluated to determine a reasonable estimate of groundwater availability by comparing assigned supplies to historic groundwater pumping.

To identify where the aquifer could support increased availability, Region D consultants tabulated assigned supply and historic pumping for each water user group within the aquifer-county-basin splits and compared the maximum historic pumping that occurred in a single year to the assigned supply. Increased availability is the difference between the maximum historic pumping and the assigned supply. The proposed groundwater availability revisions (Table 1) are equal to the 2021 modeled available groundwater plus the increased availability.

The Nacatoch Aquifer was declared non-relevant for joint planning in groundwater management areas 8 and 11 and has no desired future conditions. Therefore, Groundwater Modeling staff did not review the proposed groundwater availability in the Nacatoch Aquifer for compatibility with desired future conditions (Table 2).

In 2019, Groundwater Modeling staff performed a modeling analysis as part of a technical review of Region D’s proposed methodology for determining groundwater availability for the 2021 Regional Water Plan. This analysis determined the optimal amount of pumping that met the Groundwater Management Area 8 desired future conditions for the Trinity and Woodbine aquifers in several Region D aquifer-county-basin-splits (Shi and Wade, 2019). The optimal values of groundwater pumping from that analysis, which are compatible with the desired future conditions, are Region D’s proposed groundwater availability revisions listed in Table 3.

RECOMMENDATION

TWDB Groundwater Modeling staff recommend approval of the Region D request for revised groundwater availability values for the Carrizo-Wilcox, Queen City, Nacatoch, Trinity, and Woodbine aquifers (Tables 1, 2, and 3).

Attachments:

1. Recommended Updates to Region D Groundwater Availability, Technical Memorandum to Tony Smith, Carollo and Region D Water Planning Group, October 16, 2024.

2. GMA 11 Technical Memorandum 20-05: Base Simulation for Joint Planning with Updated Groundwater Availability Model for the Sparta, Queen City, and Carrizo-Wilcox Aquifers, Prepared for Groundwater Management Area 11, December 30, 2020.

REFERENCES

Donnelly, A., Puente, M., and Beach, J., 2024, Recommended Updates to Region D Groundwater Availability, Technical Memorandum to Tony Smith, Carollo and Region D Water Planning Group, October 16, 2024.

Hutchison, W.R., 2020, GMA 11 Technical Memorandum 20-05: Base Simulation for Joint Planning with Updated Groundwater Availability Model for the Sparta, Queen City, and Carrizo-Wilcox Aquifers, Prepared for Groundwater Management Area 11, December 30, 2020.

Shi, J. and Wade, S., 2019, Technical Review of North East Texas Regional Water Planning Group Proposed Methodology for Determining Groundwater Availability in Region D, Memorandum to Ron Ellis, TWDB Project Manager, Region D Regional Water Planning Area, August 27, 2019.

Table 1. Proposed groundwater availability for the Carrizo-Wilcox and Queen City aquifers in Region D in acre-feet per year (Donnelly and others, 2024).

Aquifer	County	Basin	2030	2040	2050	2060	2070	2080
Carrizo-Wilcox	Cass	Sulphur	2,190	2,190	2,190	2,190	2,190	2,190
Carrizo-Wilcox	Franklin	Sulphur	2,594	2,594	2,594	2,594	2,594	2,594
Carrizo-Wilcox	Gregg	Sabine	8,841	8,841	8,841	8,841	8,841	8,841
Carrizo-Wilcox	Hopkins	Sabine	4,677	4,677	4,677	4,677	4,677	4,677
Carrizo-Wilcox	Hopkins	Sulphur	3,125	3,125	3,125	3,125	3,125	3,125
Carrizo-Wilcox	Morris	Sulphur	769	769	769	769	769	769
Carrizo-Wilcox	Smith	Sabine	11,743	11,743	11,743	11,743	11,743	11,743
Carrizo-Wilcox	Titus	Cypress	7,330	7,330	7,330	7,330	7,330	7,330
Carrizo-Wilcox	Titus	Sulphur	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox	Upshur	Cypress	6,918	6,918	6,918	6,918	6,918	6,918
Carrizo-Wilcox	Upshur	Sabine	1,948	1,948	1,948	1,948	1,948	1,948
Carrizo-Wilcox	Van Zandt	Neches	4,136	4,136	4,136	4,136	4,136	4,136
Carrizo-Wilcox	Van Zandt	Sabine	5,033	5,033	5,033	5,033	5,033	5,033
Carrizo-Wilcox	Van Zandt	Trinity	1,651	1,651	1,651	1,651	1,651	1,651
Carrizo-Wilcox	Wood	Sabine	18,206	18,206	18,206	18,206	18,206	18,206
Queen City	Camp	Cypress	1,810	1,810	1,810	1,810	1,810	1,810
Queen City	Cass	Sulphur	758	758	758	758	758	758
Queen City	Harrison	Sabine	561	561	561	561	561	561
Queen City	Morris	Cypress	3,308	3,308	3,308	3,308	3,308	3,308

Table 2. Proposed groundwater availability for the Nacatoch Aquifer in Region D in acre-feet per year (Donnelly and others, 2024).

Aquifer	County	Basin	2030	2040	2050	2060	2070	2080
Nacatoch	Hunt	Sulphur	2,052	2,052	2,052	2,052	2,052	2,052
Nacatoch	Red River	Sulphur	2,924	2,923	2,923	2,923	2,923	2,923

Table 3. Recommended groundwater availability updates for the Trinity and Woodbine aquifers in Region D in acre-feet per year (Donnelly and others, 2024).

Aquifer	County	Basin	2030	2040	2050	2060	2070	2080
Trinity	Hunt	Sabine	213	213	213	213	213	213
Trinity	Red River	Sulphur	233	234	233	234	233	233
Woodbine	Lamar	Red	22	22	22	22	22	22

Attachment 1

Advanced Groundwater Solutions, LLC
www.advancedgw.com

Technical Memorandum

TO: Tony Smith, Carollo
Region D Water Planning Group

FROM: Andrew Donnelly, P.G., Meghan Puente, and James Beach, P.G.

COPY: Jennifer Jackson

SUBJECT: Recommended Updates to Region D Groundwater Availability

DATE: October 16, 2024

Introduction

This memo summarizes the recommended 2027 modeled available groundwater (MAG) availability updates in Region D. These recommended updates are for the Carrizo-Wilcox, Queen City, Trinity, and Woodbine aquifers. The methodologies used to derive the recommended changes to the MAG availabilities, as well as the recommended updated MAGs, are described below.

Carrizo-Wilcox and Queen City Aquifers

Evaluation of Supplies, Historic Pumping, and Availabilities

The current (DB27) MAG availabilities decreased significantly in the Carrizo-Wilcox and Queen City aquifers compared to the previous regional water planning cycle (DB22). This appears to be the result of the use of a new groundwater availability model (GAM) during the most recent cycle of joint groundwater planning conducted by Groundwater Management Area (GMA) 11. The aquifer properties used in the new GAM have resulted in the model automatically reducing pumping in order to keep cells from going dry during the final MAG model run. This reduction in pumping in the model simulation resulted in reduced MAGs for use in regional water planning for the Carrizo-Wilcox and Queen City aquifers. In many aquifer-county-basin splits, the new availabilities are less than the current or historic pumping volumes.

Each aquifer-county-basin split in the most recent final MAG run was evaluated to determine which splits had current MAGs that warranted a detailed evaluation to determine if an increase in the MAG is both justifiable and necessary. In many cases, the new MAGs- even ones that had decreased significantly- were significantly higher than the currently assigned supplies and recommended water management strategies (WMSs) included in the 2022 State Water Plan for that aquifer-county-basin split. Therefore, the new MAGs did not cause any issues of concern for most of the aquifer-county-basin splits.

However, there are 19 aquifer-county-basin splits that have been identified where the 2027 MAG availabilities are lower, or only slighter higher, than the sum of the 2026 assigned supplies and 2022 WMSs. These 19 aquifer-county-basin splits (summarized in Table 1) have been included in a more detailed evaluation by the NETRWPG. Also included in Table 1 are the current and previous MAG availabilities, the 2026 assigned groundwater supplies, and the 2022 recommended WMSs, all by aquifer-county-basin. The 2022 recommended WMSs have been utilized as the surrogate maximum starting point from which the 2026 WMSs are based.

Each water user group (WUG) in the 19 splits shown in Table 1 was evaluated to determine the supply that has been assigned to it in DB27 as well as the historic groundwater pumping for that WUG from the TWDB water use survey. Historic pumping for public water supply (PWS) WUGs was based on the historic municipal intake estimates available from the TWDB water use survey (https://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/index.asp). Municipal intake data is available on an aquifer-county-basin basis. Irrigation, livestock, manufacturing, mining, and steam-electric power historic pumping estimates were also obtained from the TWDB water use survey (https://www.twdb.texas.gov/waterplanning/waterusesurvey/historical-pumpage.asp). However, these historic groundwater pumping estimates are only available on an aquifer-county basis. The TWDB provided County-Other groundwater pumping estimates for this evaluation based on a data request. County-Other estimates provided by the TWDB were on an aquifer-county-basin basis.

Once the assigned supply and historic pumping was gathered for each WUG, they were compared to determine whether the assigned supply was less than the maximum amount of historic pumping that occurred in a single year. This comparison allowed the identification where historic pumping could support increased availability from the aquifer. The difference between the assigned supply and the maximum historic pumping is the amount that is recommended for the MAG availability to be increased. The sum of the increases in each aquifer-county-basin split is added to the current MAG availability to determine the new recommended MAG availability for use in this cycle of regional water planning. Note that irrigation, livestock, manufacturing, mining, and steam-electric power historic pumping estimates were not available by aquifer-county-basin. Therefore, the supplies from other basins with each county for these uses were added to the supply to obtain a county total supply to compare to the historic pumping.

Table 2 summarizes the WUGs in the 19 aquifer-county-basin splits that have historic pumping that are higher than the assigned supply, and Table 3 summarizes the total recommended increase in MAG in each aquifer-county-basin split based on the increases shown in Table 2. All but 2 of the 19 aquifer-county-basin splits have a recommended increase in the MAG, with increases ranging from 30 to 3,804 ac-ft/yr. A total of 24,063 ac-ft/yr of additional MAG is recommended for all of Region D. The recommended increases in Table 3 were added to the current MAGs for each aquifer-county-basin split to generate new recommended MAGs for the 19 aquifer-county-basin splits, which are shown in Table 4.

Trinity and Woodbine Aquifers

Previous Adjustment of MAG Availabilities

MAG availabilities in four aquifer-county-basin splits were adjusted in the previous cycle of regional water planning by Region D. These adjustments were reviewed and approved by the

TWDB in 2019. The relevant correspondence between Region D and the TWDB from 2019 is included as an attachment to this report.

However, the MAG availabilities in three of these splits were reset to their original values in the current cycle of regional water planning. Region D is recommending that these MAGs be set to the value established in the 2022 plan, summarized in Table 5. As noted, these recommended MAG availabilities were previously reviewed and approved by the TWDB during the last cycle of regional water planning.

Nacatoch Aquifer

Previous Adjustment of non-MAG Availabilities

Non-MAG availabilities in two aquifer-county-basin splits were adjusted in the previous cycle of regional water planning by Region D. These adjustments were reviewed and approved by the TWDB in 2019. The relevant correspondence between Region D and the TWDB is included as attachments to this report. The previous adjustment for the Red River-Sulphur split was carried over to the current cycle of regional water planning. However, the previous adjustment for the Hunt-Sulphur split was inadvertently decreased in the current cycle. To simplify this non-MAG availability, we recommend that a single value of 2,052 acre-feet/year be assigned as the non-MAG availability for the Nacatoch Aquifer in the Sulphur basin in Hunt County for all decades in the planning cycle.

Summary

MAGs in 19 aquifer-county-basin splits in the Carrizo-Wilcox and Queen City aquifers in Region D were decreased in the current planning cycle due to the use of an updated GAM by GMA 11 in the most recent round of joint groundwater planning. We evaluated the assigned supplies for WUGs in these 19 splits and compared them to the maximum annual estimated historic groundwater pumping for each WUG to determine if the maximum historic pumping was greater than the assigned supply. The splits with an historic pumping that was greater than the assigned supply were identified, and the difference between the pumping and supply was recommended as an increase in the MAG. The sum of all recommended increases in each of the 19 aquifer-county-basin splits was used to update the current MAGs in these two aquifers.

The MAGs in three aquifer-county-basin splits in the Trinity and Woodbine aquifers were updated in the last cycle of regional water planning. These changes were reviewed and approved by the TWDB at that time. However, the MAGs in these splits were reset to their original values. We recommend that the changes made and approved during the last cycle be restored for the current cycle of regional water planning. One non-MAG availability in the Nacatoch Aquifer was inadvertently decreased in the current cycle of regional water planning. We recommend that a single value of 2,052 acre-feet/year be assigned for all decades for this split in the current cycle of regional water planning.

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Table 1. Summary of Carrizo-Wilcox and Queen City Aquifer-County-Basin Splits Evaluated.

Aquifer	County	Basin	2022 Availability (ac-ft/yr)	2027 Availability (ac-ft/yr)	Decrease in Availability (ac-ft/yr)	Percent Decrease in Availability	Sum of 2026 Assigned Supplies (ac-ft/yr)	Sum of 2022 Recommended WMSs (ac-ft/yr)
Carrizo-Wilcox	Cass	Sulphur	2,532	777	1,755	69%	479	216
Carrizo-Wilcox	Franklin	Sulphur	2,021	398	1,623	80%	371	1,129
Carrizo-Wilcox	Gregg	Sabine	7,179	5,346	1,833	26%	5,215	135
Carrizo-Wilcox	Hopkins	Sabine	2,842	2,426	416	15%	1,625	931
Carrizo-Wilcox	Hopkins	Sulphur	6,795	2,017	4,778	70%	1,193	5,606
Carrizo-Wilcox	Morris	Sulphur	402	415	-13	-3%	384	0
Carrizo-Wilcox	Smith	Sabine	13,196	7,939	5,257	40%	4,770	646
Carrizo-Wilcox	Titus	Cypress	7,194	5,594	1,600	22%	3,258	560
Carrizo-Wilcox	Titus	Sulphur	2,838	1,942	896	32%	918	1,445
Carrizo-Wilcox	Upshur	Cypress	5,442	5,107	335	6%	4,614	216
Carrizo-Wilcox	Upshur	Sabine	1,689	1,550	139	8%	1,487	0
Carrizo-Wilcox	Van Zandt	Neches	4,317	2,616	1,701	39%	2,616	298
Carrizo-Wilcox	Van Zandt	Sabine	4,370	3,286	1,084	25%	3,272	172
Carrizo-Wilcox	Van Zandt	Trinity	1,384	1,030	354	26%	1,030	143
Carrizo-Wilcox	Wood	Sabine	19,360	16,977	2,383	12%	14,059	214
Queen City	Camp	Cypress	4,150	1,594	2,556	62%	136	4,000
Queen City	Cass	Sulphur	3,010	624	2,386	79%	496	966
Queen City	Harrison	Sabine	2,310	561	1,749	76%	151	1,949
Queen City	Morris	Cypress	9,362	3,278	6,084	65%	3,247	1,127

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Table 2. Comparison of Maximum Supply to Maximum Historic Pumping by Water User Group in the Carrizo-Wilcox and Queen City Aquifers (in acre-feet per year).

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
COUNTY-OTHER, CASS	Carrizo-Wilcox	Cass	Sulphur	80	282	202
LIVESTOCK, CASS	Carrizo-Wilcox	Cass	Sulphur	39	188	149
MINING, CASS	Carrizo-Wilcox	Cass	Sulphur	33	902	869
QUEEN CITY	Carrizo-Wilcox	Cass	Sulphur	100	293	193
LIVESTOCK, FRANKLIN	Carrizo-Wilcox	Franklin	Sulphur	361	1,149	788
MINING, FRANKLIN	Carrizo-Wilcox	Franklin	Sulphur	0	1,408	1,408
COUNTY-OTHER, GREGG	Carrizo-Wilcox	Gregg	Sabine	1,134	1,530	396
ELDERVILLE WSC	Carrizo-Wilcox	Gregg	Sabine	38	148	110
KILGORE	Carrizo-Wilcox	Gregg	Sabine	1,504	1,733	229
MANUFACTURING, GREGG	Carrizo-Wilcox	Gregg	Sabine	30	250	220
MINING, GREGG	Carrizo-Wilcox	Gregg	Sabine	411	2,672	2,261
STEAM ELECTRIC POWER, GREGG	Carrizo-Wilcox	Gregg	Sabine	242	267	25
TRYON ROAD SUD	Carrizo-Wilcox	Gregg	Sabine	128	382	254
LIVESTOCK, HOPKINS	Carrizo-Wilcox	Hopkins	Sabine	549	2,800	2,251
BRINKER WSC	Carrizo-Wilcox	Hopkins	Sulphur	253	311	58
COUNTY-OTHER, HOPKINS	Carrizo-Wilcox	Hopkins	Sulphur	124	514	390
IRRIGATION, HOPKINS	Carrizo-Wilcox	Hopkins	Sulphur	49	330	281

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
MARTIN SPRINGS WSC	Carrizo-Wilcox	Hopkins	Sulphur	446	825	379
LIVESTOCK, MORRIS	Carrizo-Wilcox	Morris	Sulphur	150	162	12
NAPLES	Carrizo-Wilcox	Morris	Sulphur	109	411	302
OMAHA	Carrizo-Wilcox	Morris	Sulphur	125	165	40
COUNTY-OTHER, SMITH	Carrizo-Wilcox	Smith	Sabine	0	1,900	1,900
IRRIGATION, SMITH	Carrizo-Wilcox	Smith	Sabine	0	251	251
LIBERTY CITY WSC	Carrizo-Wilcox	Smith	Sabine	23	428	405
LINDALE RURAL WSC	Carrizo-Wilcox	Smith	Sabine	1,011	1,034	23
MINING, SMITH	Carrizo-Wilcox	Smith	Sabine	0	506	506
STAR MOUNTAIN WSC	Carrizo-Wilcox	Smith	Sabine	213	254	41
STARRVILLE-FRIENDSHIP WSC	Carrizo-Wilcox	Smith	Sabine	130	214	84
WEST GREGG SUD	Carrizo-Wilcox	Smith	Sabine	132	726	594
MINING, TITUS	Carrizo-Wilcox	Titus	Cypress	0	1,736	1,736
COUNTY-OTHER, UPSHUR	Carrizo-Wilcox	Upshur	Cypress	194	747	553
DIANA SUD	Carrizo-Wilcox	Upshur	Cypress	598	695	97
GILMER	Carrizo-Wilcox	Upshur	Cypress	1,226	1,652	426
MANUFACTURING, UPSHUR	Carrizo-Wilcox	Upshur	Cypress	6	296	290
ORE CITY	Carrizo-Wilcox	Upshur	Cypress	214	260	46

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
PRITCHETT WSC	Carrizo-Wilcox	Upshur	Cypress	441	636	195
UNION GROVE WSC	Carrizo-Wilcox	Upshur	Cypress	72	277	205
COUNTY-OTHER, UPSHUR	Carrizo-Wilcox	Upshur	Sabine	157	280	123
EAST MOUNTAIN WATER SYSTEM	Carrizo-Wilcox	Upshur	Sabine	154	254	100
PRITCHETT WSC	Carrizo-Wilcox	Upshur	Sabine	580	756	176
EDOM WSC	Carrizo-Wilcox	Van Zandt	Neches	102	158	56
LITTLE HOPE MOORE WSC	Carrizo-Wilcox	Van Zandt	Neches	121	211	90
LIVESTOCK, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Neches	477	848	371
MINING, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Neches	1,117	1,795	678
R P M WSC	Carrizo-Wilcox	Van Zandt	Neches	130	455	325
CANTON	Carrizo-Wilcox	Van Zandt	Sabine	298	728	430
COUNTY-OTHER, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Sabine	827	1,122	295
GRAND SALINE	Carrizo-Wilcox	Van Zandt	Sabine	374	841	467
MACBEE SUD	Carrizo-Wilcox	Van Zandt	Sabine	66	68	2
MANUFACTURING, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Sabine	163	684	521
MYRTLE SPRINGS WSC	Carrizo-Wilcox	Van Zandt	Sabine	157	190	33
COUNTY-OTHER, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Trinity	604	635	31
IRRIGATION, VAN ZANDT	Carrizo-Wilcox	Van Zandt	Trinity	33	623	590

WUG	Aquifer	County	Basin	Maximum Supply	Historic High Pumping	Pumping Minus Supply
ALGONQUIN WATER RESOURCES OF TEXAS	Carrizo-Wilcox	Wood	Sabine	0	439	439
FOUKE WSC	Carrizo-Wilcox	Wood	Sabine	1,026	1,233	207
IRRIGATION, WOOD	Carrizo-Wilcox	Wood	Sabine	147	400	253
PRITCHETT WSC	Carrizo-Wilcox	Wood	Sabine	5	102	97
SHARON WSC	Carrizo-Wilcox	Wood	Sabine	471	705	234
LIVESTOCK, CAMP	Queen City	Camp	Cypress	136	352	216
LIVESTOCK, CASS	Queen City	Cass	Sulphur	115	249	134
LIVESTOCK, MORRIS	Queen City	Morris	Cypress	84	114	30

Table 3. Total Recommended Increase in MAG for Each Aquifer-County-Basin Split in the Carrizo-Wilcox and Queen City Aquifers (in acre-feet per year)

Aquifer	County	Basin	Increase in MAG
Carrizo-Wilcox	Cass	Sulphur	1,413
Carrizo-Wilcox	Franklin	Sulphur	2,196
Carrizo-Wilcox	Gregg	Sabine	3,495
Carrizo-Wilcox	Hopkins	Sabine	2,251
Carrizo-Wilcox	Hopkins	Sulphur	1,108
Carrizo-Wilcox	Morris	Sulphur	354
Carrizo-Wilcox	Smith	Sabine	3,804
Carrizo-Wilcox	Titus	Cypress	1,736
Carrizo-Wilcox	Titus	Sulphur	0
Carrizo-Wilcox	Upshur	Cypress	1,811
Carrizo-Wilcox	Upshur	Sabine	398
Carrizo-Wilcox	Van Zandt	Neches	1,520
Carrizo-Wilcox	Van Zandt	Sabine	1,747
Carrizo-Wilcox	Van Zandt	Trinity	621
Carrizo-Wilcox	Wood	Sabine	1,229
Queen City	Camp	Cypress	216
Queen City	Cass	Sulphur	134
Queen City	Harrison	Sabine	0
Queen City	Morris	Cypress	30

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Table 4. Current and Recommended MAGs for the Carrizo-Wilcox and Queen City Aquifers in Region D (in acre-feet per year).

Aquifer	County	Basin	Current MAG (ac-f/yr)						Recommended Increase in MAG (ac-f/yr)						Recommended MAG (ac-f/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Carrizo-Wilcox	Cass	Sulphur	777	777	777	777	777	777	1,413	1,413	1,413	1,413	1,413	1,413	2,190	2,190	2,190	2,190	2,190	2,190
Carrizo-Wilcox	Franklin	Sulphur	398	398	398	398	398	398	2,196	2,196	2,196	2,196	2,196	2,196	2,594	2,594	2,594	2,594	2,594	2,594
Carrizo-Wilcox	Gregg	Sabine	5,346	5,346	5,346	5,346	5,346	5,346	3,495	3,495	3,495	3,495	3,495	3,495	8,841	8,841	8,841	8,841	8,841	8,841
Carrizo-Wilcox	Hopkins	Sabine	2,426	2,426	2,426	2,426	2,426	2,426	2,251	2,251	2,251	2,251	2,251	2,251	4,677	4,677	4,677	4,677	4,677	4,677
Carrizo-Wilcox	Hopkins	Sulphur	2,017	2,017	2,017	2,017	2,017	2,017	1,108	1,108	1,108	1,108	1,108	1,108	3,125	3,125	3,125	3,125	3,125	3,125
Carrizo-Wilcox	Morris	Sulphur	415	415	415	415	415	415	354	354	354	354	354	354	769	769	769	769	769	769
Carrizo-Wilcox	Smith	Sabine	7,939	7,939	7,939	7,939	7,939	7,939	3,804	3,804	3,804	3,804	3,804	3,804	11,743	11,743	11,743	11,743	11,743	11,743
Carrizo-Wilcox	Titus	Cypress	5,594	5,594	5,594	5,594	5,594	5,594	1,736	1,736	1,736	1,736	1,736	1,736	7,330	7,330	7,330	7,330	7,330	7,330
Carrizo-Wilcox	Titus	Sulphur	1,942	1,942	1,942	1,942	1,942	1,942	0	0	0	0	0	0	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox	Upshur	Cypress	5,107	5,107	5,107	5,107	5,107	5,107	1,811	1,811	1,811	1,811	1,811	1,811	6,918	6,918	6,918	6,918	6,918	6,918
Carrizo-Wilcox	Upshur	Sabine	1,550	1,550	1,550	1,550	1,550	1,550	398	398	398	398	398	398	1,948	1,948	1,948	1,948	1,948	1,948
Carrizo-Wilcox	Van Zandt	Neches	2,616	2,616	2,616	2,616	2,616	2,616	1,520	1,520	1,520	1,520	1,520	1,520	4,136	4,136	4,136	4,136	4,136	4,136
Carrizo-Wilcox	Van Zandt	Sabine	3,286	3,286	3,286	3,286	3,286	3,286	1,747	1,747	1,747	1,747	1,747	1,747	5,033	5,033	5,033	5,033	5,033	5,033
Carrizo-Wilcox	Van Zandt	Trinity	1,030	1,030	1,030	1,030	1,030	1,030	621	621	621	621	621	621	1,651	1,651	1,651	1,651	1,651	1,651
Carrizo-Wilcox	Wood	Sabine	16,977	16,977	16,977	16,977	16,977	16,977	1,229	1,229	1,229	1,229	1,229	1,229	18,206	18,206	18,206	18,206	18,206	18,206
Queen City	Camp	Cypress	1,594	1,594	1,594	1,594	1,594	1,594	216	216	216	216	216	216	1,810	1,810	1,810	1,810	1,810	1,810
Queen City	Cass	Sulphur	624	624	624	624	624	624	134	134	134	134	134	134	758	758	758	758	758	758
Queen City	Harrison	Sabine	561	561	561	561	561	561	0	0	0	0	0	0	561	561	561	561	561	561
Queen City	Morris	Cypress	3,278	3,278	3,278	3,278	3,278	3,278	30	30	30	30	30	30	3,308	3,308	3,308	3,308	3,308	3,308

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Table 5. Current and Recommended MAGs for the Trinity and Woodbine Aquifers.

Aquifer	County	Basin	Current Modeled Available Groundwater (ac-ft/yr)						Recommended Modeled Available Groundwater (ac-ft/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Trinity	Hunt	Sabine	0	0	0	0	0	0	213	213	213	213	213	213
Trinity	Red River	Sulphur	125	125	125	125	125	125	233	234	233	234	233	233
Woodbine	Lamar	Red	0	0	0	0	0	0	22	22	22	22	22	22

Table 6. Current and Recommended non-MAG Availabilities for the Nacatoch Aquifer.

Aquifer	County	Basin	Current Modeled Available Groundwater (ac-ft/yr)						Recommended Modeled Available Groundwater (ac-ft/yr)					
			2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Nacatoch	Hunt	Sulphur	491	491	513	868	1,347	2,052	2,052	2,052	2,052	2,052	2,052	2,052
Nacatoch	Red River	Sulphur	2,924	2,923	2,923	2,923	2,923	2,923	2,924	2,923	2,923	2,923	2,923	2,923

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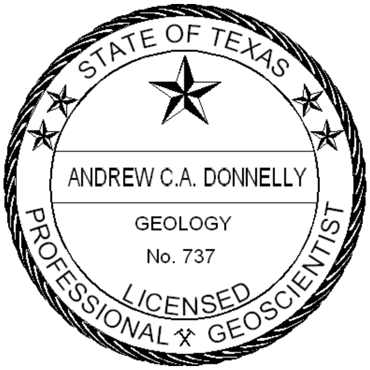

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ATTACHMENTS

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MEMO

TO: **Ms. Sarah Backhouse**

FROM: **Kristie Laughlin, P.G., James Beach, P.G. and Jennifer Herrera**

SUBJECT: **Proposed Methodology for Determining Groundwater Availability in Region D on behalf of the North East Texas Regional Water Planning Group**

DATE: **Revised May 21, 2019**

Introduction

There are no Groundwater Conservation Districts (GCDs) in Region D. Chapter 357 states:

> *If no groundwater conservation district exists within the RWPA, then the RWPG shall determine the Availability of groundwater for regional planning purposes. The Board shall review and consider approving the RWPG-Estimated Groundwater Availability, prior to inclusion in the IPP, including determining if the estimate is physically compatible with the desired future conditions for relevant aquifers in groundwater conservation districts in the co-located groundwater management area or areas. The EA shall use the Board's groundwater availability models as appropriate to conduct the compatibility review.*

Because there are no GCDs in Region D, the region wanted to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB were appropriate for the region. Region D believes that local entities that operate wells and wellfields in the region have insight and information that may be helpful in refining the groundwater availability estimates. The refined evaluation is deemed necessary to ensure that historical use and local aquifer characteristics and conditions are properly considered when estimating local groundwater availability. Without local GCD representation and data, it is difficult for Groundwater Management Area (GMA) 11 and GMA 8 to assess groundwater availability at the level that may be required for local groundwater sources. Refinement of the groundwater availability estimates entailed comparing the MAGs for each county-aquifer-basin and calculated municipal pumpage in nine county-aquifer-basins. The term "relevant" as applied to groundwater aquifers, determines whether they are considered critical to joint groundwater planning. The 'relevant' designation can change from one planning cycle to the next.

Based on an initial evaluation, the county-aquifer-basins listed below appear to have historical pumping estimates that exceed the TWDB assigned MAG volumes, and thus have been analyzed herein:

1. Hunt County – Nacatoch Aquifer – Sulphur Basin
2. Delta County – Trinity Aquifer – Sulphur Basin
3. Hunt County – Trinity Aquifer – Trinity Basin
4. Lamar County – Trinity Aquifer – Red Basin
5. Hunt County – Woodbine Aquifer – Sabine Basin
6. Hunt County – Woodbine Aquifer – Sulphur Basin
7. Lamar County – Woodbine Aquifer – Red River Basin
8. Lamar County – Woodbine Aquifer – Sulphur Basin
9. Red River County – Woodbine Aquifer – Red River Basin

Data

To investigate these nine county-aquifer-basin areas, WSP reviewed the following data:

- public water supply well locations, well depths, well tested capacities, and public water supply system average daily consumption volumes available via the Texas Commission on Environmental Quality (TCEQ) Texas Drinking Water Watch;
- groundwater well locations, depths and well yields available via TCEQ water well databases;
- groundwater well locations, depths and well yields available via the Texas Water Development Board (TWDB);
- TWDB groundwater availability model (GAM) run reports requested by GMA-8 for both the 2016 and 2021 planning cycles;
- structure surfaces derived for either the Northern Trinity Woodbine Groundwater Availability Model (NTWGAM) (Kelley and others, 2013) or the Nacatoch Brackish Availability Study (Laughlin and others, 2017; and
- TWDB historical groundwater pumping; (as described on the TWDB website):

  "Each year the Texas Water Development Board conducts an annual survey of ground and surface water use by municipal and industrial entities within the state of Texas. The information obtained, as well as water use estimates for irrigation, livestock and mining is then utilized by the Texas Water Development Board for water resources planning. The historical water use estimates and survey information is subject to revision as additional data and corrections are made available to the TWDB."

Methodology

Municipal Pumping

The focus of the analyses is primarily on municipal pumping because it accounts for 65 percent of all groundwater used in Region D, based on 2016 historical pumping estimates. Additionally, the municipal estimates are the actual pumping reported by PWS entities to TWDB via annual surveys. To determine if the MAG volumes were adequate to support public water supply (PWS) pumping, PWS locations were verified to be active and to have the correct aquifer designation based on geologic structure. River basin splits, where applicable, were noted for each public system, so that pumping could be properly allocated to compare to MAG volumes split out by basin.

Total tested well capacities were then summed for PWS wells per county-aquifer-basin. Total tested well capacity actually represents maximum system capacity, which is how much a system could pump if it pumped its wells 24 hours a day, seven days a week, for 365 days a year at full capacity. To adjust the total system capacity to a more realistic pumping volume, it is assumed that wells typically pump for only six hours a day. Thus, the maximum system capacity is divided by four to derive the expected average annual pumping for the system. The average daily consumption of the system, if reported, is also converted to an annual volume to represent the average annual PWS system pumping. The estimates of average annual pumping volume are then compared to the MAG volume.

Non-municipal Pumping

The only non-municipal estimates that are based on annual surveys are pumping estimates reported by industrial users, which accounted for approximately four percent of Region D pumping in 2016. To verify non-municipal historical pumping estimates, existing non-municipal well locations were verified (when possible) to be active and aquifer designations were either determined (from state well reports) or verified (for TWDB historical wells) using the geologic structure sources mentioned previously. Non-surveyed estimates were then evaluated to determine if they can be substantiated by existing active wells found within the county-aquifer-basin. Note that the non-surveyed estimates for irrigation and livestock are calculated by the TWDB as follows:

> *Livestock water-use estimates are derived from annual livestock population estimates produced by the Texas Agricultural Statistics Service. Estimated water use per animal unit is based on research conducted by the Texas Agricultural Experiment Station.*
>
> *Irrigated agriculture water-use estimates are based on annual crop acreage from the Natural Resources Conservation Service (prior to 2001) and the Farm Service Administration*

(2001 and later). Irrigation rates per acre are estimated based on potential evapotranspiration, with final estimates reviewed by local authorities.

Since the non-surveyed volumes are county-wide estimates and are not location-specific, in some areas they can erroneously assign pumping to water users that cannot be substantiated using the publicly-available state well databases and other resources. WSP considered the non-surveyed historical pumping estimates to be questionable when there is no well data to support the assumption that the demands are supplied by wells in that specific county-aquifer-basin. TWDB's non-surveyed historical estimates may not have any direct relationship to MAG volumes or regional supply estimates but they can be provide insight for water resource planning.

The above analyses identify where and by how much WUGs within Region D have existing groundwater supplies that exceed MAG amounts, with recommendations for two specific county-aquifer-basins to be increased based on a local hydrogeologic assessment based on available information base. Additional consideration has been given by Region D to the identification of amounts of groundwater available for future water management strategies (WMSs) in the region.

At present, the evaluation of potentially feasible WMSs is underway, but are not yet complete. An analysis has been performed to develop an estimate of the maximum amount of groundwater for individual county-aquifer-basins that may be identified as an available source for Region D. The approach proposed herein is that these estimated maximums be reviewed and possibly approved by TWDB, with an acknowledgement that local hydrogeologic analyses similar to the methods presented herein for existing groundwater availability in Region D will be performed which may further limit the amount of groundwater availabilities for each county-aquifer-basin combination within the region. Said another way, the estimates presented within this memorandum represent the maximum amount of groundwater available within Region D above the MAG, and if the local hydrogeological assessment performed by Region D during WMS evaluations indicates an amount lower than these estimated maximums, then whichever between the two is the lower amount becomes the limiting factor that establishes the availability to be employed for characterizing groundwater availability for the purposes of the 2021 Region D Plan.

To derive the estimated maximum amounts of groundwater availability above existing MAG amounts for each county-aquifer-basin, the following analyses were performed:

1. WUG second-tier needs were evaluated to determine whether groundwater is a potential source of supply. If groundwater was identified as a potential source, the second-tier WUG needs were summed by county and basin.
2. Source water balances for each county-aquifer-basin combination were then summed to represent the amount of MAG available after allocation of existing groundwater supplies to Region D entities.
3. The summed second tier need by county-basin for each Region D WUG (from Item 1) was then compared to the remaining available MAG amount by county-aquifer-basin (from Item 2) to determine the amount of water, by county-aquifer-basin, potentially needed above the MAG.
4. Those instances where the summed second tier need exceeds MAG availability were then tabulated by county-aquifer-basin by the total amount over the MAG.
5. The maximum amount over the MAG over the 50-year planning period was then calculated for each county-aquifer-basin.

This approach results in a conservative estimate of the amount of water to be identified by Region D as being potentially available above the MAG, and is conservative in two aspects:

a) WUGs may have alternative sources more viable than groundwater; and

b) WUGs may utilize one county-aquifer-basin over another, but for the present purposes it has been assumed that either county-aquifer-basin may be used, so the resultant maximum amounts may be higher than the application of a specific source to meet an identified need.

Results

Table 1 is a summary of findings for existing groundwater use using the methods described above. MAG volumes for two of the nine county-aquifer basins are probably not sufficient. It is recommended that further communication with TWDB be made regarding these areas. Table 2 details the recommended existing supply volumes for all county-aquifer-basins, while Table 3 presents the recommended additional maximum amounts of availability of groundwater to meet potential future water management strategies within Region D. It should be noted that the amounts presented in Table 3 are *in addition* to the amounts recommended in Table 2.

For the purposes of the 2021 Region D Water Plan, the methodologies used herein are proposed for estimating groundwater availability in Region D. Using these methods, for the identified county-aquifer-basins where existing supplies potentially exceed the TWDB MAG volumes, it appears that the MAG volumes are sufficient for existing supply amounts for seven of the county-aquifer-basins.

It is proposed that these methods be used to comparatively assess and evaluate TWDB MAG volumes and groundwater availabilities for potentially feasible Water Management Strategies within the Region D Planning Area. While Region D has not completed a thorough assessment of local aquifer conditions for each WUG that may need a groundwater strategy, conservative estimates of the maximum amount above the MAG for each county-aquifer-basin have been derived and are presented herein. Local hydrogeologic evaluations consistent with the methods described herein are proposed to be completed on a case-by-case basis for WUGs with identified needs, and where a potential groundwater strategy is considered, the lower of either the requested maximums presented herein or the result of the local evaluation will be employed to establish groundwater availability for the specific county-aquifer-basin for the purposes of the 2021 Region D Plan.

Table 1. Summary of Findings: Source Water Evaluation and MAGs, in acre-feet per year

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Findings
Hunt – Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	The MAG is not sufficient. Cumulative pumping volumes for non-municipal users is unknown.
Delta – Trinity – Sulphur	56	145 (IRR, STK)	41 (Ben Franklin and West Delta WSCs)	The MAG is sufficient for municipal supply. Historical pumping estimates are not substantiated. The only existing Trinity wells are public water supply wells and over 3,000 feet deep. Professional judgement indicates that 3000 feet deep wells are not economically feasible to meet irrigation and livestock demands.
Hunt – Trinity – Trinity -	0	0	No Trinity municipal pumping	Historical pumping erroneously reported in Hunt County but should be reported in Fannin County.
Lamar – Trinity – Red	0	0	No Trinity municipal pumping	There are no Trinity wells in Lamar County in the Red River basin.
Hunt - Woodbine - Sabine	269	79 (MUN)	267 (Celeste, Hickory Creek SUD – 1 well)	The MAG should be sufficient for municipal supply. There are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110 This is 22 percent of the total volume reported for Hickory Creek SUD system (405 afy). Pumpage is weighted by basin based on tested well capacities.	The MAG should be sufficient for municipal supply. Only one of the four system wells is located in the Sulphur Basin. There are no other uses reported.
Lamar - Woodbine – Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	The MAG is probably not sufficient. No active public supply wells. There are a few newer domestic wells, livestock and irrigation wells drilled within the last 6 years. Cumulative pumping is unknown, but is likely greater than 18 afy.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	This MAG should be sufficient. No active public supply wells. No active livestock wells.
Red River - Woodbine – Red	2	1 (MUN)	No Woodbine PWS pumping	The MAG is probably adequate. Historical pumping is questionable based on existing well data. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock

wsp

Table 2. Recommended Availability Volumes, in acre-feet per year

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Recommended Volume	Justification
Hunt - Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	**1,092** 730 municipal pumping plus 362 other uses	There are approximately 50 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 18 gpm. Assume wells pump 6 hours a day. Total of 225 gpm is 362 acre-feet/year.
Delta – Trinity - Sulphur	56	145 (IRR, STK)	41	**56**	MAG volume is recommended. It is sufficient for municipal supply. The only Trinity wells are for public supply (over 3,000 ft. deep).
Hunt – Trinity -Trinity -	0	0	0	**0**	MAG of zero is recommended, since the North Hunt SUD pumping is in Fannin County.
Lamar – Trinity – Red	0	0	0	**0**	MAG of zero is recommended, since there are no Trinity wells.
Hunt - Woodbine - Sabine	269	79 (MUN)	267	**269**	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110	**165**	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Lamar - Woodbine - Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	**60**	There are approximately 10 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 15 gpm. Assume wells pump 6 hours a day. Total of 37.5 gpm is 60 acre-feet/year.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	**49**	MAG volume recommended. No active public supply wells. No active domestic, irrigation or livestock wells.
Red River - Woodbine - Red	2	1 (MUN)	No Woodbine PWS pumping	**2**	MAG volume recommended. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock

Table 3. Region D Maximum Requested Groundwater Availability above MAG by County-Aquifer-Basin Combination (ac-ft)

County/Aquifer/Basin	Maximum Amount (ac-ft)
BOWIE/BLOSSOM AQUIFER/RED	231
BOWIE/BLOSSOM AQUIFER/SULPHUR	237
CAMP/CARRIZO-WILCOX AQUIFER/CYPRESS	2,120
DELTA/TRINITY AQUIFER/SULPHUR	15
HARRISON/CARRIZO-WILCOX AQUIFER/CYPRESS	1,058
HOPKINS/NACATOCH AQUIFER/SABINE	100
HOPKINS/CARRIZO-WILCOX AQUIFER/SULPHUR	4,305
HOPKINS/NACATOCH AQUIFER/SULPHUR	6,353
HUNT/NACATOCH AQUIFER/SABINE	16,533
HUNT/TRINITY AQUIFER/SABINE	19,262
HUNT/WOODBINE AQUIFER/SABINE	19,262
HUNT/NACATOCH AQUIFER/SULPHUR	2,425
HUNT/TRINITY AQUIFER/SULPHUR	2,425
HUNT/WOODBINE AQUIFER/SULPHUR	2,405
HUNT/TRINITY AQUIFER/TRINITY	124
LAMAR/BLOSSOM AQUIFER/RED	1,565
LAMAR/TRINITY AQUIFER/RED	1,888
LAMAR/WOODBINE AQUIFER/RED	1,888
LAMAR/BLOSSOM AQUIFER/SULPHUR	370
LAMAR/NACATOCH AQUIFER/SULPHUR	331
LAMAR/TRINITY AQUIFER/SULPHUR	435
LAMAR/WOODBINE AQUIFER/SULPHUR	441
RAINS/NACATOCH AQUIFER/SABINE	149
RED RIVER/NACATOCH AQUIFER/RED	134
RED RIVER/TRINITY AQUIFER/RED	155
RED RIVER/WOODBINE AQUIFER/RED	184

County/Aquifer/Basin	Maximum Amount (ac-ft)
RED RIVER/BLOSSOM AQUIFER/SULPHUR	2,391
RED RIVER/CARRIZO-WILCOX AQUIFER/SULPHUR	2,391
RED RIVER/NACATOCH AQUIFER/SULPHUR	2,212
RED RIVER/TRINITY AQUIFER/SULPHUR	2,326
TITUS/CARRIZO-WILCOX AQUIFER/CYPRESS	2,207
TITUS/QUEEN CITY AQUIFER/CYPRESS	2,063
VAN ZANDT/CARRIZO-WILCOX AQUIFER/SABINE	132

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Kelley, V., Jones, T., Young, S., Hamlin, S., Pinkard, J., Harding, J., Jigmond, M., Yan, T., Scanlon, B., Reedy, B., Beach, J., Davidson, T., and Laughlin, K., 2013. Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers: Conceptual Model Report; prepared by Intera, The University of Texas at Austin Bureau of Economic Geology, and LBG-Guyton Associates for the Texas Water Development Board.

Laughlin, K., Fleischhauer, L., Wise, M., Hamlin, S.,, Banerji, D., and Beach, J., 2017. Identification of Potential Brackish Groundwater Production Areas – Nacatoch Aquifer, TWDB Contract Number 1600011952; prepared by LBG-Guyton Associates, Collier Consulting, Inc. and The University of Texas at Austin Bureau of Economic Geology, July 2017, 154 pages.

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THROUGH: John T. Dupnik, P.G., Deputy Executive Administrator for Water Sciences and Conservation JTD
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FROM: Jerry Shi, Ph.D., P.G., Groundwater Availability Modeling J. S.
Shirley Wade, Ph.D., P.G., Groundwater Availability Modeling S. W.

DATE: August 27, 2019

SUBJECT: Technical Review of North East Texas Regional Water Planning Group Proposed Methodology for Determining Groundwater Availability in Region D

SUMMARY

Groundwater modeling of the methodology for groundwater availability proposed by the North East Texas Regional Water Planning Group results in widespread exceedances of desired future conditions and in some areas dewatering of multiple aquifers. Therefore, groundwater staff do not recommend approval of the submitted groundwater availability estimates for the Carrizo-Wilcox, Trinity, Queen City, and Woodbine aquifers. Although modeling results for the Carrizo-Wilcox and Queen City aquifers do not generate water-level drawdowns that exceed the desired future conditions in any groundwater conservation district adjacent to Region D, modeling results do suggest that these aquifers may not be able to produce the proposed groundwater availability amounts requested by the Northeast Texas Regional Water Planning Group (Region D) in some areas within Region D. For the Trinity and Woodbine aquifers, the modeling results suggest the desired future conditions in Upper Trinity, North Texas, Prairielands, Red River, Southern Trinity, Middle Trinity, and Northern Trinity groundwater conservation districts may be exceeded.

BACKGROUND

On May 24, 2019, Kristie Laughlin, James Beach, and Jennifer Herrera from WSP on behalf of Region D, submitted a proposed methodology for determining groundwater availability in Region D to Sarah Backhouse, manager of the TWDB Regional Water Planning

Department. Because there are no groundwater conservation districts in Region D, the planning group estimated groundwater availability for the aquifers in Region D. Aquifers in Region D include the Carrizo-Wilcox, Queen City, Nacatoch, Blossom, Trinity, and Woodbine aquifers. TWDB Groundwater Availability Modeling Department staff have reviewed the proposed groundwater availability estimates to determine whether they are compatible with the desired future conditions of the aquifers in Groundwater Management Areas 8 and 11. The Blossom and Nacatoch aquifers were declared nonrelevant in Groundwater Management Area 8 and they do not have desired future conditions, so their compatibility does not need to be reviewed. The Trinity and Woodbine aquifers have desired future conditions in Groundwater Management Area 8 and the Carrizo-Wilcox and Queen City aquifers have desired future conditions in Groundwater Management Area 11.

KEY ISSUES

The technical review of the proposed groundwater availability estimates consisted of verifying that the pumping rates will not generate drawdowns that exceed the desired future conditions for the Trinity and Woodbine aquifers in Groundwater Management Area 8 and for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11.

Our review of the technical materials provided by Region D showed several inconsistencies. For example, proposed estimates of groundwater availability for the Carrizo-Wilcox and Queen City aquifers in Region D are not discussed in the text of the WSP memo; however, proposed estimates for these aquifers are listed in Table 3 of the WSP memo. In addition, some of the groundwater availability estimates proposed in the text of the WSP memo for the Trinity and Woodbine aquifers were also listed at higher levels in Table 3.

ANALYSIS

Groundwater Management Area 11: Carrizo-Wilcox and Queen City aquifers

Groundwater staff revised the model pumping file for "Scenario 4" – the model simulation that resulted in values of modeled available groundwater for the adopted desired future conditions in the Groundwater Management Area 11 (Wade, 2017). The revision to Scenario 4 increased the groundwater availability amounts for the county/basin combinations shown in Tables 1 through 3. In areas where no pumping was present in Scenario 4, the requested county/basin pumping volume was evenly distributed. Factors were applied where pumping in Scenario 4 were less than the Region D requested pumping volumes. Groundwater staff then ran the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers (version 2.01; Figure 1) using the modified pumping file. Drawdowns from 2000 through 2070 were extracted from the model results and averaged by county and overall (Table 4). The methods and assumptions are the same as those discussed in the Groundwater Management Area 11 modeled available groundwater report (Wade, 2017). The drawdowns are consistent with the desired future conditions if the difference between the modeled drawdown is within a 1-foot variance. The drawdown averages were compared with the Groundwater Management Area 11 desired future conditions (Table 4). While the desired future conditions were not exceeded in a groundwater conservation district, the overall desired future condition for Groundwater Management Area 11 and several counties without a groundwater conservation district were exceeded.

In addition to analyzing county average drawdowns from the proposed groundwater availability model run, groundwater staff also analyzed the model water budget to verify the groundwater availability values. Some of the pumping discharge volumes were reduced in the model run because of model cells going dry. A model cell going dry suggests that the aquifer may not be able to produce the modeled amount of pumping in a particular area. The maximum number of dry cells in 2070 were noted for each county basin for the desired future condition/modeled available groundwater run and for the revised groundwater availability model run (Table 2). The pumping values listed in Tables 2 and 3, Region D Actual Groundwater Availability, suggest the maximum amount of pumping that appears feasible in a particular aquifer, county, and basin.

Groundwater Management Area 8: Trinity and Woodbine aquifers

The groundwater availability model simulation that met the desired future conditions (Shi, 2018) was revised to accommodate the increased pumping in the Trinity (Figure 2) and Woodbine (Figure 3) aquifers requested by Region D. The increased pumping was evenly distributed in the official boundary extent of the Trinity and Woodbine aquifers by county, basin, and regional planning area. In applying the additional pumping, we used 365 days in a year except for 366 days in leap years. Pumping is slightly more in leap years to account for one more additional day of pumping.

After the model run, the pumping information extracted from the revised model budget file was compared with the modeled available groundwater from Shi (2018) as a quality control measure. The comparisons are presented in Table 5 for the Trinity Aquifer and Table 6 for the Woodbine Aquifer. The comparisons indicate that the revised model reflected the increased pumping requested by Region D, with slightly more pumping in leap years.

Using the same approach by Shi (2018), the simulated head values from the revised model were used to calculate drawdown values between 2070 and 2009 for both aquifers by counties (Tables 7 and 8), groundwater conservation districts (Table 9), and Groundwater Management Area 8 (Table 10). A desired future condition is exceeded if the drawdown from the revised model changes more than five feet and five percent relative to the desired future condition at the same time. Tables 7 through 10 indicate that, with the increased pumping in Region D, the desired future conditions would be exceeded in several counties and groundwater conservation districts within Groundwater Management Area 8.

Additional model simulations were performed to estimate the optimal pumping rates that could be used by Region D and still do not exceed the desired future conditions by county, groundwater conservation district, and Groundwater Management Area 8.

CONCLUSIONS

The proposed groundwater availability estimates for the Queen City Aquifer do not affect the model estimated 2070 desired future conditions for Groundwater Management Area 11. Drawdown results are not presented for the Queen City Aquifer because the drawdowns with the revised pumping were within 1 foot of the desired future conditions listed in Table 1 of the modeled available groundwater report (Wade, 2017). The proposed groundwater availability estimates for the Carrizo-Wilcox Aquifer cause modeled average drawdowns which exceed the desired future conditions for Groundwater Management Area 11 in eight counties and overall (Table 4). However, none of the desired future conditions that are exceeded are in groundwater conservation districts.

Note, drawdown results are not presented for Red River County in Table 4 because Groundwater Management Area 11 did not adopt a desired future condition for the Carrizo-Wilcox Aquifer in Red River County. Although Red River County is not specifically mentioned in the joint resolution for Groundwater Management Area 11, the resolution did note that all counties with less than 200 square miles were considered non-relevant due to size.

An additional finding of concern is that the Region D proposed availability for the Carrizo-Wilcox Aquifer groundwater availability estimates also cause some model cells to go dry. The dry cells suggest that the aquifer may not be able to produce the proposed groundwater availability amounts in these areas.

The proposed groundwater availability estimates for the Trinity and Woodbine aquifers are expected to cause water level declines. The declines may be greater than the desired future conditions for both Trinity and Woodbine aquifer in several counties and groundwater conservation districts within Groundwater Management Area 8 where the desired future conditions were defined (Tables 7 through 10).

The maximum feasible amount of pumping for Region D for the Carrizo-Wilcox and Queen City aquifers is noted in Table 3 and the optimal amount of pumping in Groundwater Management Area 8 that meets the desired future condition for the Trinity and Woodbine aquifers is noted in Table 11.

REFERENCES

Wade, S.C., 2017, GAM Run 17-024 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11, Texas Water Development Board, 24 p., http://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-024_MAG.pdf

Shi, J., 2018, Gam Run 17-029 MAG: Modeled Available Groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, And Hickory Aquifers in Groundwater Management Area 8, Texas Water Development Board, 102 p., https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-029_MAG.pdf

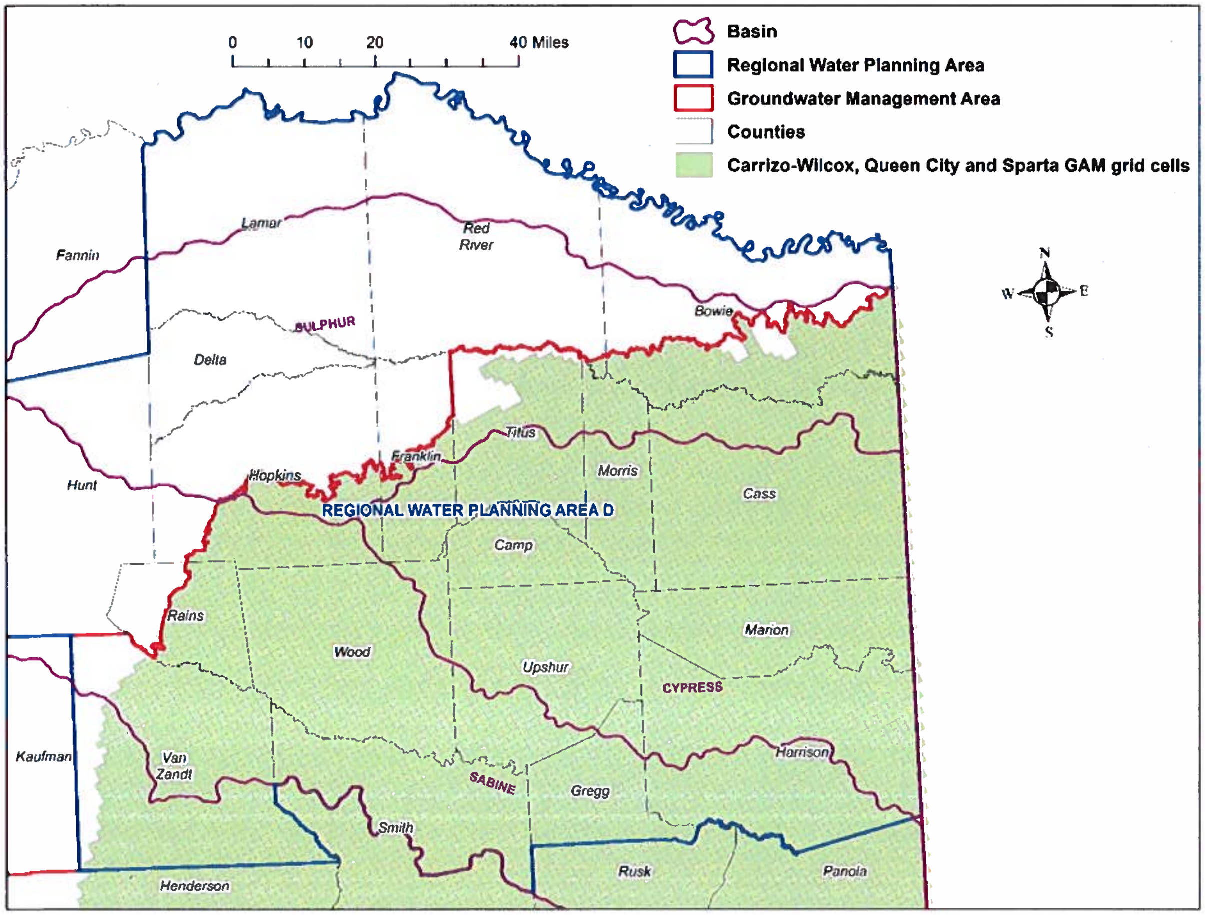

Figure 1 **Groundwater Availability Model for the Northern Part of the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11 and Region D.**

Table 1 Region D Proposed Groundwater Availability Compared with Modeled Available Groundwater (MAG) for Groundwater Management Area 11. All values in acre-feet per year.

County	Basin	Aquifer	Region D	MAG (2020)	Factor	Additional
Camp	Cypress	Carrizo-Wilcox	6,170	4,050	1.52	NA
Harrison	Cypress	Carrizo-Wilcox	7,241	6,183	1.17	NA
Hopkins	Sulphur	Carrizo-Wilcox	7,542	3,237	2.33	NA
Red River	Sulphur	Carrizo-Wilcox	2,391	0	NA	2,391
Titus	Cypress	Queen City	2,207	144	NA	2,063
Titus	Cypress	Carrizo-Wilcox	9,422	7,215	1.31	NA
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,629	1.03	NA

NA: not applicable

Table 2 Reductions of Modeled Groundwater Pumping Due to Dry Cells in Groundwater Management Area 11 and Region D. All values in acre-feet per year.

County	Basin	Aquifer	Region D request	Region D Actual (2070)	Region D dry cell count (2070)	MAG (2070)	MAG dry cell count (2070)
Camp	Cypress	Carrizo-Wilcox	6,170	6,101	4	4,050	0
Harrison	Cypress	Carrizo-Wilcox	7,241	6,951	29	5,990	25
Hopkins	Sulphur	Carrizo-Wilcox	7,542	6,907	16	3,237	9
Red River	Sulphur	Carrizo-Wilcox	2,391	478	4	0	0
Titus	Cypress	Queen City	2,207	490	14	144	0
Titus	Cypress	Carrizo-Wilcox	9,422	8,494	35	6,634	32
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,398	15	4,270	15

Table 3 Region D Actual Groundwater Availability (Region D request decreased by pumping from dry cells). All values in acre-feet per year.

County	Basin	Aquifer	Region D Actual Groundwater Availability					
			2020	2030	2040	2050	2060	2070
Camp	Cypress	Carrizo-Wilcox	6,156	6,127	6,127	6,101	6,101	6,101
Harrison	Cypress	Carrizo-Wilcox	7,188	7,115	7,028	6,994	6,951	6,951
Hopkins	Sulphur	Carrizo-Wilcox	7,228	7,228	7,228	7,057	7,057	6,907
Red River	Sulphur	Carrizo-Wilcox	478	478	478	478	478	478
Titus	Cypress	Queen City	2,207	1,716	1,226	1,103	735	490
Titus	Cypress	Carrizo-Wilcox	9,234	9,016	8,889	8,753	8,560	8,494
Van Zandt	Sabine	Carrizo-Wilcox	4,768	4,768	4,590	4,528	4,528	4,398

Table 4 **Desired Future Conditions for the Carrizo-Wilcox Aquifer compared with Results from GAM Run 17-024 for Groundwater Management Area 11 and estimated drawdowns resulting from simulation of the requested groundwater availability from Region D.**

County	Desired Future Conditions (feet)[1]	Scenario 4 (feet)	Region D (feet)
Anderson	90	90	90
Angelina	48	48	48
Bowie	5	5	5
Camp	33	33	44
Cass	68	68	69
Cherokee	99	99	99
Franklin	14	14	16
Gregg	58	58	59
Harrison	18	19	21
Henderson	50	50	50
Hopkins	3	3[2]	6[2]
Houston	80	80	80
Marion	45	45	47
Morris	46	46	51
Nacogdoches	29	29	29
Panola	3	2[2]	4[2]
Rains	1	1[2]	1[2]
Rusk	23	23	23
Sabine	9	9	9
San Augustine	7	7	7
Shelby	1	1	1
Smith	119	119	120
Titus	11	11	16
Trinity	51	51	51
Upshur	77	77	81
Van Zandt	21	21	21
Wood	89	89	90
Overall	**56**	**56**	**61**

[1] Drawdown in feet from 2000 to 2070.
[2] For county average drawdown calculations negative drawdowns were set to zero, but not for overall Groundwater Management Area 11 drawdown average.

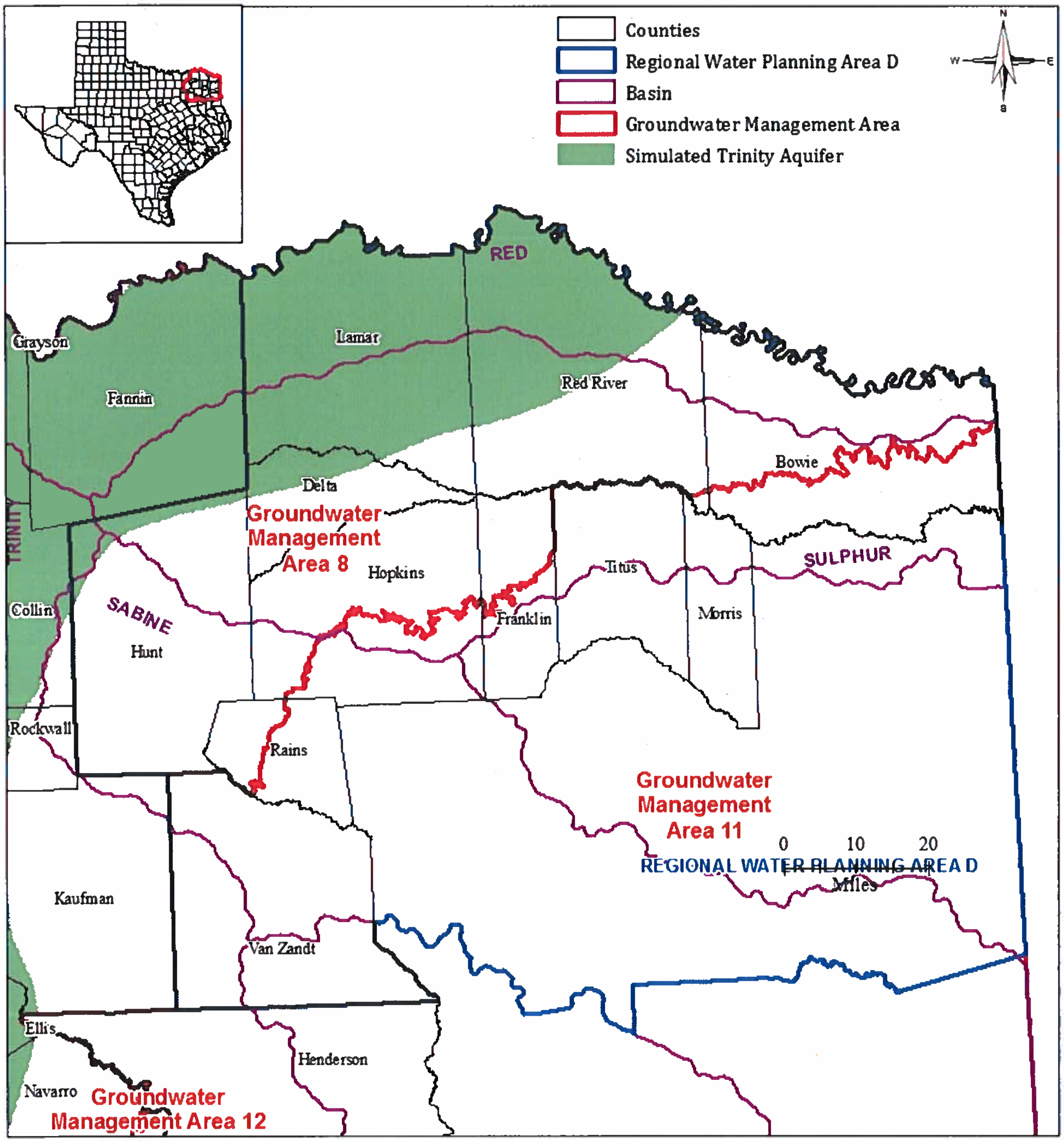

Figure 2 **Simulated Trinity Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.**

Table 5 Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Trinity Aquifer.

Pumping Scenario	County	Delta	Hunt	Hunt	Hunt	Lamar	Lamar	Red River	Red River
	Year \ Basin	Sulphur	Sabine	Sulphur	Trinity	Red	Sulphur	Red	Sulphur
Modeled Available Groundwater[1]	2020	56	0	3	0	0	8	52	125
	2030	56	0	3	0	0	8	52	125
	2040	56	0	3	0	0	8	52	125
	2050	56	0	3	0	0	8	52	125
	2060	56	0	3	0	0	8	52	125
	2070	56	0	3	0	0	8	52	125
Requested Groundwater Availability[2]	2020	71	19,262	2,428	124	1,888	443	207	2,451
	2030	71	19,262	2,428	124	1,888	443	207	2,451
	2040	71	19,262	2,428	124	1,888	443	207	2,451
	2050	71	19,262	2,428	124	1,888	443	207	2,451
	2060	71	19,262	2,428	124	1,888	443	207	2,451
	2070	71	19,262	2,428	124	1,888	443	207	2,451
Re-Modeled Groundwater Availability[3]	2020	71	19,315	2,434	125	1,894	444	208	2,457
	2030	71	19,261	2,428	125	1,888	443	208	2,451
	2040	71	19,315	2,434	125	1,894	444	208	2,457
	2050	71	19,261	2,428	125	1,888	443	208	2,451
	2060	71	19,315	2,434	125	1,894	444	208	2,457
	2070	71	19,261	2,428	125	1,888	443	208	2,451

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.

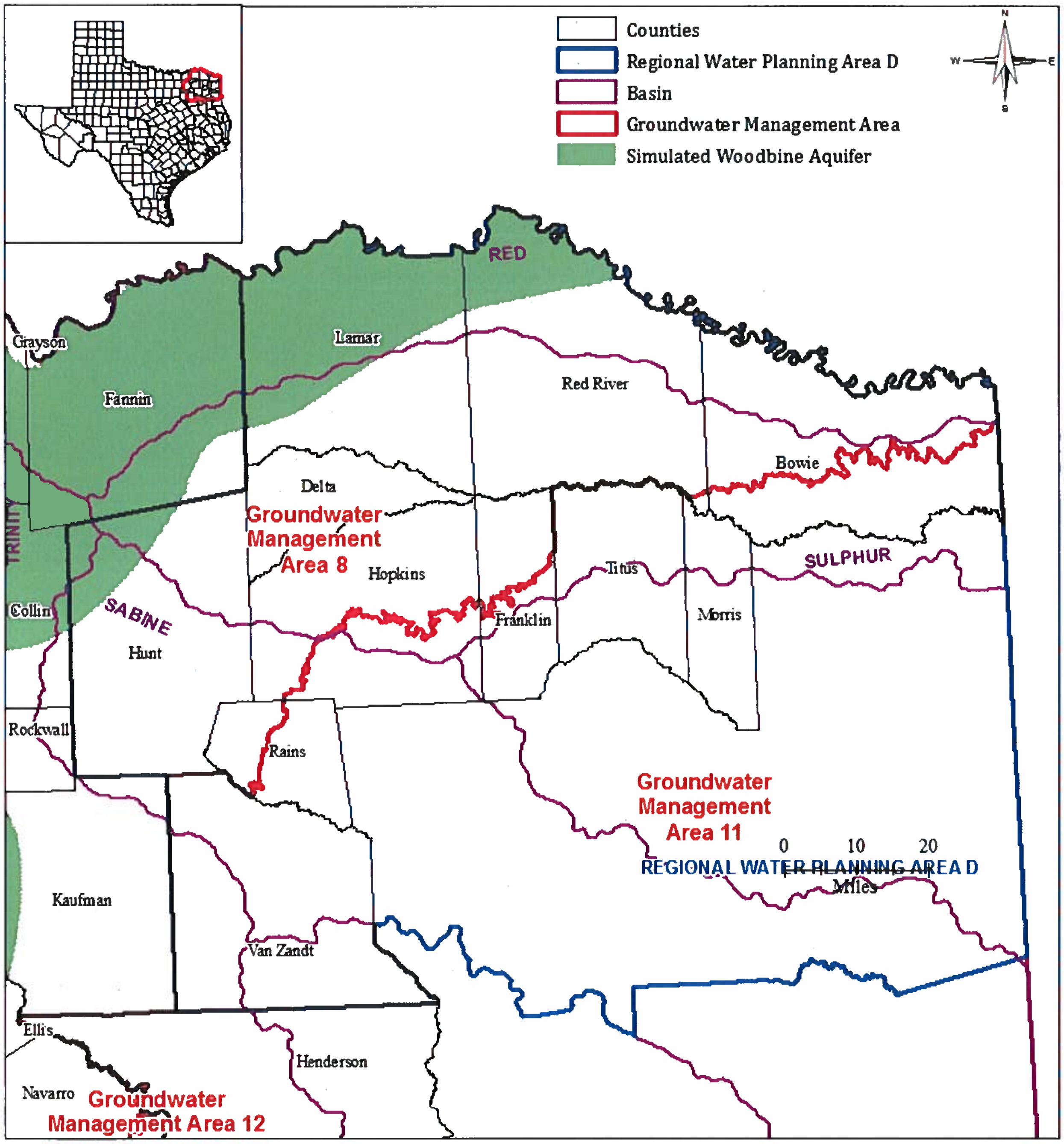

Figure 3 **Simulated Woodbine Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.**

Table 6 Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Woodbine Aquifer.

Pumping Scenario	County	Hunt	Hunt	Lamar	Lamar	Red River
	Year \ Basin	Sabine	Sulphur	Red	Sulphur	Red
Modeled Available Groundwater[1]	2020	269	165	0	49	2
	2030	268	165	0	49	2
	2040	269	165	0	49	2
	2050	268	165	0	49	2
	2060	269	165	0	49	2
	2070	268	165	0	49	2
Requested Groundwater Availability[2]	2020	19,531	2,570	1,948	490	186
	2030	19,530	2,570	1,948	490	186
	2040	19,531	2,570	1,948	490	186
	2050	19,530	2,570	1,948	490	186
	2060	19,531	2,570	1,948	490	186
	2070	19,530	2,570	1,948	490	186
Re-Modeled Groundwater Availability[3]	2020	19,584	2,577	1,953	492	187
	2030	19,530	2,570	1,948	490	187
	2040	19,584	2,577	1,953	492	187
	2050	19,530	2,570	1,948	490	187
	2060	19,584	2,577	1,953	492	187
	2070	19,530	2,570	1,948	490	187

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.

Table 7 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity And Woodbine Aquifers by Counties Not in Upper Trinity Groundwater Conservation District.

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
			Woodbine			
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	459	459	977	518	113%	Yes
Comanche	—	—	—	—	—	—
Cooke	2	2	2	0	0%	No
Coryell	—	—	—	—	—	—
Dallas	123	123	282	159	129%	Yes
Delta	—	—	—	—	—	—
Denton	22	19	44	22	100%	Yes
Eastland	—	—	—	—	—	—
Ellis	61	61	112	51	84%	Yes
Erath	—	—	—	—	—	—
Falls	—	—	—	—	—	—
Fannin	247	247	644	397	161%	Yes
Grayson	160	157	272	112	70%	Yes
Hamilton	—	—	—	—	—	—
Hill	20	16	21	1	5%	No
Hunt	598	598	1,652	1,054	176%	Yes
Johnson	2	3	4	2	100%	No
Kaufman	208	208	500	292	140%	Yes
Lamar	38	38	266	228	600%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	6	6	7	1	17%	No
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Navarro	92	92	125	33	36%	Yes
Red River	2	2	11	9	450%	Yes
Rockwall	243	243	744	501	206%	Yes
Somervell	—	—	—	—	—	—
Tarrant	7	6	7	0	0%	No
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
Paluxy						
Bell	19	19	19	0	0%	No
Bosque	6	6	7	1	17%	No
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	705	705	1,391	686	97%	Yes
Comanche	—	—	—	—	—	—
Cooke		—	—	—	—	—
Coryell	7	7	7	0	0%	No
Dallas	324	324	542	218	67%	Yes
Delta	264	264	854	590	223%	Yes
Denton	552	552	603	51	9%	Yes
Eastland	—	—	—	—	—	—
Ellis	107	107	215	108	101%	Yes
Erath	1	1	1	0	0%	No
Falls	144	144	150	6	4%	No
Fannin	688	688	1,811	1,123	163%	Yes
Grayson	922	922	1,712	790	86%	Yes
Hamilton	2	2	2	0	0%	No
Hill	38	38	51	13	34%	Yes
Hunt	586	586	2,199	1,613	275%	Yes
Johnson	-61	-61	-48	13	-21%	No
Kaufman	276	276	599	323	117%	Yes
Lamar	93	93	349	256	275%	Yes
Lampasas	—	—	—	—	—	—
Limestone	178	178	195	17	10%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
McLennan	35	35	39	4	11%	No
Milam	—	—	—	—	—	—
Mills	1	1	1	0	0%	No
Navarro	119	119	175	56	47%	Yes
Red River	21	21	150	129	614%	Yes
Rockwall	401	401	981	580	145%	Yes
Somervell	1	1	1	0	0%	No
Tarrant	101	101	122	21	21%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
			Glen Rose			
Bell	83	83	85	2	2%	No
Bosque	49	49	53	4	8%	No
Brown	2	2	2	0	0%	No
Burnet	2	2	2	0	0%	No
Callahan	—	—	—	—	—	—
Collin	339	339	1,122	783	231%	Yes
Comanche	1	1	1	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	14	14	15	1	7%	No
Dallas	263	263	551	288	110%	Yes
Delta	181	181	823	642	355%	Yes
Denton	349	349	551	202	58%	Yes
Eastland	—	—	—	—	—	—
Ellis	194	194	336	142	73%	Yes
Erath	5	5	5	0	0%	No
Falls	215	215	225	10	5%	No
Fannin	280	280	1,421	1,141	408%	Yes
Grayson	337	337	1,264	927	275%	Yes
Hamilton	4	4	4	0	0%	No
Hill	133	133	166	33	25%	Yes
Hunt	299	299	1,900	1,601	535%	Yes
Johnson	58	58	90	32	55%	Yes
Kaufman	269	269	607	338	126%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Lamar	97	97	514	417	430%	Yes
Lampasas	1	1	1	0	0%	No
Limestone	271	271	305	34	13%	Yes
McLennan	133	133	146	13	10%	Yes
Milam	212	212	216	4	2%	No
Mills	1	1	1	0	0%	No
Navarro	232	232	337	105	45%	Yes
Red River	36	36	253	217	603%	Yes
Rockwall	311	311	925	614	197%	Yes
Somervell	4	4	4	0	0%	No
Tarrant	148	148	217	69	47%	Yes
Taylor	—	—	—	—	—	—
Travis	85	85	85	0	0%	No
Williamson	77	76	77	0	0%	No
Twin Mountains						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	526	526	1244	718	137%	Yes
Comanche	—	—	—	—	—	—
Cooke	—	—	—	—	—	—
Coryell	—	—	—	—	—	—
Dallas	463	463	823	360	78%	Yes
Delta	—	—	—	—	—	—
Denton	716	716	1,017	301	42%	Yes
Eastland	—	—	—	—	—	—
Ellis	333	333	511	178	53%	Yes
Erath	6	6	6	0	0%	No
Falls	—	—	—	—	—	—
Fannin	372	372	1,380	1,008	271%	Yes
Grayson	417	417	1,287	870	209%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Hunt	370	370	1,509	1,139	308%	Yes
Johnson	156	156	199	43	28%	Yes
Kaufman	381	381	841	460	121%	Yes
Lamar	—	—	—	—	—	—
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	—	—	—	—	—	—
Rockwall	426	426	1,036	610	143%	Yes
Somervell	31	31	34	3	10%	No
Tarrant	315	315	409	94	30%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
Travis Peak						
Bell	300	294	297	-3	-1%	No
Bosque	167	167	178	11	7%	Yes
Brown	1	1	1	0	0%	No
Burnet	16	16	16	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	99	100	102	3	3%	No
Dallas	348	350	655	307	88%	Yes
Delta	186	186	822	636	342%	Yes
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	301	305	496	195	65%	Yes
Erath	19	19	19	0	0%	No
Falls	462	460	473	11	2%	No
Fannin	269	269	1,181	912	339%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Grayson	—	—	—	—	—	—
Hamilton	24	24	25	1	4%	No
Hill	298	299	351	53	18%	Yes
Hunt	324	324	1,426	1,102	340%	Yes
Johnson	179	184	243	64	36%	Yes
Kaufman	323	323	672	349	108%	Yes
Lamar	114	114	549	435	382%	Yes
Lampasas	6	6	6	0	0%	No
Limestone	392	393	433	41	10%	Yes
McLennan	471	468	488	17	4%	No
Milam	345	344	348	3	1%	No
Mills	7	7	7	0	0%	No
Navarro	290	291	413	123	42%	Yes
Red River	51	51	301	250	490%	Yes
Rockwall	—	—	—	—	—	—
Somervell	51	52	57	6	12%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	141	142	143	2	1%	No
Williamson	173	172	173	0	0%	No
Hensell						
Bell	137	137	138	1	1%	No
Bosque	129	129	136	7	5%	Yes
Brown	1	1	1	0	0%	No
Burnet	7	7	7	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke		—	—	—	—	—
Coryell	66	66	67	1	2%	No
Dallas	332	332	599	267	80%	Yes
Delta	—	—	—	—	—	—
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	263	263	409	146	56%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Erath	11	11	11	0	0%	No
Falls	271	271	280	9	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	13	13	13	0	0%	No
Hill	186	186	217	31	17%	Yes
Hunt	—	—	—	—	—	—
Johnson	126	126	167	41	33%	Yes
Kaufman	309	309	590	281	91%	Yes
Lamar	—	—	—	—	—	—
Lampasas	1	1	1	0	0%	No
Limestone	183	183	212	29	16%	Yes
McLennan	220	220	234	14	6%	Yes
Milam	229	229	231	2	1%	No
Mills	2	2	2	0	0%	No
Navarro	254	254	350	96	38%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	26	26	29	3	12%	No
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	50	51	51	1	2%	No
Williamson	74	73	73	-1	-1%	No
Hosston						
Bell	330	330	333	3	1%	No
Bosque	201	201	214	13	6%	Yes
Brown	1	1	1	0	0%	No
Burnet	20	20	20	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	3	3	3	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	130	130	133	3	2%	No
Dallas	351	351	665	314	89%	Yes
Delta	—	—	—	—	—	—

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	310	310	509	199	64%	Yes
Erath	31	31	32	1	3%	No
Falls	465	465	478	13	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	35	35	36	1	3%	No
Hill	337	337	396	59	18%	Yes
Hunt	—	—	—	—	—	—
Johnson	235	235	307	72	31%	Yes
Kaufman	295	295	584	289	98%	Yes
Lamar	—	—	—	—	—	—
Lampasas	11	11	11	0	0%	No
Limestone	404	404	445	41	10%	Yes
McLennan	542	542	564	22	4%	No
Milam	345	345	349	4	1%	No
Mills	13	13	13	0	0%	No
Navarro	291	291	415	124	43%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	83	83	91	8	10%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	146	148	148	2	1%	No
Williamson	177	176	177	0	0%	No
Antlers						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	2	2	2	0	0%	No
Burnet	—	—	—	—	—	—
Callahan	1	1	1	0	0%	No
Collin	570	570	1,046	476	84%	Yes
Comanche	9	9	9	0	0%	No
Cooke	176	179	236	60	34%	Yes

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Coryell	—	—	—	—	—	—
Dallas	—	—	—	—	—	—
Delta	—	—	—	—	—	—
Denton	395	398	527	132	33%	Yes
Eastland	3	3	3	0	0%	No
Ellis	—	—	—	—	—	—
Erath	12	11	11	-1	-8%	No
Falls	—	—	—	—	—	—
Fannin	251	251	910	659	263%	Yes
Grayson	348	348	678	330	95%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—
Hunt	—	—	—	—	—	—
Johnson	—	—	—	—	—	—
Kaufman	—	—	—	—	—	—
Lamar	122	122	517	395	324%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	13	13	84	71	546%	Yes
Rockwall	—	—	—	—	—	—
Somervell	—	—	—	—	—	—
Tarrant	148	149	171	23	16%	Yes
Taylor	0	0	0	0	0%	No
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 8 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity Aquifer by Counties in Upper Trinity Groundwater Conservation District.

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Paluxy						
Hood (outcrop)	5	5	5	0	0%	No
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	5	5	5	0	0%	No
Parker (downdip)	1	1	1	0	0%	No
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Glen Rose						
Hood (outcrop)	7	7	7	0	0%	No
Hood (downdip)	28	27	31	3	11%	No
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	10	10	10	0	0%	No
Parker (downdip)	28	28	37	9	32%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Twin Mountains						
Hood (outcrop)	4	4	4	0	0%	No
Hood (downdip)	46	46	51	5	11%	No

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance?[4]
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	1	1	1	0	0%	No
Parker (downdip)	46	46	63	17	37%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
Antlers						
Hood (outcrop)	—	—	—	—	—	—
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	18	18	21	3	17%	No
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	11	11	14	3	27%	No
Parker (downdip)	—	—	—	—	—	—
Wise (outcrop)	34	35	42	8	24%	Yes
Wise (downdip)	142	142	168	26	18%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 9 Comparison of Simulated Drawdowns by Model with Desired Future Conditions (DFCs)of Trinity and Woodbine Aquifers by Groundwater Conservation Districts (GCDs).

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
			Woodbine			
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	—	—	—	—	—	—
North Texas GCD	278	251	534	256	92%	Yes
Northern Trinity GCD	7	6	7	0	0%	No
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	39	35	61	22	56%	Yes
Red River GCD	204	201	457	253	124%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	6	6	7	1	17%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
			Paluxy			
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	19	19	19	0	0%	No
Middle Trinity GCD	6	6	7	1	17%	No
North Texas GCD	671	671	1,213	542	81%	Yes
Northern Trinity GCD	101	101	122	21	21%	Yes
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	35	35	82	47	134%	Yes

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Red River GCD	699	699	1,807	1,108	159%	Yes
Saratoga UWCD	—	—	—	—	—	No
Southern Trinity GCD	35	35	39	4	11%	No
Upper Trinity GCD (outcrop)	5	5	5	0	0%	No
Upper Trinity GCD (subcrop)	1	1	1	0	0%	No
Glen Rose						
Central Texas GCD	2	2	2	0	0%	No
Clear Water GCD	83	83	85	2	2%	No
Middle Trinity GCD	27	27	29	2	7%	No
North Texas GCD	341	341	993	652	191%	Yes
Northern Trinity GCD	148	148	217	69	47%	Yes
Post Oak Savanah GCD	212	212	216	4	2%	No
Prairielands GCD	126	126	193	67	53%	Yes
Red River GCD	283	283	1,414	1,131	400%	Yes
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	133	133	146	13	10%	Yes
Upper Trinity GCD (outcrop)	8	8	8	0	0%	No
Upper Trinity GCD (subcrop)	28	28	36	8	29%	Yes
Twin Mountains						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	6	6	6	0	0%	No
North Texas GCD	569	569	1,192	623	109%	Yes
Northern Trinity GCD	315	315	409	94	30%	Yes

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	142	142	183	41	29%	Yes
Red River GCD	377	377	1,369	992	263%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	3	3	3	0	0%	—
Upper Trinity GCD (subcrop)	46	46	59	13	28%	Yes
Travis Peak						
Central Texas GCD	16	16	16	0	0%	—
Clear Water GCD	300	294	297	-3	-1%	—
Middle Trinity GCD	88	88	92	4	5%	—
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	345	344	348	3	1%	No
Prairielands GCD	258	261	360	102	40%	Yes
Red River GCD	269	269	1,181	912	339%	Yes
Saratoga UWCD	6	6	6	0	0%	No
Southern Trinity GCD	471	468	488	17	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Hensell						
Central Texas GCD	7	7	7	0	0%	No
Clear Water GCD	137	137	138	1	1%	No
Middle Trinity GCD	72	72	75	3	4%	No

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	229	229	231	2	1%	No
Prairielands GCD	190	190	262	72	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	220	220	234	14	6%	Yes
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Hosston						
Central Texas GCD	20	20	20	0	0%	No
Clear Water GCD	330	330	333	3	1%	No
Middle Trinity GCD	111	111	116	5	5%	No
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savanah GCD	345	345	349	4	1%	No
Prairielands GCD	289	290	398	109	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	11	11	11	0	0%	No
Southern Trinity GCD	542	542	564	22	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
Antlers						
Central Texas GCD	—	—	—	—	—	—

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment [2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ?[4]
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	10	10	10	0	0%	No
North Texas GCD	290	293	403	113	39%	Yes
Northern Trinity GCD	148	149	171	23	16%	Yes
Post Oak Savanah GCD	—	—	—	—	—	—
Prairielands GCD	—	—	—	—	—	—
Red River GCD	304	304	782	478	157%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	24	25	29	5	21%	No
Upper Trinity GCD (subcrop)	142	142	168	26	18%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 10 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity and Woodbine Aquifers by Groundwater Management Area 8.

Aquifer	Desired Future Conditions (DFCs, feet)	Existing Drawdowns[1] (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[2] (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment[3] (%)	Does Region D Pumping Adjustment Cause DFCs Violation?[4]
Woodbine	146	136	316	170	117%	Yes
Paluxy	144	144	290	146	101%	Yes
Glen Rose	116	116	236	120	104%	Yes
Twin Mountain	313	313	575	262	84%	Yes
Travis Peak	177	177	246	69	39%	Yes
Hensell	118	118	139	21	18%	Yes
Hosston	206	206	235	29	14%	Yes
Antlers	177	177	350	173	98%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

Table 11 Optimal amount of groundwater available that meets desired future conditions with an error tolerance of five percent or five feet, whichever is greater, for the Trinity and Woodbine aquifers.

County	Aquifer	River Basin	Simulated Pumping in Region D in Acre-Feet Per Year (Total Pumping that is compatible with the modeled available groundwater)					
			2020	2030	2040	2050	2060	2070
Delta	Trinity	Sulphur	56	56	56	56	56	56
Hunt	Trinity	Sabine	213	213	213	213	213	213
Hunt	Woodbine	Sabine	344	343	344	343	344	343
Hunt	Trinity	Sulphur	3	3	3	3	3	3
Hunt	Woodbine	Sulphur	165	165	165	165	165	165
Hunt	Trinity	Trinity	0	0	0	0	0	0
Lamar	Trinity	Red	0	0	0	0	0	0
Lamar	Woodbine	Red	22	22	22	22	22	22
Lamar	Trinity	Sulphur	8	8	8	8	8	8
Lamar	Woodbine	Sulphur	62	62	62	62	62	62
Red River	Trinity	Red	52	52	52	52	52	52
Red River	Woodbine	Red	251	251	251	251	251	251
Red River	Trinity	Sulphur	234	233	234	233	234	233

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October 23, 2019

Mr. Ron Ellis
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78711-3231

Subject: Revised Request for Review of Groundwater Availability in Region D for Draft Recommended Water Management Strategies

Dear Mr. Ellis:

This memorandum is a follow-up to the original May 24, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) detailing the proposed methodology for determining groundwater availability in Region D, and the subsequent August 27, 2019 response to that memo provided by the Texas Water Development Board (TWDB) providing a technical review of that proposed methodology.

Objective

The objective of this memorandum is to specify the exact quantities that have been identified by Region D as being potentially available (pending TWDB approval) for use as a source for draft recommended water management strategies for water users with identified projected needs within Region D.

Background

As there are no groundwater conservation districts (GCDs) within Region D, the NETRWPG has wished to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB are appropriate for the purposes of the 2021 Region D Water Plan. The first May 24, 2019 submittal on behalf of the NETRWPG identified two county-aquifer-basin locations recommended to be increased based on a local hydrogeologic assessment on available information, as well as provided estimates on maximum availability to be applied to identified needs for future water management strategies (WMSs). At that time, the evaluation of feasible WMSs was underway, but was not at a point where recommended and alternative WMSs had been identified, thus the use of estimated maximums by the NETRWPG at that time.

In response to that memorandum, the above referenced August 27, 2019, memorandum from TWDB was provided to the NETRWPG. The TWDB memorandum presented the TWDB's model-based review of the proposed availabilities to determine whether they are physically compatible with desired future conditions (DFCs) for relevant aquifers in GCDs in co-located groundwater management areas (GMAs). Alternative volumes proffered by TWDB as maximum availabilities for select county-aquifer-basins were then presented in the memorandum.

Status

The present work of the NETRWPG is in the development and identification of recommended and alternative water management strategies, which will be incorporated into the Initially Prepared Plan (IPP) to be submitted by March, 2020. As it is roughly five (5) months until the submittal of the IPP, the "recommended" and "alternative" strategies discussed herein represent the best available information at present as to the representation of these strategies for the purposes of the 2021 Region D Plan. It should be noted that these are thus draft representations of these strategies; however, as TWDB rules (357.32(d)(2)) require that TWDB review the proposed availabilities and determine whether they are physically compatible with the desired future conditions for relevant aquifers in GCDs in the co-located GMAs, this memo is submitted to initiate the final component of TWDB's review of groundwater availability for the North East Texas region.

Analysis

With the analyses of existing supplies in the region complete, and with draft recommended and alternative[1] water management strategies identified, the consultant team for the NETRWPG has performed a comparative analysis to identify the extent of availabilities identified as exceeding the MAGs and the TWDB's modeled maximum availabilities by county-aquifer-basin. Table 1 below presents the list of draft recommended and alternative WMSs that when compiled by similar county-aquifer-basin location may potentially exceed the present MAGs for the respective county-aquifer-basin. Presented in Table 2 are the individual sums of these strategies by county-aquifer-basin.

Using output from DB22, the NETRWPG has identified the remaining amount of MAG after accounting for allocations to existing WUG supplies, as shown in Table 3. These amounts, in effect, show how much MAG remains available for potential utilization as a source for potential WMSs.

Table 4 presents the results of a comparison between the recommended and alternative WMS amounts (by county-aquifer-basin as identified in Table 2) to the remaining MAGs after allocations have been made for existing supplies. The amounts presented in Table 4 represent the amounts (by county-aquifer-basin) in exceedance of the MAG. There are eight (8) county-aquifer-basins where the combined total recommended WMS amounts exceed the present MAG by a total amount of 6,453 ac-ft/yr in 2020 and 8,392 ac-ft/yr in 2070. The majority of these overages occurs in the portion of the Carrizo-Wilcox Aquifer-in the Sulphur River Basin in Hopkins County and the portion of the Nacatoch Aquifer in the Sulphur River Basin in Red River County. No overage occurs in the portion of the Queen City Aquifer in the Cypress River Basin in Camp County.

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[1] It is noted that TWDB's review is focused upon recommended WMSs and the associated availability amounts for such strategies. Alternative WMSs are identified herein for informational purposes only, as they represent the present draft status of potentially feasible strategies that at a later date may be considered/discussed. These Alternative WMSs are *not* requested for TWDB review and approval at this time.

Table 1 Draft Recommended and Alternative Water Management Strategies Potentially Exceeding MAG and Increased Availabilities Identified by TWDB (August 27, 2019 memorandum)

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
CAMP	LIVESTOCK CAMP	3,962	3,962	3,962	3,962	3,962	3,962	DRILL NEW WELLS	QUEEN CITY AQUIFER	CAMP	CYPRESS
HOPKINS	IRRIGATION HOPKINS	4,627	4,627	4,516	4,240	4,052	3,696	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	LIVESTOCK HOPKINS	1,068	1,090	1,140	1,143	1,196	1,219	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MILLER GROVE WSC	8	16	23	29	40	52	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MINING HOPKINS	227	283	360	444	533	639	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HUNT	COMMERCE	0	0	22	377	856	1,561	DRILL NEW WELLS	NACATOCH AQUIFER	HUNT	SULPHUR
HUNT	HICKORY CREEK SUD	116	293	461	462	461	462	USE EXISTING WELL PRODUCTION CAPACITY BEYOND MAG	WOODBINE AQUIFER	HUNT	SULPHUR
HUNT	LIVESTOCK HUNT	2	2	2	2	2	2	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	MINING HUNT	73	64	35	19	7	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	WEST TAWAKONI	90	0	0	0	0	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
RED RIVER	IRRIGATION RED RIVER	2,057	2,057	2,057	2,057	2,057	2,057	DRILL NEW WELLS	NACATOCH AQUIFER	RED RIVER	SULPHUR
RED RIVER	IRRIGATION RED RIVER	185	185	185	185	185	185	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
RED RIVER	LIVESTOCK RED RIVER	174	173	174	173	174	173	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
TITUS	LIVESTOCK TITUS	275	334	379	425	517	560	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
VAN ZANDT	CANTON	100	100	100	100	100	100	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
VAN ZANDT	SOUTH TAWAKONI WSC	38	0	0	0	0	0	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
ALTERNATIVE WMS											
WOOD	COUNTY-OTHER, WOOD	8,716	9,751	10,285	14,121	20,856	32,060		CARRIZO-WILCOX AQUIFER	WOOD	SABINE
HOPKINS	BRINKER WSC	0	0	0	12	47	83	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR

Table 2 Sum of WMS Amounts by County-Aquifer-Basin

Source Name	Source County	Source Basin	DRAFT WMS SUPPLY (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	3,962	3,962	3,962	3,962	3,962	3,962
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,856	5,821	5,606
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561
WOODBINE	HUNT	SULPHUR	116	293	461	462	461	462
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	2,057	2,057	2,057	2,057	2,057	2,057
TRINITY AQUIFER	RED RIVER	SULPHUR	359	358	359	358	359	358
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	275	334	379	425	517	560
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,868	5,868	5,689
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	8,716	9,751	10,285	14,121	20,856	32,060

Table 3 Modeled Available Groundwater Remaining after Allocation to Existing Supplies

Source Name	Source County	Source Basin	MAG REMAINING AFTER EXISTING SUPPLY ALLOCATIONS (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	4,170	4,170	4,014	4,014	4,014	4,014
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	20	20	20	20	20	20
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
NACATOCH	RED RIVER	SULPHUR	179	180	181	181	181	181
TRINITY AQUIFER	RED RIVER	SULPHUR	65	65	65	65	65	65
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	1,587	878	239	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	5,583	5,495	5,397	5,340	5,266	5,164

Table 4 Total WMS Amount over MAG by County-Aquifer-Basin

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,808	3,773	3,558
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561
WOODBINE	HUNT	SULPHUR	96	273	441	442	441	442
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876
TRINITY AQUIFER	RED RIVER	SULPHUR	294	293	294	293	294	293
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	140	425	517	560
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100
		TOTAL	**6,453**	**6,577**	**6,901**	**7,342**	**7,866**	**8,392**
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,820	3,820	3,641
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Although the amounts above exceed the MAG, it is again noted that the TWDB's August 27, 2019 memorandum presents alternative volumes as maximum availabilities for select county-aquifer-basins that remain physically compatible with DFCs for relevant aquifers in GCDs in co-located GMAs. These maximums identified by TWDB, in a number of instances, represent an increase in modeled availability that achieves these objectives. These increases above the MAG identified by TWDB are presented in Table 5.

Table 5 Increase in Modeled Availability above MAG Identified by TWDB (August 27, 2019 Memorandum)

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	HUNT	SABINE	213	213	213	213	213	213
NACATOCH	RED RIVER	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	RED RIVER	SULPHUR	109	108	109	108	109	108
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	2,019	1,952	2,055	1,967	1,825	1,860
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	139	139	134	131	131	128
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	0	0	0	0	0	0

Results of a comparison between the WMS amounts exceeding the MAG (by county-aquifer-basin as shown in Table 4) to the increases in availabilities identified by the TWDB (as shown in Table 5) are shown in Table 6, which depicts the WMS amounts in excess of the increased availabilities identified by TWDB by county-aquifer-basin.

Table 6 WMS Amounts above Increased Availabilities Identified by TWDB

Source Name	Source County	Source Basin	EXCEEDANCE OF WMS ABOVE ADDITIONAL AVAILABILITY IDENTIFIED BY TWDB (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
RECOMMENDED WMSs								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
NACATOCH	**HUNT**	**SULPHUR**	**0**	**0**	**22**	**377**	**856**	**1,561**
WOODBINE	**HUNT**	**SULPHUR**	**96**	**273**	**441**	**442**	**441**	**442**
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
NACATOCH	**RED RIVER**	**SULPHUR**	**1,878**	**1,877**	**1,876**	**1,876**	**1,876**	**1,876**
TRINITY AQUIFER	**RED RIVER**	**SULPHUR**	**185**	**185**	**185**	**185**	**185**	**185**
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
ALTERNATIVE WMSs								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Based on the results shown in Table 6, there are four (4) county-aquifer-basins (shown in bold) where the draft recommended strategies exceed the total groundwater availability identified by the MAG when incorporating the additional amounts identified by TWDB in its' August 27, 2019 memorandum. The totals (by county-aquifer-basin) of the remaining recommended strategies (non-bold) are within the total amounts of available groundwater supply when reflecting both the MAGs plus the additional amounts identified by TWDB. Thus, the recommended strategies within the non-bold county-aquifer-basins shown in Table 6 are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs.

The aforementioned analyses performed on behalf of the NETRWPG identifies eight (8) county-aquifer-basins wherein the total recommended WMSs exceed the present respective MAGs (Table 4). When the additional amounts identified by TWDB's analysis from its' August 27, 2019, memorandum are included in the comparison, the total amounts for recommended WMSs exceed the total available groundwater in four (4) county-aquifer-basins (Table 6).

Focusing upon the identified WMSs in Table 1, it is thus noted that the Camp County Livestock WMS (located in the Queen City Aquifer, Camp County, Cypress Creek Basin) is found to be within the MAG, which necessitates no further review. For the remaining strategies identified in Table 1 that are located in the below county-aquifer-basins, these WMSs are found to be within the total available groundwater supply when considering both the MAG and the additional availability identified by TWDB in its' August 27, 2019, memorandum:

1. Hopkins County, Carrizo-Wilcox Aquifer, Sulphur River Basin.
2. Hunt County, Trinity Aquifer, Sabine River Basin.
3. Titus County, Carrizo-Wilcox Aquifer, Cypress Creek River Basin.
4. Van Zandt County, Carrizo-Wilcox Aquifer, Sabine River Basin.

Based on the analyses by TWDB and the evaluation documented herein, the WMSs identified in Table 1 located in the above enumerated county-aquifer-basins are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs. If necessary, the amounts for these enumerated county-aquifer-basins that are above the MAG (as identified in Table 4) can be interpreted as being part of the requested review and approval to the TWDB from the NETRWPG, although it is noted that these results are within the amounts previously identified by TWDB.

There are four (4) remaining instances where recommended WMSs have amounts that exceed the total available groundwater when adding the MAGs with the additional availabilities identified by TWDB. Those four recommended WMSs are shown in Table 7 below by county-aquifer-basin, along with their respective amounts in exceedance of the total available groundwater. Note that the amounts shown in Table 7 are exceedances, and do not represent the total amount of the recommended WMS (which can be found in Table 1). A portion of the Hickory Creek SUD's recommended WMS is met by the existing MAG in Hunt County, Woodbine Aquifer, Sulphur Basin. Similarly, a portion of the Red River County Irrigation recommended WMS for the Sulphur River Basin is met by the existing MAG for the Red River County, Nacatoch Aquifer, Sulphur River Basin. Portions of the recommended amount for Red River County Irrigation in the Sulphur River Basin are met by both the remaining MAG for the Red River County, Trinity Aquifer, Sulphur River Basin, as well as additional availability amounts identified by the TWDB for that county-aquifer-basin.

A local hydrogeologic assessment of the available information base has been performed by the Region D consultant team (attached hereto). The results of this assessment applicable to the four county-aquifer-basins are summarized in the notes in Table 7.

Table 7 Recommended WMS Amounts in Exceedance of the MAG and the Additional Availability Identified by TWDB

WUG	County	Aquifer	Basin	Recommended Amount in Exceedance[2] of Additional Availability identified by TWDB (ac-ft/yr)						NOTE
				2020	2030	2040	2050	2060	2070	
COMMERCE	HUNT	NACATOCH	SULPHUR	0	0	22	377	856	1,561	Past maximum historic pumping exceeds the identified 2070 needs
HICKORY CREEK SUD	HUNT	WOODBINE	SULPHUR	96	273	441	442	441	442	Use of full production capacity from existing system
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	NACATOCH	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876	Based on a relatively low average annual water level decline and the potential for high-productivity wells in the portion of the Nacatoch Aquifer located in the Sulphur River Basin in Red River County, it has been determined that the future projected needs can likely be met with additional irrigation wells.
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	TRINITY	SULPHUR	185	185	185	185	185	185	Assessment did not identify sufficient available data to determine potential productivity; however, since there is little to no current production from this portion of the Trinity Aquifer, it has been determined that sufficient source availability is likely to meet the projected needs

[22] Remaining portion of recommended amount is within the total available amount identified by the MAG in addition to the available amount identified by TWDB in its' August 27, 2019 memorandum.

Request for TWDB Review

The amounts presented in Table 7, along with the supporting documentation, are recommended for the TWDB's review and possible approval to be used in addition to the additional amounts identified by the TWDB in its August 27 2019 memorandum. If approval is necessary for all amounts above the MAG, Table 4 represents the total amount of recommended WMS availability identified above the MAG by county-aquifer-basin for TWDB review.

The NETRWPG and its' consultant team appreciate the TWDB's efforts in support of these analyses, as they represent the first attempt at a Regional Water Planning Group identifying groundwater availability for planning purposes since there are no GCDs located within the region. It is the intent of this memorandum to document milestones of significance to the process as they have occurred to date, in the hope that such documentation will assist in refining the process for future rounds of planning.

If there are any questions whatsoever, please feel free to contact us at your convenience. We truly appreciate the opportunity to work with you and your staff on the planning process.

Sincerely,

CAROLLO ENGINEERS, INC.

Tony L. Smith, P.E.
Associate Vice President
Water Resources

TLS:ckt

Enclosures: WSP Local Hydrogeological Assessment

cc: Mr. Walt Sears
Mr. James Beach
Mr. David K. Harkins

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November 1, 2019

Mr. Ron Ellis
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78711-3231

Subject: Addendum to Revised Request of Groundwater Availability in Region D for Draft Recommended Water Management Strategies

Dear Mr. Ellis:

This is an addendum to the October 23, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) regarding Groundwater Availability in Region D for Draft Water Management Strategies.

The attached table reflects the original Modeled Available Groundwater (MAG) amounts, total groundwater availabilities identified by TWDB that are physically compatible with desired future conditions for aquifers in GCDs in co-located groundwater management areas, and lastly the total groundwater availability identified by Region D for the specific aquifer, county and basin splits requested for review and approval by the TWDB. There are a total of nine splits with amounts identified above their current respective MAGs. Of these, there are five (5) splits that are higher than the availabilities identified in the August 27, 2019, memorandum from TWDB provided to the NETRWPG; however, two of these splits are within the Nacatoch Aquifer, a non-relevant aquifer for the purposes of regional water planning. Thus, there are three (3) identified splits remaining that are in relevant aquifers that exceed the availabilities identified by TWDB in its' August 27, 2019, memorandum, namely:

1. Woodbine Aquifer, Lamar County, Red River Basin;
2. Woodbine Aquifer, Hunt County, Sulphur River Basin; and
3. Trinity Aquifer, Red River County, Sulphur River Basin.

The supporting documentation for the Woodbine Aquifer, Lamar County, Red River Basin split's availability (i.e. No. 1 above), was submitted as part of the original May 24, 2019, memorandum submitted on behalf of the NETRWPG to Region D. Supporting documentation for the remaining splits was submitted in the revised request submitted in the NETRWPG's October 23, 2019, memorandum and supporting documentation.

We appreciate your staff's input in presenting this request in a manner that best facilitates TWDB's review of the groundwater availabilities identified herein. If there is anything we can do to assist further, please feel free to contact me at your convenience.

Sincerely,

Tony L. Smith, P.E.
Associate Vice President

TLS
Enclosures: Attached Table

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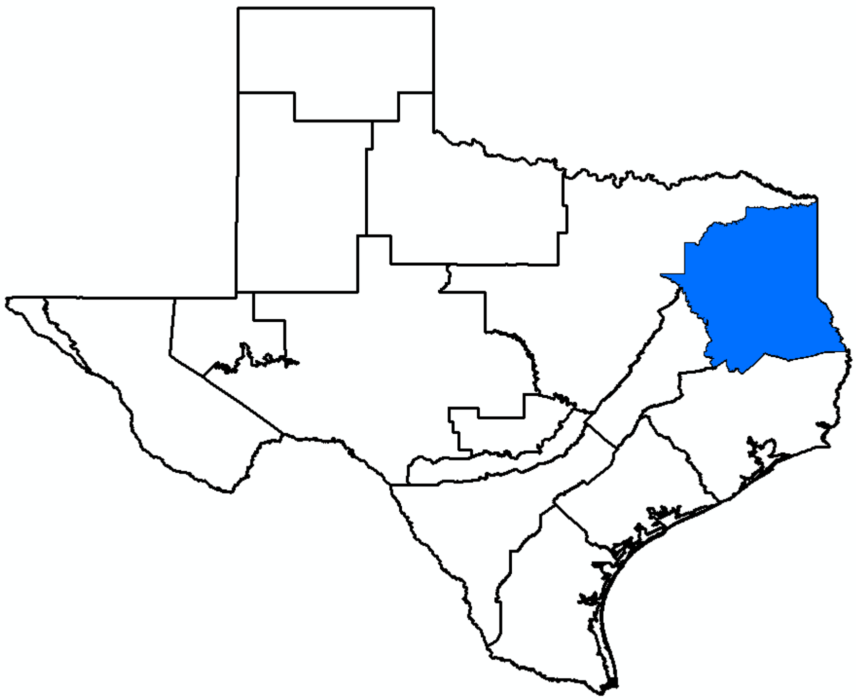
Summary of Groundwater Availabilities

Source Name	Source County	Source Basin	Original Modeled Available Groundwater (MAG)						Total Availability Identified from August 27, 2019, TWDB Review						Groundwater Source Availability Requested by Region D for Review by the TWDB					
			2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
WOODBINE	LAMAR	RED	0	0	0	0	0	0	22	22	22	22	22	22	60	60	60	60	60	60
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,237	3,237	3,237	3,237	3,237	3,237	7,228	7,228	7,228	7,057	7,057	6,907	7,119	7,205	7,228	7,045	7,010	6,795
NACATOCH	HUNT	SULPHUR	491	491	491	491	491	491	491	491	491	491	491	491	491	491	513	868	1,347	2,052
WOODBINE	HUNT	SULPHUR	165	165	165	165	165	165	165	165	165	165	165	165	261	438	606	607	606	607
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0	213	213	213	213	213	213	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	2,925	2,924	2,923	2,923	2,923	2,923
TRINITY AQUIFER	RED RIVER	SULPHUR	125	125	125	125	125	125	234	233	234	233	234	233	419	418	419	418	419	418
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	7,215	7,064	6,834	6,786	6,735	6,634	9,234	9,016	8,889	8,753	8,560	8,494	7,215	7,064	6,974	7,211	7,252	7,194
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	4,629	4,629	4,456	4,397	4,397	4,270	4,768	4,768	4,590	4,528	4,528	4,398	4,767	4,729	4,556	4,497	4,497	4,370

Attachment 2

GMA 11 Technical Memorandum 20-05
Draft 1

Base Simulation for Joint Planning with Updated Groundwater Availability Model for the Sparta, Queen City, and Carrizo-Wilcox Aquifers



Prepared for:
Groundwater Management Area 11

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December 30, 2020

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Table of Contents

List of Tables

List of Figures

Appendices

Appendix A – Source Code for *geteoy2013.exe*
Appendix B – Source Code for *makebasewel.exe*
Appendix C – Source Code for *getpump.exe*
Appendix D – Source Code for *getdd.exe*

1.0 Introduction and Background

1.1 Updated Groundwater Availability Model

Panday and others (2020) completed an update of the Groundwater Availability Model that corrected some of the identified limitations of the previous Groundwater Availability Model identified in Hutchison (2017a, 2017b, and 2017c). Of note is that the updated model does not result in rising groundwater levels due to a combination of recharge conceptualization problems and restrictions to the movement of groundwater from outcrop areas to downdip areas. The improvements were documented in example predictive runs of the updated Groundwater Availability Model documented in appendices in Panday and others (2020).

The final version of the updated Groundwater Availability Model was delivered to the Texas Water Development Board on December 11, 2020. The simulation described in this draft Technical Memorandum uses the delivered version of the updated Groundwater Availability Model, which differs slightly from the version used in Hutchison (2017a, 2017b, and 2017c). These differences are mostly with aquifer hydraulic conductivity values.

1.2 Updated Regional Water Plan Groundwater Availability

Technical Memorandum 20-03 documented the groundwater availability values developed by Region D and Region I that are comparable to the modeled available groundwater values from the 2016 round of joint planning by Groundwater Management Area 11. Most of the modeled available groundwater values for county-river basin units are the same as the groundwater availability values in the regional plans. This base simulation uses the regional water plans availability numbers as the basis for future pumping assumptions.

2.0 Model Files

2.1 Files Unchanged from Final Calibrated Model

Files that contain model input parameters related to the model grid and aquifer parameters were the same files used in the final calibrated model. Names of the files used in the base simulation are shown in Table 1.

Table 1. Predictive Simulation Files Unchanged from Final Calibrated Model

File Name	Description
pred.dis	Spatial discretization
pred.ims	Solver parameters
pred.npf	Node property flow (aquifer parameters)
tr58-g_final_model_gwv_L2top_newK._kx	Horizontal hydraulic conductivity
tr58-g_final_model_gwv_L2top_newK._kz	Vertical hydraulic conductivity
tr58-g_final_model_gwv_L2top_newK._ss	Specific storage
tr58-g_final_model_gwv_L2top_newK._sy	Specific yield

2.2 Files for Control of Simulation (NAM and OC6 Packages)

The NAM files were updated with the new names of the simulation files (*mfsim.nam* and *predbase.nam*). The output control file (*predbase*.oc6) was updated to reflect additional stress periods as documented below.

2.3 Time Discretization and Storage (TDIS and STO Packages)

The predictive simulation was run for the period 2014 to 2080, a total of 67 annual stress periods. The TDIS file from the final calibrated model was modified to reflect 67 annual stress periods and named *pred.tdis*. Initially, the simulation was specified with a single time step in each stress period. This caused numerical problems and resulted in non-convergence of the solution. Through trial and error, the final number of time steps that resulted in solution convergence with a reasonable run time (about 40 minutes) using a TSMULT value of 1.2 were:

- Stress Period 1: 10 time steps
- Stress Period 2: 5 time steps
- Stress Period 3: 3 time steps
- Stress Period 4: 2 time steps
- Stress Periods 5 to 67: 1 time step

The final calibrated model for storage was modified to reflect the change in the number of stress periods (all transient) and renamed *pred.sto*.

2.4 Initial Conditions (IC6 Package)

The initial conditions file was renamed and updated (*pred.ic6*). The update was open and close a file of 2013 heads that were extracted from the final calibrated model with the FORTRAN pre-processor *geteoy2013.exe*. The source code for the pre-processor is presented in Appendix A.

2.5 Simulated Pumping (WEL Package)

The simulated pumping for the base predictive scenario is based on the regional planning groups groundwater availability values as documented in Technical Memorandum 20-03 and the calculated factors that convert 2011 pumping from the final calibrated model as documented in Technical Memorandum 20-04. The FORTRAN pre-processor *makebasewel.exe* was written to develop the input file. The source code for the pre-processor is presented in Appendix B.

The pre-processor:

- Reads the updated grid file (documented in Technical Memorandum 20-01)
- Reads the pumping factor file (documented in Technical Memorandum 20-04)
- Reads the text header and footer of the final calibrated model WEL file (12 lines)
- Reads the historic pumping from 2011 (documented in Technical Memorandum 20-04)
- Calculates the base predictive scenario pumping using the factors for county-river basin units
- Writes updated pumping values for each location
- Adds pumping in the eight cells in San Augustine County-Sabine River Basin unit (note that the regional planning group listed 3 AF/yr in this unit while the final calibrated model had no wells in this unit)
- Writes the final footer line of text

Please note that all areas outside of Groundwater Management Area 11 and all areas in Groundwater Management Area 11 outside of Regions D and I were assigned a factor of one (i.e. pumping in 2011 was assumed for all future pumping without change).

2.6 Evapotranspiration (EVT Package)

The evapotranspiration file from the calibrated model was modified to include only the initial steady-state period for all stress periods in the predictive simulation. Inspection of the final calibrated model input file shows that the same evapotranspiration parameters were used for each stress period of the calibrated model (1980 to 2013). The modified file was named *pred.evt*.

2.7 General Head Boundaries (GHB Package)

General head boundaries were implemented in the calibrated model to simulate the effects of overlying formations that are not formally part of the model domain. The general head boundary file from the calibrated model was modified to include only the initial steady-state stress period for all stress periods in the predictive scenario. Inspection of the calibrated model input file shows that the same general head boundary parameters are used in each stress period of the calibration period (1980 to 2013). The modified file was named *pred.ghb*.

2.8 Recharge (RCH Package)

The recharge input file of the calibrated model contains the cell-by-cell recharge amounts for each stress period of the calibrated model (1980 to 2013). Recharge was implemented by defining a steady-state recharge (applied to stress period 1) and applying a stress period-specific factor to increase or decrease the recharge for each stress period. The first stress period of recharge was extracted and used for all stress periods in the predictive simulation. The modified recharge file was named *pred.rch.*

2.9 River (RIV Package)

The calibrated model simulated surface water-groundwater interactions with the River (RIV) package. Inspection of the input file yielded the conclusion that RIV head values changed slightly for each stress period. River conductance and bottom elevations remained the same in all stress periods. The calibrated model first stress period input data was extracted and used for all stress periods in the predictive simulation. The modified file was named *pred.riv*.

3.0 Results

3.1 Pumping

One of the features of MODFLOW 6 is the ability to dynamically reduce pumping during a simulation if the saturated thickness decreases to the point that the input pumping rate for a well cannot be sustained. This contrasts with older versions of MODFLOW where a cell would go dry and pumping would be reduced to zero for the remainder of the simulation.

As described above, the input pumping was specified to equal the groundwater availability values developed by Region D and Region I, which were based, in part, on the results of the old GAM and the modeled available groundwater based on simulations with the old GAM. However, as noted earlier, the groundwater conservation districts in Groundwater Management Area 11 had identified limitations of the previous Groundwater Availability Model (Hutchison, 2017a, 2017b, and 2017c). Of note is that the old GAM exhibited rising groundwater levels due to a combination of recharge conceptualization problems and restrictions to the movement of groundwater from outcrop areas to downdip areas.

The output pumping from the simulation was extracted from the cell-by-cell output file using the FORTRAN post-processor *getpump.exe*. The source code for the post-processor is presented in Appendix C.

The post-processor:

- Reads the updated grid file
- Reads the number of time steps in each stress period
- Reads a list of 70 county-river basin units with codes
- Reads the final calibration cbb file
- Convert pumping from cubic feet per day to acre-feet per year
- Incrementally add acre-feet per year values if final time step to aquifer pumping totals
- Writes pumping total summary files for each county-river basin unit

The output pumping was organized into county-river basin units for comparison with the regional water plan availability values used as input. Table 2 presents the results for the Sparta Aquifer. Table 3 presents the results for the Queen City Aquifer. Table 4 presents the results for the Carrizo-Wilcox Aquifer.

Table 2. Output Pumping Summary - Sparta Aquifer

County	River Basin	2011 Pumping (AF/yr)	GW Availability (AF/yr)	2014 Simulated Pumping (AF/yr)	2080 Simulated Pumping (AF/yr)
Anderson	Neches	14	344	223	149
Anderson	Trinity	32	272	222	198
Angelina	Neches	331	371	371	371
Cherokee	Neches	228	359	359	359
Houston	Neches	225	477	477	477
Houston	Trinity	560	977	973	973
Nacogdoches	Neches	266	365	365	365
Sabine	Sabine	648	160	11	11
Sabine	Neches	12	37	37	37
San Augustine	Sabine	0	3	3	3
San Augustine	Neches	23	163	164	164
Trinity	Neches	19	154	153	153
Total		**2,358**	**3,682**	**3,358**	**3,260**

Table 3. Output Pumping Summary - Queen City Aquifer

County	River Basin	2011 Pumping (AF/yr)	GW Availability (AF/yr)	2014 Simulated Pumping (AF/yr)	2080 Simulated Pumping (AF/yr)
Anderson	Neches	423	11,828	11,724	11,430
Anderson	Trinity	303	7,274	6,533	5,514
Angelina	Neches	96	1,093	1,094	1,094
Camp	Cypress	58	4,306	1,704	1,637
Cass	Sulphur	150	3,010	737	635
Cass	Cypress	449	35,499	20,767	15,935
Cherokee	Neches	1,094	23,211	10,555	8,975
Gregg	Cypress	41	1,359	973	495
Gregg	Sabine	187	5,625	3,062	2,005
Harrison	Cypress	216	7,762	4,775	3,099
Harrison	Sabine	180	2,310	634	543
Henderson	Neches	602	12,067	11,128	10,629
Henderson	Trinity	159	0	159	158
Houston	Neches	63	2,043	2,046	2,046
Houston	Trinity	186	258	214	214
Marion	Cypress	172	15,407	8,466	7,453
Morris	Cypress	119	9,469	4,487	3,433
Nacogdoches	Neches	329	2,985	2,969	2,958
Rusk	Sabine	11	18	15	15
Rusk	Neches	15	40	40	39
Smith	Sabine	333	28,343	24,421	13,016
Smith	Neches	890	30,692	29,605	20,528
Titus	Cypress	1	144	65	60
Upshur	Cypress	829	19,642	7,572	6,447
Upshur	Sabine	614	7,749	6,252	6,013
Van Zandt	Neches	266	4,791	3,555	2,475
Wood	Cypress	102	986	869	815
Wood	Sabine	1,710	9,060	6,138	5,818
Total		**9,598**	**246,971**	**170,559**	**133,479**

Table 4. Output Pumping Summary - Carrizo-Wilcox Aquifer

County	River Basin	2011 Pumping (AF/yr)	GW Availability (AF/yr)	2014 Simulated Pumping (AF/yr)	2080 Simulated Pumping (AF/yr)
Anderson	Neches	2,143	23,335	23,303	21,979
Anderson	Trinity	3,479	5,753	5,354	5,067
Angelina	Neches	25,214	27,591	27,592	27,592
Bowie	Sulphur	3,230	9,872	9,668	9,662
Camp	Cypress	1,323	4,050	3,997	3,770
Cass	Sulphur	856	2,864	775	775
Cass	Cypress	2,895	15,159	12,856	12,856
Cherokee	Neches	9,617	20,933	20,672	15,379
Franklin	Sulphur	202	2,021	883	477
Franklin	Cypress	454	7,765	6,404	5,586
Gregg	Cypress	274	862	863	729
Gregg	Sabine	2,959	7,179	6,850	5,412
Harrison	Cypress	2,462	6,183	4,749	4,635
Harrison	Sabine	2,113	4,851	4,702	4,469
Henderson	Neches	3,582	6,036	5,987	3,991
Henderson	Trinity	4,014	0	3,790	3,226
Hopkins	Sulphur	1,521	7,228	3,708	2,116
Hopkins	Cypress	102	313	313	294
Hopkins	Sabine	1,124	2,842	2,778	2,517
Houston	Neches	1,468	22,488	1,720	1,720
Houston	Trinity	5,139	3,806	634	634
Marion	Cypress	1,834	2,726	1,967	1,967
Morris	Sulphur	273	402	401	401
Morris	Cypress	1,013	2,166	2,161	2,154
Nacogdoches	Neches	17,949	24,181	21,171	20,880
Panola	Sabine	5,184	8,370	4,957	4,957
Rains	Sabine	700	1,839	1,584	1,462
Rusk	Sabine	3,355	9,068	8,897	6,989
Rusk	Neches	3,958	11,769	8,939	7,114
Sabine	Sabine	1,822	3,249	1,030	1,029
Sabine	Neches	254	356	355	355
San Augustine	Sabine	197	290	290	288
San Augustine	Neches	2,342	1,149	304	304
Shelby	Sabine	5,095	8,317	3,869	3,702
Shelby	Neches	496	2,577	2,577	2,577
Smith	Sabine	3,538	13,246	12,941	7,936
Smith	Neches	12,618	22,705	22,410	17,592
Titus	Sulphur	584	2,838	2,479	2,084
Titus	Cypress	1,299	7,252	6,790	5,497
Trinity	Neches	32	269	266	266
Trinity	Trinity	1	0	1	1
Upshur	Cypress	4,416	5,442	5,441	5,122
Upshur	Sabine	1,273	1,689	1,690	1,551
Van Zandt	Sabine	2,779	4,767	3,801	3,352
Van Zandt	Neches	1,198	4,317	4,095	2,635
Van Zandt	Trinity	910	1,384	1,251	1,095
Wood	Cypress	320	2,053	1,870	930
Wood	Sabine	5,556	19,404	18,931	16,971
Total		**153,167**	**342,956**	**288,066**	**252,097**

Please note that, in general, the historic pumping (defined by the high pumping in 2011 during drought conditions) is lower than the groundwater availability values. Also, please note that, in general, pumping at the input amounts (groundwater availability) are not possible given the dynamic reduction due to decreased saturated thickness. Finally, please note that the first year of the simulation (2014) has higher pumping than the last year of the simulation (2080). In summary, as saturated thickness declines, pumping declines. However, simulated 2080 pumping is higher than the 2011 pumping.

The differences in the total pumping in GMA 11 are presented graphically in Figure 1 for the Sparta Aquifer, Figure 2 for the Queen City Aquifer, and Figure 3 for the Carrizo-Wilcox Aquifer.

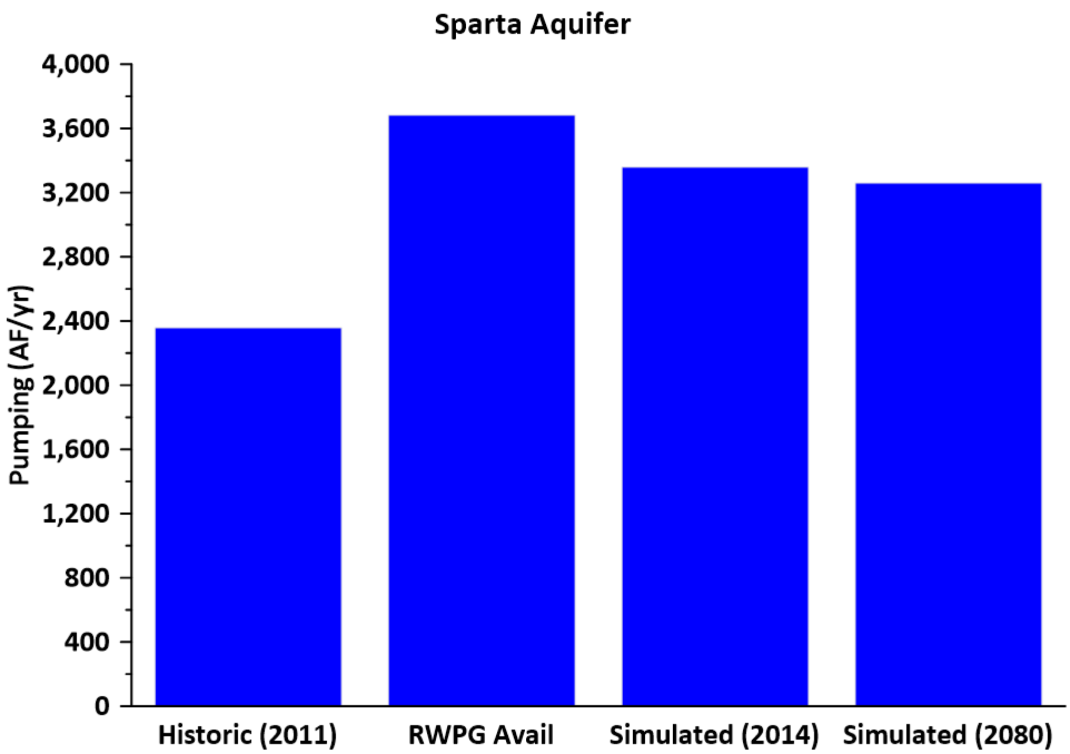

Figure 1. Total GMA 11 Pumping - Sparta Aquifer

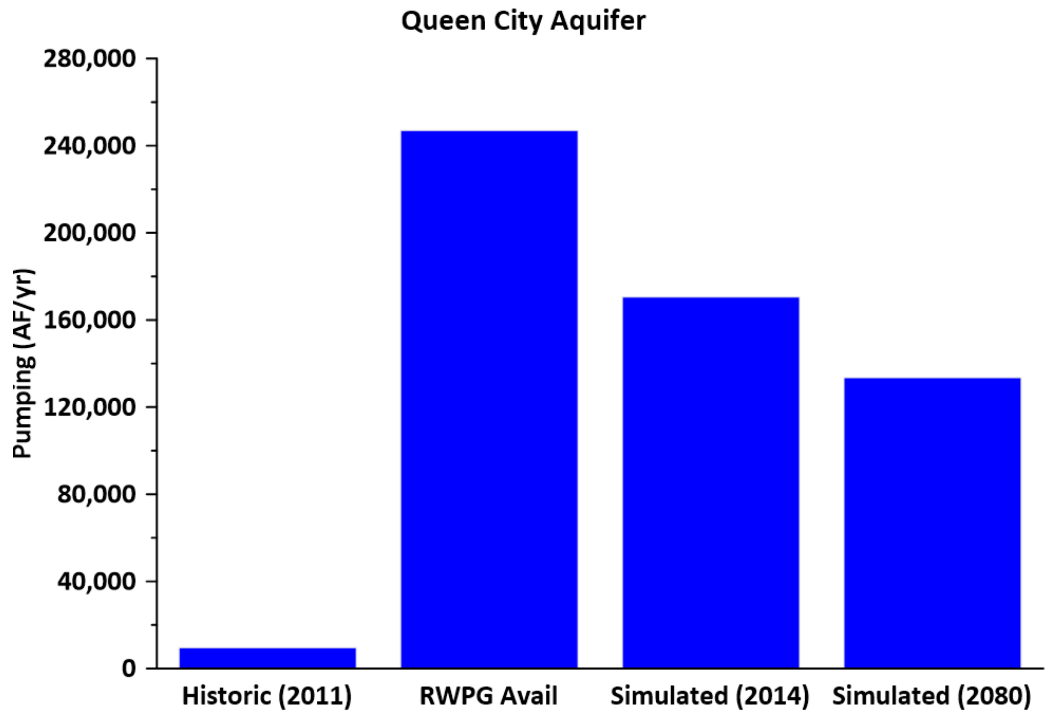

Figure 2. Total GMA 11 Pumping - Queen City Aquifer

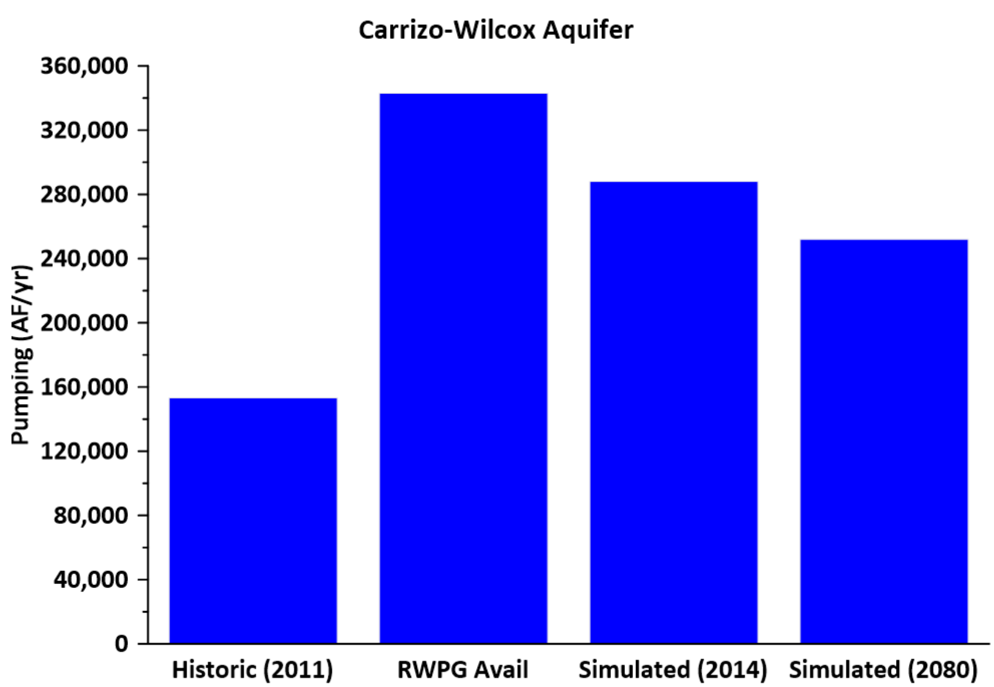

Figure 3. Total GMA 11 Pumping - Carrizo-Wilcox Aquifer

3.2 Average Drawdown (2013 to 2080)

Average drawdown from 2013 to 2080 for each county-model layer unit and for each county-aquifer unit was calculated using the FORTRAN post-processor *getdd.exe*. Source code for the post-processor is presented in Appendix D.

The post-processor:

- Reads a list of counties in GMA 11
- Reads the updated grid file
- Counts the cells in each county-layer unit
- Writes summary tables with total cell count for each county-layer unit
- Reads the final calibrated model hds file
- Calculates drawdown
- Sums drawdowns
- Calculates average drawdown for each county-layer unit (drawdown sum divided by number of cells)
- Calculates average drawdown for the Carrizo-Wilcox Aquifer (layers 6 to 9)
- Reads a list of file names for output for each county
- Writes annual drawdowns for each county
- Writes a summary file for 2080 drawdowns by layer
- Writes a summary file for 2080 drawdowns by aquifer

Table 5 presents the drawdown from 2013 to 2080 for each county-aquifer unit.

Table 5. Average Drawdown (2013 to 2080) for Each County-Aquifer Unit in GMA 11

County	Sparta Aquifer	Queen City Aquifer	Carrizo-Wilcox Aquifer
Anderson	32	47	158
Angelina	6	28	68
Bowie			12
Camp		13	88
Cass	72	36	80
Cherokee	7	34	181
Franklin			109
Gregg		52	115
Harrison		46	27
Henderson		38	109
Hopkins			66
Houston	3	12	87
Marion	129	33	33
Morris		43	80
Nacogdoches	7	22	74
Panola			21
Rains			17
Rusk	26	17	89
Sabine	1	3	9
SanAugustine	2	7	22
Shelby	18	12	17
Smith	157	149	275
Titus		9	69
Trinity	5	18	57
Upshur	10	32	155
VanZandt		88	57
Wood	9	17	127

3.3 Groundwater Budget (Pumping Impacts)

A groundwater budget is an accounting of all inflow components, all outflow components, and storage changes for a given area over a specified time period. For purposes of this analysis, the groundwater budget of the calibrated model (1980 to 2013) is compared to the groundwater budget of the base predictive simulation (2014 to 2080) to assess the source of the increased pumping simulated in the base predictive simulation.

When pumping is increased, the initial response is storage reduction. However, over an extended period, pumping will induce inflow and capture natural outflow. The pumping increases associated with the predictive simulation are discussed above. This analysis provides insight as to the source of that increased pumping.

The defined area is GMA 11 as defined in the updated grid file. The updated grid file (documented in Technical Memorandum 20-01) includes a GMA column that was used to create a zone file for zone budget. Each cell was assigned a zone number based on the GMA designation. Layer 1 cells (alluvial cells) were reclassified as zone 1, and cells outside of Texas were reclassified as zone 2. GMAs that border GMA 11 include GMA 8, GMA 12, and GMA 14.

The groundwater budget for GMA 11 was extracted from the cell-by-cell output files of the calibrated model and the base predictive scenario using the program ZONEBUDGET for MODFLOW 6 obtained from the US Geological Survey.

The results for the calibrated model were saved in the Excel file *zbgmacalib.xlsx*, and the results for the base predictive simulation were saved in the Excel file *zbgmapredbase.xlsx*. A summary of the groundwater budgets for the two time periods is presented in Table 6.

Table 6. Groundwater Budget Summary for GMA 11

		1981 to 2013 Average (AF/yr)	2014 to 2080 Average (AF/yr)	Difference (AF/yr)
Inflow				
	Recharge	235,475	235,341	-134
	Overlying Formations	3,221	6,193	2,973
	Alluvium	0	144,707	144,707
	Outside Texas	0	3,412	3,412
	GMA 8	13	13	0
	GMA 12	4,968	13,754	8,785
	GMA 14	4,981	13,871	8,890
Total Inflow		248,657	417,290	168,633
Outflow				
	Pumping	129,718	393,637	263,919
	Evapotranspiration	73,198	33,008	-40,190
	Alluvium	45,624	0	-45,624
	Outside Texas	542	0	-542
Total Outflow		249,081	426,645	177,564
Model Storage				
	Confined	-143	-1,117	-974
	Unconfined	-281	-8,238	-7,956
Total Model Storage		-424	-9,355	-8,931
Inflow-Outflow		-424	-9,355	-8,931
Model Error		0	0	0

Please note that the predictive scenario simulates average pumping that is over 250,000 AF/yr above the historic period. The differences in other components are useful to understand the source of the increased pumping and are summarized in Table 7.

Table 7. Summary of Sources of Increased Pumping

		AF/yr	Percentage of Pumping Increase
Pumping Increase		263,919	100
Induced Inflow			
	Overlying Formations	2,973	1.13
	Alluvium	190,331	72.12
	Outside Texas	3,954	1.50
	GMA 8	0	0.00
	GMA 12	8,785	3.33
	GMA 14	8,890	3.37
Captured Outflow			
	Evapotranspiration	40,190	15.23
Reduced Storage			
	Confined	974	0.37
	Unconfined	7,956	3.01
Recharge Difference		-134	-0.05

Based on these results, 72 percent of the increased pumping is derived from the alluvium, and ultimately, from surface water. About 15 percent of the pumping is from decreased evapotranspiration. Only about 3 percent of the pumping is sourced from groundwater storage.

4.0 Discussion of Results

Limitations associated with the old GAM resulted in an underprediction of average drawdowns due to the issues of recharge and the inability of water to move from the outcrop areas to the downdip areas of the aquifers. The updated GAM has corrected these limitations.

The pumping associated with the previous round of joint planning and the groundwater availability in the Region D and Region I water plans cannot be sustained with the assumed geographic distribution of pumping used in the predictive scenario. If this round of joint planning were to adopt desired future conditions based on this predictive scenario, the modeled available groundwater values would be less than the current groundwater availability values in the regional plans. This would not be an arbitrary reduction, nor a reduction based on regulation. This would, however, reflect the results of an updated and improved groundwater model to make such predictions.

Due to the timing of the release of the updated GAM and the approaching deadline for GMA 11 to propose a desired future condition, and due to budget considerations of the groundwater conservation districts in GMA 11, it is not feasible to develop simulations that would increase the amount of pumping by changing the geographic distribution of pumping. This task would be appropriate to consider as part of the next round of joint planning (i.e. in 2026).

5.0 References

Hutchison, W.R., 2017a. Desired Future Condition Explanatory Report: Carrizo-Wilcox/Queen City/Sparta Aquifers for Groundwater Management Area 11. Report submitted to Texas Water Development Board, January 24, 2017, 445p.

Hutchison, W.R., 2017b. Use of Predictive Simulation Results from Scenario 4 in Desired Future Conditions for Sparta, Queen City, and Carrizo-Wilcox Aquifer. GMA 11 Technical Memorandum 16-02. Report submitted to Groundwater Management Area 11. January 24, 2017, 15p.

Hutchison, W.R., 2017c. Initial GAM Simulations for Sparta, Queen City and Carrizo-Wilcox Aquifers. GMA 11 Technical Memorandum 15-01. Report submitted to Groundwater Management Area 11. January 21, 2017, 109p.

Panday, S., Rumbaugh, J., Hutchison, W.R., Schorr, S., 2020. Numerical Model Report: Groundwater Availability Model for the Northern Portion of the Queen City, Sparta, and Carrizo-Wilcox Aquifers. Final Report prepared for Texas Water Development Board, Contact Number #1648302063. 198p.

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Appendix A

Source Code for *geteoy2013.exe*

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```
! geteoy2013.exe
!
! reads binary hds file from calibrated model run
! returns final sp file for predictive run initial heads (End-of-Year 2013 heads)
!
! Declare arrays
!
double precision hds(34,637536 )
integer*4 kstp,kper,nodes
double precision pertim,totim,tb,gd,te,st
character*16 text

! read calibrated model hds file
! write header file as qc check

open (1,file='tr58_g_final.hds',form='binary')
open (2,file='header.dat')
100 read (1,end=199) kstp,kper,pertim,totim,text,nodes,i1,i2
write ( 2, 110 ) kstp,kper,pertim,totim,text,nodes,i1,i2
110 format (2i10,2f15.4,1x,a16,1x,3i10)
read (1) (hds(kper,n),n=1,nodes)
go to 100
199 continue

! write last stress period/last time step heads to eoy file for use in predicitve runs

open (3,file='eoy2013.dat' )
do 300 n=1,nodes
write (3,312) hds(34,n)
312 format (f15.4)
300 continue

stop
end
```

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Appendix B

Source Code for *makebasewel.exe*

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```
! makebasewel.exe
!
! read updated grid file
! read pumping factor file
! read text for WEL file
! write WEL file leading text lines (12 lines)
! read historic pumping
! calculate pred scen pumping using factor for county-river basin unit
! write updated pumping for predictive scenario
! write final text for WEL file

! declare arrays

dimension il(637536),icounty(637536),ibn(637536),igcd(637536)
dimension igma(637536),nodesa(8)
dimension pumpfac(3,70),ic(70),irb(70)
character*40 text,txtw(13)

! read grid file

open (1,file='updatedgrid.dat')
do 100 k=1,637536
read (1,*) kk,ac,ir,icol,il(k),icounty(k),ibn(k),igcd(k),igma(k),ib,iaq2
100 continue

! read pumping factor file

open (2,file='2011fac.dat')
do 200 k=1,70
read (2,*) text,ic(k),text,irb(k),(pumpfac(iaq,k),iaq=1,3)
200 continue

! read text from MF6 WEL file
! write first 12 lines to predictive simulation file

open (3,file='weltext.dat')
open (31,file='predbase.wel')
do 300 k=1,13
read (3,310) txtw(k)
310 format (a40)
300 continue
do 301 k=1,12
write (31,310) txtw(k)
301 continue

! read historic pumping
```

```
! calculate predictive simulation pumping with factors

open (4,file='2011pumpout.dat')
do 400 kk=1,53189
read (4,*) isp,iyr,text,node,cfd,afd
fac=1.0
do 401 k=1,70
if (ic(k).eq.icounty(node).and.irb(k).eq.ibn(node)) then
if (il(node).eq.2) fac=pumpfac(1,k)
if (il(node).eq.4) fac=pumpfac(2,k)
if (il(node).gt.5) fac=pumpfac(3,k)
end if
401 continue
if (fac.lt.0) fac=1.0
cfd2=cfd*fac
write (31,410) node,cfd2
410 format (i10,e15.5)
400 continue

! Add 3 AF/yr to San Augustine-Sabine in Sparta Aquifer
!  (no hisotric pumping but RWPG has availability)

nodesa(1)=326840
nodesa(2)=327562
nodesa(3)=328170
nodesa(4)=328904
nodesa(5)=329565
nodesa(6)=329566
nodesa(7)=329567
nodesa(8)=330258
tafy=-3
cafy=tafy/8
cfd=cafy*43560/365
do 500 in=1,8
write (31,410) nodesa(in),cfd
500 continue

! write final line for WEL file

write (31,310) txtw(13)

stop
end
```

Appendix C

Source Code for *getpump.exe*

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```
! getpump.exe
!
! Read updated grid file
! Read number of time steps in each stress period
! Read list of 70 county-river basin units with codes
! Read calibration cbb file
! Convert cfd to afy
! Incrementally add afy of final time step to aquifer pumping totals
! Write pumping totals summary files for each county-river basin unit

! declare arrays

dimension id1(637536),id2(637536)
character*16 text,txt1id1,txt2id1,txt1id2,txt2id2,auxtxt(400)
character*40 cn(70),rbn(70)
double precision delt,pertim,totim
double precision data(4338894),data2d(4,4338894)
dimension
il(637536),icounty(637536),ibn(637536),igcd(637536),igma(637536),ib(637536),iaq(637
536)
dimension itsnum(67)
dimension pump(67,3,8,27)
dimension ic1(70),ic2(70),irb1(70),irb2(70)
dimension spinp(2,70),qcinp(2,70),cwinp(2,70)

! read grid file

open (2,file='updatedgrid.dat')
do 200 k=1,637536
read (2,*) kk,ac,ir,ic,il(k),icounty(k),ibn(k),igcd(k),igma(k),ib(k),iaq(k)
200 continue

! read list of number of time steps for each stress period

open (21,file='tsnum.dat')
do 201 isp=1,67
read (21,*) itsnum(isp)
201 continue

! read list of county-river basin units and codes
! read county-river basin output filenames

open (31,file='avail2011compare.csv')
read (31,*) text
do 300 k=1,70
read (31,*) ic1(k),ic2(k),cn(k),irb1(k),irb2(k),rbn(k),x1,x2,x3,x4,x5,x6
```

```
spinp(1,k)=x1
spinp(2,k)=x2
qcinp(1,k)=x3
qcinp(2,k)=x4
cwinp(1,k)=x5
cwinp(2,k)=x6
300 continue

! read cbb file

open (4,file='predbase.cbb',form='binary')
open (5,file='header.dat')

kk=0
400 read (4,end=499) kstp,kper,text,ndim1,ndim2,nd3
kk=kk+1
ndim3=-nd3
read (4) imeth,delt,pertim,totim
write (5,410) kstp,kper,text,ndim1,ndim2,ndim3,imeth,delt,pertim,totim
write (*,490) kper,kstp
490 format ('+',2x," Stress Period ",i3,2x," Time Step ",i3)
410 format (2i10,1x,a16,1x,4i10,3f15.4)

if (imeth.eq.1) read (4) (data(j),j=1,ndim1)

if (imeth.eq.6) then
read (4) txt1id1
read (4) txt2id1
read (4) txt1id2
read (4) txt2id2
read (4) ndat
read (4) (auxtxt(n),n=1,ndat-1)
read (4) nlist
if (ndat.eq.1) write (5,411) txt1id1,txt2id1,txt1id1,txt2id2,ndat,nlist
if (ndat.eq.2) write (5,412) txt1id1,txt2id1,txt1id1,txt2id2,ndat,nlist,auxtxt(1)
411 format (4a16,i10,i10)
412 format (4a16,i10,i10,a16)
read (4) ((id1(n),id2(n),(data2d(i,n),i=1,ndat)),n=1,nlist)

! pumping in position 4
! convert pumping to AFY and sum for each county-model layer unit

if (kk.eq.4) then
do 420 n=1,nlist
if (data2d(1,n).ne.0.and.kstp.eq.itsnum(kper)) then
pumpaf=-data2d(1,n)*365/43560
```

```
do 430 kcrb=1,70
if (icounty(id1(n)).eq.ic2(kcrb).and.ibn(id1(n)).eq.irb2(kcrb)) then
if (il(id1(n)).eq.2)
pump(kper,1,irb1(kcrb),ic1(kcrb))=pump(kper,1,irb1(kcrb),ic1(kcrb))+pumpaf
if (il(id1(n)).eq.4)
pump(kper,2,irb1(kcrb),ic1(kcrb))=pump(kper,2,irb1(kcrb),ic1(kcrb))+pumpaf
if (il(id1(n)).gt.5)
pump(kper,3,irb1(kcrb),ic1(kcrb))=pump(kper,3,irb1(kcrb),ic1(kcrb))+pumpaf
end if
430 continue
end if
420 continue
end if

end if
if (kk.eq.8) kk=0
goto 400
499 continue

! write summary files

open (51,file='pumpsp.dat')
open (52,file='pumpqc.dat')
open (53,file='pumpcw.dat')
do 500 k=1,70
write (51,510)
ic2(k),irb2(k),spinp(1,k),spinp(2,k),pump(1,1,irb1(k),ic1(k)),pump(67,1,irb1(k),ic1(k))
write (52,510)
ic2(k),irb2(k),qcinp(1,k),qcinp(2,k),pump(1,2,irb1(k),ic1(k)),pump(67,2,irb1(k),ic1(k))
write (53,510)
ic2(k),irb2(k),cwinp(1,k),cwinp(2,k),pump(1,3,irb1(k),ic1(k)),pump(67,3,irb1(k),ic1(k))
510 format (2i10,4f10.0)
500 continue

stop
end
```

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Appendix D

Source Code for *getdd.exe*

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```
! getdd.exe

! reads list of counties
! reads grid file
! counts cells in each county-layer unit
! writes summary table with total cell count for each county-layer
! read calibrated model hds file

! declare arrays

dimension icount(10,27),iclist(27)
dimension sumdd(10,27,1980:2080),avgdd(10,27,1980:2080)
dimension sumcwdd(27,1980:2080),avgcwdd(27,1980:2080)
dimension icn(637536),il(637536)
character*30 county(27),txt
double precision hds(1980:2080,637536)
dimension dd(1980:2080,637536)
integer*4 kstp,kper,nodes
double precision pertim,totim,tb,gd,te,st
character*16 text
character*30 gma11county(27),gma11fn(27)
dimension icngma11(27)

! read list

open (1,file='GMA11CountyNamNum.csv')
read (1,*) text
do 100 k=1,27
read (1,*) county(k),iclist(k)
100 continue

! read grid file and count

open (2,file='updatedgrid.dat')
do 200 nn=1,637536
read (2,*) kk,carea,ir,ic,il(nn),icn(nn),ibn,igcd,igma,ib,iaq
do 201 ic=1,27
if (iclist(ic).eq.icn(nn)) then
icount(il(nn),ic)=icount(il(nn),ic)+1
icount(10,ic)=icount(10,ic)+1
end if
201 continue
200 continue

! write cell count summary file

```

```
open (3,file='cellcount.dat')
do 300 k=1,27
write (3,310) k,iclist(k),county(k),(icount(ilay,k),ilay=1,10)
310 format (2i10,2x,a15,2x,10i7)
300 continue

! read calibrated model hds file and fill hds array

open (4,file='tr58_g_final.hds',form='binary')
open (5,file='headercal.dat')
400 read (4,end=499) kstp,kper,pertim,totim,text,nodes,i1,i2
iyr=kper+1979
write (5,410) kstp,kper,iyr,pertim,totim,text,nodes,i1,i2
410 format (3i10,2f15.4,1x,a16,1x,3i10)
read (4) (hds(iyr,n),n=1,nodes)
goto 400
499 continue

! read predicitve run hds file and fill hds array

open (6,file='predbase.hds',form='binary')
open (7,file='headerpred.dat')
600 read (6,end=699) kstp,kper,pertim,totim,text,nodes,i1,i2
iyr=kper+2013
write (7,710) kstp,kper,iyr,pertim,totim,text,nodes,i1,i2
710 format (3i10,2f15.4,1x,a16,1x,3i10)
read (6) (hds(iyr,n),n=1,nodes)
goto 600
699 continue

! calculate drawdown

do 800 iyr=1980,2080
do 801 nn=1,637536
dd(iyr,nn)=hds(2013,nn)-hds(iyr,nn)
801 continue
800 continue

! sum dd

do 900 ic=1,27
do 901 iyr=1980,2080
do 902 nn=1,637536
if (iclist(ic).eq.icn(nn)) then
sumdd(il(nn),ic,iyr)=sumdd(il(nn),ic,iyr)+dd(iyr,nn)
sumdd(10,ic,iyr)=sumdd(10,ic,iyr)+dd(iyr,nn)
```

```
if (il(nn).gt.5) sumcwdd(ic,iyr)=sumcwdd(ic,iyr)+dd(iyr,nn)
end if
902 continue
901 continue
900 continue

! calculate avgdd (layer)

do 1000 ilay=1,10
do 1001 ic=1,27
do 1002 iyr=1980,2080
avgdd(ilay,ic,iyr)=-9999
if (icount(ilay,ic).gt.0) avgdd(ilay,ic,iyr)=sumdd(ilay,ic,iyr)/icount(ilay,ic)
1002 continue
1001 continue
1000 continue

! calculate avgdd (Carrizo-Wilcox)


do 1010 ic=1,27
   do 1011 iyr=1980,2080
cwcount=icount(6,ic)+icount(7,ic)+icount(8,ic)+icount(9,ic)
avgcwdd(ic,iyr)=sumcwdd(ic,iyr)/cwcount
1011 continue
1010 continue


! read gma 11 county list and file names

open (11,file='GMA11ddfile.csv')
read (11,*) text
do 1100 ic=1,27
read (11,*) gma11county(ic),icngma11(ic),gma11fn(ic)
1100 continue

! write gma 11 drawdowns

do 1200 ic=1,27
open (12,file=gma11fn(ic))
do 1201 iyr=1980,2080
write (12,1210) gma11county(ic),iyr,(avgdd(ilay,ic,iyr),ilay=1,10),avgcwdd(ic,iyr)
1210 format (a20,1x,i10,11f10.2)
1201 continue
close (12)
1200 continue
```

```
! write summary file of 2080 drawdowns - layer
open (13,file='dd2080sumlayer.dat')
iyr=2080
do 1300 ic=1,27
write (13,1310) gma11county(ic),iyr,(avgdd(ilay,ic,iyr),ilay=1,10)
1310 format (a20,1x,i10,10f10.0)
1300 continue
! write summary file of 2080 drawdown - aquifer
open (14,file='dd2080sumaquifer.dat')
iyr=2080
do 1400 ic=1,27
write (14,1410) gma11county(ic),iyr,avgdd(2,ic,iyr),avgdd(4,ic,iyr),avgcwdd(ic,iyr)
1410 format (a20,1x,i10,3f10.0)
1400 continue
stop
end
```

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Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
BOWIE COUNTY										
Burns Redbank WSC	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Hooks
Central Bowie County WSC	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
County-Other, Bowie	Red	Bowie	Nacatoch Aquifer	1,128	1,149	1,130	1,119	1,119	1,119	Self-supplied
County-Other, Bowie	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
De Kalb	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Hooks	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
New Boston	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Riverbend Water Resources Dist	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Texarkana
Texarkana	Red	Bowie	Red Run-of-River	0	0	0	0	0	0	Self-supplied
Texarkana	Red	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Central Bowie County WSC	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
County-Other, Bowie	Sulphur	Bowie	Carrizo-Wilcox Aquifer	2,442	2,484	2,440	2,416	2,416	2,416	Self-supplied
County-Other, Bowie	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
De Kalb	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Macedonia Eylau MUD 1	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Maud	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Nash	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
New Boston	Sulphur	Bowie	Sulphur Run-of-River	75	75	75	75	75	75	Self-supplied
New Boston	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Redwater	Sulphur	Bowie	Carrizo-Wilcox Aquifer	66	66	66	66	66	66	Self-supplied
Redwater	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Riverbend Water Resources Dist	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Texarkana
Texarkana	Sulphur	Bowie	Red Run-of-River	0	0	0	0	0	0	Self-supplied
Texarkana	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Texarkana	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Self-supplied
Wake Village	Sulphur	Bowie	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water Resources District
County Total - Round VI				**3,711**	**3,774**	**3,711**	**3,676**	**3,676**	**3,676**	
County Total - Round V				**3,636**	**3,699**	**3,636**	**3,601**	**3,601**		
Round VI minus Round V				**75**	**75**	**75**	**75**	**75**		
CAMP COUNTY										
Bi County WSC	Cypress	Camp	Carrizo-Wilcox Aquifer	1,087	1,087	1,087	1,087	1,087	1,087	Self-supplied
County-Other, Camp	Cypress	Camp	Carrizo-Wilcox Aquifer	444	453	461	469	478	478	Self-supplied
Cypress Springs SUD	Cypress	Camp	Cypress Springs Lake/Reservoir	10	10	10	10	10	10	Franklin County WD
Pittsburg	Cypress	Camp	Bob Sandlin Lake/Reservoir	0	0	0	0	0	0	Northeast Texas MWD
Pittsburg	Cypress	Camp	Carrizo-Wilcox Aquifer	433	433	433	433	433	433	Self-supplied
Pittsburg	Cypress	Camp	O' the Pines Lake/Reservoir	841	848	850	857	864	872	Northeast Texas MWD
County Total - Round VI				**2,815**	**2,831**	**2,841**	**2,856**	**2,872**	**2,880**	
County Total - Round V				**3,258**	**3,267**	**3,275**	**3,283**	**3,292**		
Round VI minus Round V				**-443**	**-436**	**-434**	**-427**	**-420**		

Region D 2026 - North East Texas Regional Water Plan
Municipal Water Supply by County, WUG, Basin for 2030-2080

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
CASS COUNTY										
Atlanta	Cypress	Cass	Wright Patman Lake/Reservoir	1,071	1,131	1,205	1,202	1,202	1,201	Manufacturing, Cass
Avinger	Cypress	Cass	O' the Pines Lake/Reservoir	302	302	302	302	302	302	Northeast Texas MWD
County-Other, Cass	Cypress	Cass	Carrizo-Wilcox Aquifer	212	212	212	212	212	212	Self-supplied
E M C WSC	Cypress	Cass	Carrizo-Wilcox Aquifer	63	63	63	63	63	63	Self-supplied
Eastern Cass WSC	Cypress	Cass	Carrizo-Wilcox Aquifer	581	581	581	581	581	581	Self-supplied
Holly Springs WSC	Cypress	Cass	O' the Pines Lake/Reservoir	60	60	59	59	59	59	Hughes Springs
Hughes Springs	Cypress	Cass	O' the Pines Lake/Reservoir	562	562	562	562	562	562	Northeast Texas MWD
Linden	Cypress	Cass	Carrizo-Wilcox Aquifer	444	444	444	444	444	444	Self-supplied
Mims WSC	Cypress	Cass	O' the Pines Lake/Reservoir	133	133	133	133	133	133	Northeast Texas MWD
Queen City	Cypress	Cass	Carrizo-Wilcox Aquifer	169	169	169	169	169	169	Self-supplied
Queen City	Cypress	Cass	Wright Patman Lake/Reservoir	153	147	142	139	137	136	Manufacturing, Cass
Western Cass WSC	Cypress	Cass	Carrizo-Wilcox Aquifer	895	895	895	895	895	895	Self-supplied
Atlanta	Sulphur	Cass	Wright Patman Lake/Reservoir	4	4	4	4	4	5	Manufacturing, Cass
County-Other, Cass	Sulphur	Cass	Carrizo-Wilcox Aquifer	80	80	80	80	80	80	Self-supplied
County-Other, Cass	Sulphur	Cass	Wright Patman Lake/Reservoir	44	44	44	44	44	44	Manufacturing, Cass
Eastern Cass WSC	Sulphur	Cass	Carrizo-Wilcox Aquifer	38	38	38	38	38	38	Self-supplied
Queen City	Sulphur	Cass	Carrizo-Wilcox Aquifer	100	100	100	100	100	100	Self-supplied
Queen City	Sulphur	Cass	Wright Patman Lake/Reservoir	87	83	81	79	77	77	Manufacturing, Cass
Western Cass WSC	Sulphur	Cass	Carrizo-Wilcox Aquifer	188	188	188	188	188	188	Self-supplied
County Total - Round VI				**5,186**	**5,236**	**5,302**	**5,294**	**5,290**	**5,289**	
County Total - Round V				**4,946**	**5,006**	**5,079**	**5,076**	**5,076**		
Round VI minus Round V				**240**	**230**	**223**	**218**	**214**		
DELTA COUNTY										
Cooper	Sulphur	Delta	Big Creek Lake/Reservoir	464	461	458	376	188	0	Self-supplied
Cooper	Sulphur	Delta	Chapman/Cooper Lake/Reservoir Non-System Portion	0	0	0	76	258	440	Sulphur River MWD
County-Other, Delta	Sulphur	Delta	Chapman/Cooper Lake/Reservoir Non-System	82	83	82	80	76	73	Cooper
County-Other, Delta	Sulphur	Delta	Nacatoch Aquifer	74	74	74	74	74	74	Commerce
County-Other, Delta	Sulphur	Delta	Nacatoch Aquifer	11	12	12	12	12	12	Self-supplied
County-Other, Delta	Sulphur	Delta	Trinity Aquifer	16	16	16	16	16	16	Self-supplied
Delta County MUD	Sulphur	Delta	Chapman/Cooper Lake/Reservoir Non-System	191	194	196	199	201	204	Cooper
North Hunt SUD	Sulphur	Delta	Tawakoni Lake/Reservoir	7	6	4	3	3	3	Commerce
North Hunt SUD	Sulphur	Delta	Woodbine Aquifer	3	2	2	1	1	1	Self-supplied
County Total - Round VI				**848**	**848**	**844**	**837**	**829**	**823**	
County Total - Round V				**1,296**	**1,295**	**1,292**	**1,290**	**1,291**		
Round VI minus Round V				**-448**	**-447**	**-448**	**-453**	**-462**		
FRANKLIN COUNTY										
Cornersville WSC	Cypress	Franklin	Carrizo-Wilcox Aquifer	6	7	7	7	9	8	Self-supplied
County-Other, Franklin	Cypress	Franklin	Carrizo-Wilcox Aquifer	77	82	82	82	82	82	Self-supplied
Cypress Springs SUD	Cypress	Franklin	Carrizo-Wilcox Aquifer	67	67	67	67	67	67	Self-supplied
Cypress Springs SUD	Cypress	Franklin	Cypress Springs Lake/Reservoir	1,938	1,818	1,699	1,593	1,492	1,389	Franklin County WD
Winnsboro	Cypress	Franklin	Cypress Springs Lake/Reservoir	384	357	332	311	291	272	Franklin County WD

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
County-Other, Franklin	Sulphur	Franklin	Bob Sandlin Lake/Reservoir	14	16	17	17	17	17	Mount Pleasant
County-Other, Franklin	Sulphur	Franklin	Carrizo-Wilcox Aquifer	123	133	133	133	133	133	Self-supplied
Cypress Springs SUD	Sulphur	Franklin	Cypress Springs Lake/Reservoir	993	932	871	818	764	713	Franklin County WD
Mount Vernon	Sulphur	Franklin	Cypress Springs Lake/Reservoir	2,538	2,426	2,315	2,204	2,093	1,982	Franklin County WD
Mount Vernon	Sulphur	Franklin	Sulphur Run-of-River	46	46	46	46	46	46	Self-supplied
County Total - Round VI				**6,186**	**5,884**	**5,569**	**5,278**	**4,994**	**4,709**	
County Total - Round V				**6,799**	**6,527**	**6,304**	**6,020**	**5,790**		
Round VI minus Round V				**-613**	**-643**	**-735**	**-742**	**-796**		
GREGG COUNTY										
County-Other, Gregg	Cypress	Gregg	Carrizo-Wilcox Aquifer	226	239	256	280	297	297	Self-supplied
County-Other, Gregg	Cypress	Gregg	Fork Lake/Reservoir	31	33	37	41	45	45	Kilgore
County-Other, Gregg	Cypress	Gregg	O' the Pines Lake/Reservoir	2	2	3	3	3	3	Longview
Glenwood WSC	Cypress	Gregg	Carrizo-Wilcox Aquifer	24	25	25	25	25	25	Self-supplied
Tryon Road SUD	Cypress	Gregg	Carrizo-Wilcox Aquifer	165	165	164	153	139	139	Self-supplied
Tryon Road SUD	Cypress	Gregg	O' the Pines Lake/Reservoir	948	948	948	948	948	948	Northeast Texas MWD
Chalk Hill SUD	Sabine	Gregg	Carrizo-Wilcox Aquifer	2	2	2	2	2	2	Self-supplied
Clarksville City	Sabine	Gregg	Carrizo-Wilcox Aquifer	245	245	245	245	245	245	Self-supplied
County-Other, Gregg	Sabine	Gregg	Big Sandy Creek Lake/Reservoir	50	50	50	50	50	50	White Oak
County-Other, Gregg	Sabine	Gregg	Carrizo-Wilcox Aquifer	740	807	885	990	1,110	1,152	Self-supplied
County-Other, Gregg	Sabine	Gregg	Fork Lake/Reservoir	590	630	693	767	855	855	Kilgore
County-Other, Gregg	Sabine	Gregg	Gladewater Lake/Reservoir	154	154	154	154	54	54	Gladewater
County-Other, Gregg	Sabine	Gregg	O' the Pines Lake/Reservoir	48	48	47	47	47	47	Longview
Cross Roads SUD	Sabine	Gregg	Carrizo-Wilcox Aquifer	45	46	47	48	49	50	Self-supplied
Cross Roads SUD	Sabine	Gregg	Fork Lake/Reservoir	32	34	36	39	43	47	Kilgore
Elderville WSC	Sabine	Gregg	Carrizo-Wilcox Aquifer	265	267	269	267	266	258	Self-supplied
Elderville WSC	Sabine	Gregg	Cherokee Lake/Reservoir	185	185	185	186	170	170	Longview
Elderville WSC	Sabine	Gregg	Fork Lake/Reservoir	188	188	188	188	189	189	Longview
Gladewater	Sabine	Gregg	Gladewater Lake/Reservoir	982	987	999	1,013	1,030	866	Self-supplied
Kilgore	Sabine	Gregg	Carrizo-Wilcox Aquifer	1,139	1,139	1,140	1,143	1,148	1,148	Self-supplied
Kilgore	Sabine	Gregg	Fork Lake/Reservoir	3,794	3,739	3,658	3,561	3,450	3,437	Sabine River Authority
Liberty City WSC	Sabine	Gregg	Carrizo-Wilcox Aquifer	838	838	838	838	838	838	Self-supplied
Longview	Sabine	Gregg	Cherokee Lake/Reservoir	7,467	7,471	7,472	7,474	7,475	7,475	Cherokee Water
Longview	Sabine	Gregg	Fork Lake/Reservoir	15,153	15,194	15,228	15,267	15,303	15,258	Sabine River Authority
Longview	Sabine	Gregg	O' the Pines Lake/Reservoir	16,630	16,630	16,630	16,630	16,630	16,630	Northeast Texas MWD
Longview	Sabine	Gregg	Sabine Run-of-River	11,196	11,161	11,150	11,092	11,033	10,987	Self-supplied
Starrville-Friendship WSC	Sabine	Gregg	Carrizo-Wilcox Aquifer	98	98	98	98	98	98	Self-supplied
Tryon Road SUD	Sabine	Gregg	Carrizo-Wilcox Aquifer	128	128	128	128	128	128	Self-supplied
Tryon Road SUD	Sabine	Gregg	O' the Pines Lake/Reservoir	340	340	340	340	340	240	Northeast Texas MWD
West Gregg SUD	Sabine	Gregg	Carrizo-Wilcox Aquifer	521	521	521	521	517	514	Self-supplied
White Oak	Sabine	Gregg	Big Sandy Creek Lake/Reservoir	2,590	2,590	2,590	2,590	2,590	2,590	Longview
County Total - Round VI				**64,816**	**64,904**	**65,026**	**65,128**	**65,117**	**64,785**	
County Total - Round V				**66,659**	**66,669**	**66,683**	**66,784**	**67,182**		
Round VI minus Round V				**-1,843**	**-1,765**	**-1,657**	**-1,656**	**-2,065**		

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
HARRISON COUNTY										
Blocker Crossroads WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	20	21	21	21	20	20	Self-supplied
County-Other, Harrison	Cypress	Harrison	Carrizo-Wilcox Aquifer	517	517	517	517	517	517	Self-supplied
County-Other, Harrison	Cypress	Harrison	O' the Pines Lake/Reservoir	253	253	253	253	253	253	Marshall
Cypress Valley WSC	Cypress	Harrison	Queen City Aquifer	316	316	316	316	316	316	Self-supplied
Diana SUD	Cypress	Harrison	Carrizo-Wilcox Aquifer	47	47	47	47	47	47	Self-supplied
Diana SUD	Cypress	Harrison	O' the Pines Lake/Reservoir	47	47	47	47	47	47	Northeast Texas MWD
Gum Springs WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	300	300	300	300	300	300	Self-supplied
Gum Springs WSC	Cypress	Harrison	Cherokee Lake/Reservoir	52	52	52	52	52	52	Longview
Gum Springs WSC	Cypress	Harrison	Fork Lake/Reservoir	200	200	200	200	201	201	Longview
Gum Springs WSC	Cypress	Harrison	O' the Pines Lake/Reservoir	536	536	537	536	538	538	Longview
Harleton WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	247	247	247	247	247	247	Self-supplied
Harleton WSC	Cypress	Harrison	O' the Pines Lake/Reservoir	51	51	51	51	51	51	Northeast Texas MWD
Leigh WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	517	517	517	517	517	517	Self-supplied
Marshall	Cypress	Harrison	Cypress Run-of-River	1,286	1,286	1,286	1,286	1,287	1,287	Self-supplied
Marshall	Cypress	Harrison	O' the Pines Lake/Reservoir	1,158	1,158	1,158	1,158	1,158	1,158	Northeast Texas MWD
North Harrison WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	260	260	260	260	260	260	Self-supplied
Panola-Bethany WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	31	25	20	17	14	11	Self-supplied
Scottsville	Cypress	Harrison	Carrizo-Wilcox Aquifer	71	71	70	70	71	71	Self-supplied
Talley WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	114	114	114	112	112	112	Self-supplied
Tryon Road SUD	Cypress	Harrison	Carrizo-Wilcox Aquifer	20	20	21	32	46	46	Self-supplied
Tryon Road SUD	Cypress	Harrison	O' the Pines Lake/Reservoir	534	534	534	534	534	634	Northeast Texas MWD
Waskom	Cypress	Harrison	Carrizo-Wilcox Aquifer	339	339	339	339	339	339	Self-supplied
West Harrison WSC	Cypress	Harrison	Carrizo-Wilcox Aquifer	88	88	86	86	87	87	Self-supplied
Blocker Crossroads WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	192	191	191	191	192	192	Self-supplied
County-Other, Harrison	Sabine	Harrison	Carrizo-Wilcox Aquifer	766	796	832	884	924	924	Self-supplied
County-Other, Harrison	Sabine	Harrison	O' the Pines Lake/Reservoir	70	70	70	70	70	70	Marshall
Elysian Fields WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	165	191	195	224	252	279	Self-supplied
Gill WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	250	250	250	250	250	250	Self-supplied
Gill WSC	Sabine	Harrison	O' the Pines Lake/Reservoir	67	67	67	67	67	67	Marshall
Gum Springs WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	127	127	127	127	127	127	Self-supplied
Gum Springs WSC	Sabine	Harrison	Cherokee Lake/Reservoir	142	142	142	142	142	142	Longview
Gum Springs WSC	Sabine	Harrison	Fork Lake/Reservoir	546	546	546	546	545	545	Longview
Gum Springs WSC	Sabine	Harrison	O' the Pines Lake/Reservoir	1,464	1,464	1,463	1,464	1,462	1,462	Longview
Hallsville	Sabine	Harrison	Carrizo-Wilcox Aquifer	77	77	77	77	77	77	Self-supplied
Hallsville	Sabine	Harrison	Cherokee Lake/Reservoir	553	553	553	553	553	553	Longview
Hallsville	Sabine	Harrison	Fork Lake/Reservoir	334	334	334	334	334	334	Longview
Longview	Sabine	Harrison	Cherokee Lake/Reservoir	170	166	165	163	162	162	Cherokee Water
Longview	Sabine	Harrison	Fork Lake/Reservoir	325	317	315	311	310	310	Sabine River Authority
Longview	Sabine	Harrison	O' the Pines Lake/Reservoir	920	920	920	920	920	920	Northeast Texas MWD
Longview	Sabine	Harrison	Sabine Run-of-River	382	417	428	486	545	591	Self-supplied
Marshall	Sabine	Harrison	Cypress Run-of-River	5,954	5,954	5,954	5,954	5,953	5,953	Self-supplied
Marshall	Sabine	Harrison	O' the Pines Lake/Reservoir	5,419	5,419	5,419	5,419	5,419	5,419	Northeast Texas MWD
Panola-Bethany WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	51	41	34	27	22	18	Self-supplied

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Scottsville	Sabine	Harrison	Carrizo-Wilcox Aquifer	145	145	146	146	145	145	Self-supplied
Talley WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	84	84	84	86	86	86	Self-supplied
West Harrison WSC	Sabine	Harrison	Carrizo-Wilcox Aquifer	272	272	274	274	273	273	Self-supplied
County Total - Round VI				**25,479**	**25,542**	**25,579**	**25,713**	**25,844**	**26,010**	
County Total - Round V				**26,019**	**26,099**	**26,210**	**26,383**	**26,522**		
Round VI minus Round V				**-540**	**-557**	**-631**	**-670**	**-678**		
HOPKINS COUNTY										
Cornersville WSC	Cypress	Hopkins	Carrizo-Wilcox Aquifer	91	89	88	88	86	85	Self-supplied
Cypress Springs SUD	Cypress	Hopkins	Cypress Springs Lake/Reservoir	186	184	180	172	164	155	Franklin County WD
Brashear WSC	Sabine	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	70	74	77	82	87	87	Sulphur Springs
Cash SUD	Sabine	Hopkins	Indirect Reuse	11	16	19	28	2	3	North Texas MWD
Cash SUD	Sabine	Hopkins	North Texas MWD Lake/Reservoir System	5	4	4	3	3	3	North Texas MWD
Cash SUD	Sabine	Hopkins	Tawakoni Lake/Reservoir	11	11	11	11	11	12	Sabine River Authority
Como	Sabine	Hopkins	Carrizo-Wilcox Aquifer	97	97	97	97	97	97	Self-supplied
Cornersville WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	93	92	92	90	89	89	Self-supplied
County-Other, Hopkins	Sabine	Hopkins	Carrizo-Wilcox Aquifer	479	479	480	478	475	477	Self-supplied
County-Other, Hopkins	Sabine	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	53	50	15	0	0	0	Sulphur Springs
Cumby	Sabine	Hopkins	Nacatoch Aquifer	109	109	109	109	109	109	Self-supplied
Jones WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	19	17	17	14	15	15	Self-supplied
Lake Fork WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	46	46	46	46	46	46	Self-supplied
Martin Springs WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	375	374	376	377	377	377	Self-supplied
Martin Springs WSC	Sabine	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	188	188	189	189	188	188	Sulphur Springs
Miller Grove WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	163	162	162	160	159	158	Self-supplied
Shady Grove No 2 WSC	Sabine	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	25	27	27	29	31	31	Sulphur Springs
Shady Grove No 2 WSC	Sabine	Hopkins	Sulphur Springs Lake/Reservoir	25	26	28	30	31	31	Sulphur Springs
Shirley WSC	Sabine	Hopkins	Carrizo-Wilcox Aquifer	334	332	328	323	317	313	Self-supplied
Brashear WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	85	89	93	99	105	105	Sulphur Springs
Brinker WSC	Sulphur	Hopkins	Carrizo-Wilcox Aquifer	251	251	251	252	253	253	Self-supplied
Brinker WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	77	77	77	77	77	77	Sulphur Springs
Como	Sulphur	Hopkins	Carrizo-Wilcox Aquifer	27	27	27	27	27	27	Self-supplied
Cornersville WSC	Sulphur	Hopkins	Carrizo-Wilcox Aquifer	12	12	11	11	10	10	Self-supplied
County-Other, Hopkins	Sulphur	Hopkins	Carrizo-Wilcox Aquifer	437	439	436	433	433	431	Self-supplied
County-Other, Hopkins	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	30	29	9	0	0	0	Sulphur Springs
County-Other, Hopkins	Sulphur	Hopkins	Nacatoch Aquifer	91	88	87	85	85	85	Self-supplied
Cumby	Sulphur	Hopkins	Nacatoch Aquifer	11	11	11	11	11	11	Self-supplied
Cypress Springs SUD	Sulphur	Hopkins	Cypress Springs Lake/Reservoir	293	290	280	268	255	242	Franklin County WD
Gafford Chapel WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	111	115	121	128	135	135	Sulphur Springs
Gafford Chapel WSC	Sulphur	Hopkins	Nacatoch Aquifer	3	3	3	3	3	3	Commerce
Gafford Chapel WSC	Sulphur	Hopkins	Nacatoch Aquifer	52	52	52	52	52	52	Self-supplied
Martin Springs WSC	Sulphur	Hopkins	Carrizo-Wilcox Aquifer	69	69	69	69	69	69	Self-supplied
Martin Springs WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	35	35	34	34	35	35	Sulphur Springs
North Hopkins WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	921	921	921	921	921	921	Sulphur Springs
Shady Grove No 2 WSC	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System	31	32	34	36	38	38	Sulphur Springs
Shady Grove No 2 WSC	Sulphur	Hopkins	Sulphur Springs Lake/Reservoir	31	33	34	36	38	38	Sulphur Springs

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Sulphur Springs	Sulphur	Hopkins	Chapman/Cooper Lake/Reservoir Non-System Portion	3,440	3,497	3,590	3,646	3,701	3,757	Sulphur River MWD
County Total - Round VI				**8,387**	**8,447**	**8,485**	**8,514**	**8,535**	**8,565**	
County Total - Round V				**10,064**	**10,041**	**9,974**	**9,948**	**9,949**		
Round VI minus Round V				**-1,677**	**-1,594**	**-1,489**	**-1,434**	**-1,414**		
HUNT COUNTY										
Ables Springs SUD	Sabine	Hunt	Indirect Reuse	14	14	12	12	12	12	North Texas MWD
Ables Springs SUD	Sabine	Hunt	North Texas MWD Lake/Reservoir System	24	21	19	18	16	16	North Texas MWD
Ables Springs SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	1	1	1	1	1	1	North Texas MWD
B H P WSC	Sabine	Hunt	Indirect Reuse	188	207	219	233	242	257	North Texas MWD
B H P WSC	Sabine	Hunt	North Texas MWD Lake/Reservoir System	316	304	290	280	279	282	North Texas MWD
B H P WSC	Sabine	Hunt	Tawakoni Lake/Reservoir	11	11	10	10	9	10	North Texas MWD
Caddo Basin SUD	Sabine	Hunt	Indirect Reuse	66	53	54	50	48	50	Farmersville
Caddo Basin SUD	Sabine	Hunt	Indirect Reuse	599	475	484	453	427	452	North Texas MWD
Caddo Basin SUD	Sabine	Hunt	North Texas MWD Lake/Reservoir System	111	84	82	74	67	68	Farmersville
Caddo Basin SUD	Sabine	Hunt	North Texas MWD Lake/Reservoir System	999	750	739	666	600	611	North Texas MWD
Caddo Basin SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	3	3	3	3	3	3	Farmersville
Caddo Basin SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	37	29	29	27	25	26	North Texas MWD
Caddo Mills	Sabine	Hunt	North Texas MWD Lake/Reservoir System	67	67	67	67	67	67	Cash SUD
Caddo Mills	Sabine	Hunt	Tawakoni Lake/Reservoir	186	201	242	309	319	319	Greenville
Cash SUD	Sabine	Hunt	Fork Lake/Reservoir	912	1,605	2,240	2,400	1,785	1,720	Sabine River Authority
Cash SUD	Sabine	Hunt	Indirect Reuse	279	217	149	89	181	170	North Texas MWD
Cash SUD	Sabine	Hunt	North Texas MWD Lake/Reservoir System	460	369	295	243	207	182	North Texas MWD
Cash SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	76	72	68	64	61	58	North Texas MWD
Cash SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	991	943	895	851	804	771	Sabine River Authority
Celeste	Sabine	Hunt	Woodbine Aquifer	95	95	95	95	95	95	Self-supplied
Combined Consumers SUD	Sabine	Hunt	Fork Lake/Reservoir	1,668	1,648	1,627	1,606	1,583	1,563	Sabine River Authority
County-Other, Hunt	Sabine	Hunt	Chapman/Cooper Lake/Reservoir Non-System	3	4	5	8	13	14	Cooper
County-Other, Hunt	Sabine	Hunt	Nacatoch Aquifer	391	391	392	392	392	392	Self-supplied
County-Other, Hunt	Sabine	Hunt	Tawakoni Lake/Reservoir	806	806	806	806	806	734	Greenville
County-Other, Hunt	Sabine	Hunt	Woodbine Aquifer	15	15	15	15	15	15	Self-supplied
Greenville	Sabine	Hunt	Greenville City Lake/Reservoir	3,215	3,215	3,215	3,215	3,215	3,215	Self-supplied
Greenville	Sabine	Hunt	Tawakoni Lake/Reservoir	3,366	3,124	2,850	2,587	2,293	2,240	Sabine River Authority
Hickory Creek SUD	Sabine	Hunt	Woodbine Aquifer	175	177	177	178	179	179	Self-supplied
Josephine	Sabine	Hunt	Indirect Reuse	11	12	11	11	12	12	North Texas MWD
Josephine	Sabine	Hunt	North Texas MWD Lake/Reservoir System	18	18	17	16	16	16	North Texas MWD
Josephine	Sabine	Hunt	Tawakoni Lake/Reservoir	1	1	1	1	1	1	North Texas MWD
MacBee SUD	Sabine	Hunt	Fork Lake/Reservoir	71	59	50	41	34	28	Sabine River Authority
Poetry WSC	Sabine	Hunt	Indirect Reuse	79	80	77	74	58	57	Terrell
Poetry WSC	Sabine	Hunt	North Texas MWD Lake/Reservoir System	133	126	117	109	83	78	Terrell
Poetry WSC	Sabine	Hunt	Tawakoni Lake/Reservoir	5	5	4	4	3	3	Terrell
Quinlan	Sabine	Hunt	Tawakoni Lake/Reservoir	240	258	276	292	307	322	Cash SUD
Royse City	Sabine	Hunt	Indirect Reuse	207	261	287	313	348	388	North Texas MWD
Royse City	Sabine	Hunt	North Texas MWD Lake/Reservoir System	345	411	437	460	489	524	North Texas MWD

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Royse City	Sabine	Hunt	Tawakoni Lake/Reservoir	13	16	17	18	20	22	North Texas MWD
Shady Grove SUD	Sabine	Hunt	Tawakoni Lake/Reservoir	164	207	263	335	428	545	Greenville
West Tawakoni	Sabine	Hunt	Tawakoni Lake/Reservoir	804	797	738	784	777	777	Sabine River Authority
Commerce	Sulphur	Hunt	Nacatoch Aquifer	244	244	244	244	244	244	Self-supplied
Commerce	Sulphur	Hunt	Tawakoni Lake/Reservoir	1,886	1,886	1,886	1,886	1,886	1,886	Sabine River Authority
County-Other, Hunt	Sulphur	Hunt	Chapman/Cooper Lake/Reservoir Non-System	1	2	3	4	6	7	Cooper
County-Other, Hunt	Sulphur	Hunt	Fork Lake/Reservoir	138	143	143	134	122	103	Cash SUD
County-Other, Hunt	Sulphur	Hunt	Nacatoch Aquifer	66	66	66	66	66	66	Self-supplied
County-Other, Hunt	Sulphur	Hunt	Tawakoni Lake/Reservoir	138	143	142	135	122	103	Cash SUD
County-Other, Hunt	Sulphur	Hunt	Woodbine Aquifer	24	19	14	4	0	0	Self-supplied
Hickory Creek SUD	Sulphur	Hunt	Woodbine Aquifer	107	108	110	110	110	111	Self-supplied
North Hunt SUD	Sulphur	Hunt	Tawakoni Lake/Reservoir	124	128	132	135	137	137	Commerce
North Hunt SUD	Sulphur	Hunt	Woodbine Aquifer	46	48	49	50	51	51	Self-supplied
Shady Grove SUD	Sulphur	Hunt	Tawakoni Lake/Reservoir	10	13	17	22	27	35	Greenville
Texas A&M University Commerc	Sulphur	Hunt	Nacatoch Aquifer	1	1	1	1	1	1	Commerce
Texas A&M University Commerc	Sulphur	Hunt	Nacatoch Aquifer	156	156	156	156	156	156	Self-supplied
Wolfe City	Sulphur	Hunt	Turkey Creek Lake/Reservoir	180	180	180	180	180	180	Self-supplied
Wolfe City	Sulphur	Hunt	Woodbine Aquifer	71	72	72	73	72	72	Self-supplied
County-Other, Hunt	Trinity	Hunt	Trinity Aquifer	3	3	3	3	3	3	Self-supplied
Frognot WSC	Trinity	Hunt	Woodbine Aquifer	2	3	3	4	4	5	Self-supplied
Hickory Creek SUD	Trinity	Hunt	Woodbine Aquifer	60	60	60	61	62	62	Self-supplied
West Leonard WSC	Trinity	Hunt	Woodbine Aquifer	5	5	6	7	7	8	Self-supplied
County Total - Round VI				**20,427**	**20,432**	**20,662**	**20,485**	**19,576**	**19,525**	
County Total - Round V				**19,214**	**19,595**	**20,037**	**20,335**	**23,906**		
Round VI minus Round V				**1,213**	**837**	**625**	**150**	**-4,330**		
LAMAR COUNTY										
Bois D Arc MUD	Red	Lamar	Woodbine Aquifer	2	2	1	1	1	1	Self-supplied
County-Other, Lamar	Red	Lamar	Pat Mayse Lake/Reservoir	6	6	6	6	6	6	Lamar County WSD
County-Other, Lamar	Red	Lamar	Trinity Aquifer	0	0	0	0	0	0	Self-supplied
Lamar County WSD	Red	Lamar	Pat Mayse Lake/Reservoir	5,278	5,229	5,193	5,159	5,108	5,108	Paris
Paris	Red	Lamar	Crook Lake/Reservoir	625	625	625	625	625	625	Self-supplied
Paris	Red	Lamar	Pat Mayse Lake/Reservoir	982	888	816	809	802	795	Self-supplied
Reno (Lamar)	Red	Lamar	Pat Mayse Lake/Reservoir	128	138	149	160	171	171	Lamar County WSD
Blossom	Sulphur	Lamar	Pat Mayse Lake/Reservoir	230	245	245	245	245	245	Lamar County WSD
County-Other, Lamar	Sulphur	Lamar	Pat Mayse Lake/Reservoir	274	279	277	275	273	273	Lamar County WSD
County-Other, Lamar	Sulphur	Lamar	Trinity Aquifer	1	1	1	1	1	1	Self-supplied
Lamar County WSD	Sulphur	Lamar	Pat Mayse Lake/Reservoir	3,518	3,486	3,462	3,438	3,404	3,404	Paris
Paris	Sulphur	Lamar	Crook Lake/Reservoir	967	967	967	967	967	967	Self-supplied
Paris	Sulphur	Lamar	Pat Mayse Lake/Reservoir	1,519	1,373	1,263	1,252	1,242	1,231	Self-supplied
Reno (Lamar)	Sulphur	Lamar	Pat Mayse Lake/Reservoir	571	616	665	713	764	764	Lamar County WSD
County Total - Round VI				**14,101**	**13,855**	**13,670**	**13,651**	**13,609**	**13,591**	
County Total - Round V				**37,607**	**37,314**	**37,072**	**36,611**	**36,344**		
Round VI minus Round V				**-23,506**	**-23,459**	**-23,402**	**-22,960**	**-22,735**		

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
MARION COUNTY										
County-Other, Marion	Cypress	Marion	Carrizo-Wilcox Aquifer	486	486	486	486	486	486	Self-supplied
County-Other, Marion	Cypress	Marion	O' the Pines Lake/Reservoir	169	169	169	169	169	169	Northeast Texas MWD
Diana SUD	Cypress	Marion	Carrizo-Wilcox Aquifer	27	27	27	27	27	27	Self-supplied
Diana SUD	Cypress	Marion	O' the Pines Lake/Reservoir	24	24	24	24	24	24	Northeast Texas MWD
E M C WSC	Cypress	Marion	Carrizo-Wilcox Aquifer	243	243	243	243	243	243	Self-supplied
Harleton WSC	Cypress	Marion	Carrizo-Wilcox Aquifer	81	81	81	81	81	81	Self-supplied
Harleton WSC	Cypress	Marion	O' the Pines Lake/Reservoir	17	17	17	17	17	17	Northeast Texas MWD
Jefferson	Cypress	Marion	Cypress Run-of-River	763	763	763	763	763	763	Self-supplied
Jefferson	Cypress	Marion	O' the Pines Lake/Reservoir	1,509	1,509	1,509	1,509	1,509	1,509	Northeast Texas MWD
Kellyville-Berea WSC	Cypress	Marion	Carrizo-Wilcox Aquifer	148	148	148	148	148	148	Self-supplied
Mims WSC	Cypress	Marion	O' the Pines Lake/Reservoir	763	763	763	763	763	763	Northeast Texas MWD
Ore City	Cypress	Marion	Carrizo-Wilcox Aquifer	16	19	25	29	33	37	Self-supplied
County Total - Round VI				**4,246**	**4,249**	**4,255**	**4,259**	**4,263**	**4,267**	
County Total - Round V				**4,717**	**4,717**	**4,717**	**4,717**	**4,717**		
Round VI minus Round V				**-471**	**-468**	**-462**	**-458**	**-454**		
MORRIS COUNTY										
Bi County WSC	Cypress	Morris	Carrizo-Wilcox Aquifer	132	132	132	132	132	132	Self-supplied
County-Other, Morris	Cypress	Morris	Carrizo-Wilcox Aquifer	353	353	353	353	353	353	Self-supplied
Daingerfield	Cypress	Morris	O' the Pines Lake/Reservoir	1,582	1,582	1,582	1,582	1,582	1,582	Northeast Texas MWD
Holly Springs WSC	Cypress	Morris	O' the Pines Lake/Reservoir	32	32	33	33	33	33	Hughes Springs
Lone Star	Cypress	Morris	O' the Pines Lake/Reservoir	747	747	747	747	747	747	Northeast Texas MWD
Naples	Cypress	Morris	Carrizo-Wilcox Aquifer	116	116	116	116	116	116	Self-supplied
Omaha	Cypress	Morris	Carrizo-Wilcox Aquifer	165	165	165	165	165	165	Self-supplied
Tri SUD	Cypress	Morris	Bob Sandlin Lake/Reservoir	200	198	183	175	164	147	Mount Pleasant
County-Other, Morris	Sulphur	Morris	Carrizo-Wilcox Aquifer	187	187	187	187	187	187	Self-supplied
Naples	Sulphur	Morris	Carrizo-Wilcox Aquifer	109	109	109	109	109	109	Self-supplied
Omaha	Sulphur	Morris	Carrizo-Wilcox Aquifer	125	125	125	125	125	125	Self-supplied
County Total - Round VI				**3,748**	**3,746**	**3,732**	**3,724**	**3,713**	**3,696**	
County Total - Round V				**3,727**	**3,726**	**3,730**	**3,734**	**3,737**		
Round VI minus Round V				**21**	**20**	**2**	**-10**	**-24**		
RAINS COUNTY										
Bright Star Salem SUD	Sabine	Rains	Carrizo-Wilcox Aquifer	344	344	344	344	344	344	Self-supplied
Bright Star Salem SUD	Sabine	Rains	Fork Lake/Reservoir	432	423	418	405	394	384	Sabine River Authority
Cash SUD	Sabine	Rains	Indirect Reuse	45	64	89	119	12	12	North Texas MWD
Cash SUD	Sabine	Rains	North Texas MWD Lake/Reservoir System	22	17	14	14	13	13	North Texas MWD
Cash SUD	Sabine	Rains	Tawakoni Lake/Reservoir	3	3	3	4	4	5	North Texas MWD
Cash SUD	Sabine	Rains	Tawakoni Lake/Reservoir	47	43	44	48	52	55	Sabine River Authority
County-Other, Rains	Sabine	Rains	Carrizo-Wilcox Aquifer	337	340	338	335	335	335	Self-supplied
County-Other, Rains	Sabine	Rains	Nacatoch Aquifer	75	77	76	74	74	74	Self-supplied
East Tawakoni	Sabine	Rains	Tawakoni Lake/Reservoir	246	247	247	248	248	248	Emory
Emory	Sabine	Rains	Fork Lake/Reservoir	1,806	1,786	1,766	1,746	1,727	1,707	Sabine River Authority
Emory	Sabine	Rains	Tawakoni Lake/Reservoir	715	709	701	692	682	673	Sabine River Authority
Golden WSC	Sabine	Rains	Carrizo-Wilcox Aquifer	8	10	9	8	8	8	Self-supplied

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Miller Grove WSC	Sabine	Rains	Carrizo-Wilcox Aquifer	33	34	34	36	37	38	Self-supplied
Point	Sabine	Rains	Fork Lake/Reservoir	201	198	196	194	192	190	Sabine River Authority
Point	Sabine	Rains	Tawakoni Lake/Reservoir	201	199	198	196	194	193	Sabine River Authority
Shirley WSC	Sabine	Rains	Carrizo-Wilcox Aquifer	158	162	166	173	179	183	Self-supplied
South Rains SUD	Sabine	Rains	Carrizo-Wilcox Aquifer	90	90	90	90	90	90	Bright Star Salem SUD
South Rains SUD	Sabine	Rains	Tawakoni Lake/Reservoir	192	188	187	187	188	188	Emory
County Total - Round VI				**4,955**	**4,934**	**4,920**	**4,913**	**4,773**	**4,740**	
County Total - Round V				**3,523**	**3,513**	**3,505**	**3,496**	**3,450**		
Round VI minus Round V				**1,432**	**1,421**	**1,415**	**1,417**	**1,323**		
RED RIVER COUNTY										
410 WSC	Red	Red River	Pat Mayse Lake/Reservoir	66	64	64	63	63	63	Lamar County WSD
County-Other, Red River	Red	Red River	Pat Mayse Lake/Reservoir	64	63	62	63	62	62	Lamar County WSD
County-Other, Red River	Red	Red River	Trinity Aquifer	23	23	23	23	23	23	Self-supplied
County-Other, Red River	Red	Red River	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Red River County WSC	Red	Red River	Blossom Aquifer	30	30	30	30	30	30	Self-supplied
Red River County WSC	Red	Red River	Pat Mayse Lake/Reservoir	184	184	184	184	184	184	Lamar County WSD
Red River County WSC	Red	Red River	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
410 WSC	Sulphur	Red River	Pat Mayse Lake/Reservoir	152	149	148	148	148	148	Lamar County WSD
Bogata	Sulphur	Red River	Nacatoch Aquifer	510	510	510	510	510	510	Self-supplied
Clarksville	Sulphur	Red River	Blossom Aquifer	371	371	371	371	371	371	Self-supplied
County-Other, Red River	Sulphur	Red River	Nacatoch Aquifer	55	54	54	54	54	54	Self-supplied
County-Other, Red River	Sulphur	Red River	Pat Mayse Lake/Reservoir	186	184	185	184	185	185	Lamar County WSD
County-Other, Red River	Sulphur	Red River	Trinity Aquifer	0	0	0	0	0	0	Self-supplied
County-Other, Red River	Sulphur	Red River	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Red River County WSC	Sulphur	Red River	Blossom Aquifer	223	223	223	223	223	223	Self-supplied
Red River County WSC	Sulphur	Red River	Nacatoch Aquifer	188	188	188	188	188	188	Self-supplied
Red River County WSC	Sulphur	Red River	Wright Patman Lake/Reservoir	0	0	0	0	0	0	Riverbend Water
Talco	Sulphur	Red River	Nacatoch Aquifer	16	16	16	16	16	16	Self-supplied
County Total - Round VI				**2,068**	**2,059**	**2,058**	**2,057**	**2,057**	**2,057**	
County Total - Round V				**1,882**	**1,878**	**1,878**	**1,878**	**1,878**		
Round VI minus Round V				**186**	**181**	**180**	**179**	**179**		
SMITH COUNTY										
Carroll WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	57	59	63	67	71	70	Self-supplied
County-Other, Smith	Sabine	Smith	Carrizo-Wilcox Aquifer	308	284	269	247	225	203	Self-supplied
County-Other, Smith	Sabine	Smith	Gladewater Lake/Reservoir	23	23	23	23	23	23	Gladewater
Crystal Systems Texas	Sabine	Smith	Carrizo-Wilcox Aquifer	1,676	1,676	1,676	1,676	1,676	1,676	Self-supplied
East Texas MUD	Sabine	Smith	Carrizo-Wilcox Aquifer	1,263	1,263	1,263	1,263	1,263	1,263	Self-supplied
East Texas MUD	Sabine	Smith	Queen City Aquifer	269	269	269	269	269	269	Self-supplied
Jackson WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	175	188	198	205	213	220	Self-supplied
Liberty City WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	43	43	43	43	43	43	Self-supplied
Lindale	Sabine	Smith	Carrizo-Wilcox Aquifer	1,354	1,348	1,331	1,337	1,348	1,348	Self-supplied
Lindale Rural WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	1,311	1,311	1,311	1,311	1,311	1,311	Self-supplied
Overton	Sabine	Smith	Carrizo-Wilcox Aquifer	30	32	34	35	36	37	Self-supplied
Pine Ridge WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	271	271	271	271	271	271	Self-supplied

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Sand Flat WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	546	546	546	546	546	546	Self-supplied
Southern Utilities	Sabine	Smith	Carrizo-Wilcox Aquifer	2,194	2,306	2,390	2,444	2,431	2,332	Self-supplied
Star Mountain WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	339	339	339	339	339	339	Self-supplied
Starrville-Friendship WSC	Sabine	Smith	Carrizo-Wilcox Aquifer	239	239	239	239	239	239	Self-supplied
Tyler	Sabine	Smith	Palestine Lake/Reservoir	118	106	99	89	78	68	Upper Neches River
Tyler	Sabine	Smith	Tyler Lake/Reservoir	115	103	95	84	75	65	Self-supplied
West Gregg SUD	Sabine	Smith	Carrizo-Wilcox Aquifer	132	132	132	132	135	135	Self-supplied
Winona	Sabine	Smith	Carrizo-Wilcox Aquifer	169	169	169	169	169	169	Self-supplied
County Total - Round VI				**10,632**	**10,707**	**10,760**	**10,789**	**10,761**	**10,627**	
County Total - Round V				**9,118**	**9,471**	**10,057**	**10,707**	**11,513**		
Round VI minus Round V				**1,514**	**1,236**	**703**	**82**	**-752**		
TITUS COUNTY										
Bi County WSC	Cypress	Titus	Carrizo-Wilcox Aquifer	126	126	126	126	126	126	Self-supplied
County-Other, Titus	Cypress	Titus	Bob Sandlin Lake/Reservoir	263	283	297	310	322	340	Mount Pleasant
County-Other, Titus	Cypress	Titus	Carrizo-Wilcox Aquifer	438	457	475	439	416	416	Self-supplied
Cypress Springs SUD	Cypress	Titus	Cypress Springs Lake/Reservoir	109	121	141	149	155	165	Franklin County WD
Mount Pleasant	Cypress	Titus	Bob Sandlin Lake/Reservoir	13,180	12,843	12,602	12,399	12,086	11,887	Titus County FWD 1
Mount Pleasant	Cypress	Titus	Cypress Run-of-River	400	400	400	400	400	400	Self-supplied
Mount Pleasant	Cypress	Titus	Cypress Springs Lake/Reservoir	2,464	2,356	2,248	2,140	2,032	1,924	Self-supplied
Mount Pleasant	Cypress	Titus	Tankersley Lake/Reservoir	950	950	950	950	950	950	Self-supplied
Tri SUD	Cypress	Titus	Bob Sandlin Lake/Reservoir	1,290	1,428	1,530	1,635	1,732	1,821	Mount Pleasant
County-Other, Titus	Sulphur	Titus	Bob Sandlin Lake/Reservoir	424	460	479	500	526	550	Mount Pleasant
County-Other, Titus	Sulphur	Titus	Carrizo-Wilcox Aquifer	432	454	477	500	500	500	Self-supplied
County-Other, Titus	Sulphur	Titus	Nacatoch Aquifer	76	76	76	76	76	76	Self-supplied
Cypress Springs SUD	Sulphur	Titus	Cypress Springs Lake/Reservoir	80	88	101	107	114	119	Franklin County WD
Talco	Sulphur	Titus	Nacatoch Aquifer	467	467	467	467	467	467	Self-supplied
Tri SUD	Sulphur	Titus	Bob Sandlin Lake/Reservoir	734	813	870	931	986	1,037	Mount Pleasant
County Total - Round VI				**21,433**	**21,322**	**21,239**	**21,129**	**20,888**	**20,778**	
County Total - Round V				**20,265**	**20,103**	**20,010**	**19,708**	**19,520**		
Round VI minus Round V				**1,168**	**1,219**	**1,229**	**1,421**	**1,368**		
UPSHUR COUNTY										
Bi County WSC	Cypress	Upshur	Carrizo-Wilcox Aquifer	479	479	479	479	479	479	Self-supplied
County-Other, Upshur	Cypress	Upshur	Big Sandy Creek Lake/Reservoir	27	27	27	27	27	27	White Oak
County-Other, Upshur	Cypress	Upshur	Carrizo-Wilcox Aquifer	297	297	297	297	297	297	Self-supplied
County-Other, Upshur	Cypress	Upshur	Gladewater Lake/Reservoir	76	76	76	76	76	76	Gladewater
County-Other, Upshur	Cypress	Upshur	Queen City Aquifer	786	871	870	891	913	913	Self-supplied
Diana SUD	Cypress	Upshur	Carrizo-Wilcox Aquifer	598	598	598	598	598	598	Self-supplied
Diana SUD	Cypress	Upshur	O' the Pines Lake/Reservoir	524	524	524	524	524	524	Northeast Texas MWD
East Mountain Water System	Cypress	Upshur	Carrizo-Wilcox Aquifer	85	85	85	85	85	85	Self-supplied
Gilmer	Cypress	Upshur	Carrizo-Wilcox Aquifer	1,226	1,226	1,226	1,226	1,226	1,226	Self-supplied
Glenwood WSC	Cypress	Upshur	Carrizo-Wilcox Aquifer	342	341	341	341	341	341	Self-supplied
Ore City	Cypress	Upshur	Carrizo-Wilcox Aquifer	198	195	189	185	181	177	Self-supplied
Ore City	Cypress	Upshur	O' the Pines Lake/Reservoir	1,504	1,504	1,504	1,504	1,504	1,504	Northeast Texas MWD
Pritchett WSC	Cypress	Upshur	Carrizo-Wilcox Aquifer	1,143	1,143	1,123	1,087	1,037	990	Self-supplied

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Sharon WSC	Cypress	Upshur	Carrizo-Wilcox Aquifer	313	313	313	313	313	313	Self-supplied
Union Grove WSC	Cypress	Upshur	Carrizo-Wilcox Aquifer	14	14	15	14	14	14	Self-supplied
Big Sandy	Sabine	Upshur	Carrizo-Wilcox Aquifer	247	247	247	247	247	247	Self-supplied
County-Other, Upshur	Sabine	Upshur	Big Sandy Creek Lake/Reservoir	13	13	13	13	13	13	White Oak
County-Other, Upshur	Sabine	Upshur	Carrizo-Wilcox Aquifer	54	54	54	54	54	54	Self-supplied
County-Other, Upshur	Sabine	Upshur	Gladewater Lake/Reservoir	36	36	36	36	36	36	Gladewater
County-Other, Upshur	Sabine	Upshur	Loma Lake/Reservoir	400	400	400	400	400	400	Self-supplied
County-Other, Upshur	Sabine	Upshur	Queen City Aquifer	145	160	161	165	169	169	Self-supplied
East Mountain Water System	Sabine	Upshur	Carrizo-Wilcox Aquifer	122	122	122	122	122	122	Self-supplied
Fouke WSC	Sabine	Upshur	Carrizo-Wilcox Aquifer	13	12	12	12	11	11	Self-supplied
Gladewater	Sabine	Upshur	Gladewater Lake/Reservoir	597	592	580	566	549	505	Self-supplied
Glenwood WSC	Sabine	Upshur	Carrizo-Wilcox Aquifer	10	10	10	10	10	10	Self-supplied
Pritchett WSC	Sabine	Upshur	Carrizo-Wilcox Aquifer	727	726	726	726	726	725	Self-supplied
Union Grove WSC	Sabine	Upshur	Carrizo-Wilcox Aquifer	362	362	361	362	362	362	Self-supplied
County Total - Round VI				**10,338**	**10,427**	**10,389**	**10,360**	**10,314**	**10,218**	
County Total - Round V				**9,899**	**9,987**	**9,973**	**9,982**	**10,025**		
Round VI minus Round V				**439**	**440**	**416**	**378**	**289**		
VAN ZANDT COUNTY										
Ben Wheeler WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	304	294	286	277	267	266	Self-supplied
Bethel Ash WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	134	146	159	172	185	198	Self-supplied
Carroll WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	0	0	1	1	1	1	Self-supplied
County-Other, Van Zandt	Neches	Van Zandt	Carrizo-Wilcox Aquifer	1,260	1,195	1,073	1,037	1,083	1,037	Self-supplied
Edom WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	88	85	82	79	77	77	Self-supplied
Little Hope Moore WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	39	38	37	36	35	35	Self-supplied
R P M WSC	Neches	Van Zandt	Carrizo-Wilcox Aquifer	91	90	89	82	78	76	Self-supplied
R P M WSC	Neches	Van Zandt	Queen City Aquifer	132	125	126	126	126	126	Self-supplied
Van	Neches	Van Zandt	Carrizo-Wilcox Aquifer	447	446	447	447	447	447	Self-supplied
Ables Springs SUD	Sabine	Van Zandt	North Texas MWD Lake/Reservoir System	1	1	1	1	1	1	North Texas MWD
Canton	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	282	282	294	298	262	270	Self-supplied
Canton	Sabine	Van Zandt	Mill Creek Lake/Reservoir	1,190	1,190	1,190	1,190	1,190	1,190	Self-supplied
Canton	Sabine	Van Zandt	Sabine Run-of-River	903	903	903	903	903	903	Self-supplied
Carroll WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	93	93	92	92	92	97	Self-supplied
Combined Consumers SUD	Sabine	Van Zandt	Fork Lake/Reservoir	338	336	335	334	335	334	Sabine River Authority
County-Other, Van Zandt	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	461	560	652	694	730	733	Self-supplied
County-Other, Van Zandt	Sabine	Van Zandt	Sabine Run-of-River	170	170	170	170	170	170	Self-supplied
Edgewood	Sabine	Van Zandt	Edgewood City Lake/Reservoir	0	0	0	0	0	0	Self-supplied
Edgewood	Sabine	Van Zandt	Fork Lake/Reservoir	560	560	560	560	560	560	Sabine River Authority
Fruitvale WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	358	358	373	378	375	386	Self-supplied
Golden WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	134	141	151	158	164	170	Self-supplied
Grand Saline	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	345	345	359	364	362	374	Self-supplied
Little Hope Moore WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	82	80	78	75	73	73	Self-supplied
MacBee SUD	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	66	58	60	61	60	62	Self-supplied
MacBee SUD	Sabine	Van Zandt	Fork Lake/Reservoir	739	735	730	726	721	716	Sabine River Authority
Myrtle Springs WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	72	72	72	72	72	72	Self-supplied

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
Pine Ridge WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	89	89	89	89	89	89	Self-supplied
Pruitt Sandflat WSC	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	226	226	235	238	237	244	Self-supplied
South Tawakoni WSC	Sabine	Van Zandt	Fork Lake/Reservoir	1,505	1,488	1,472	1,455	1,439	1,422	Sabine River Authority
Van	Sabine	Van Zandt	Carrizo-Wilcox Aquifer	304	305	304	304	304	304	Self-supplied
Wills Point	Sabine	Van Zandt	Sabine Run-of-River	19	19	19	19	19	19	Self-supplied
Wills Point	Sabine	Van Zandt	Tawakoni Lake/Reservoir	495	546	596	647	698	750	Sabine River Authority
Bethel Ash WSC	Trinity	Van Zandt	Carrizo-Wilcox Aquifer	34	38	41	44	48	51	Self-supplied
County-Other, Van Zandt	Trinity	Van Zandt	Carrizo-Wilcox Aquifer	878	933	921	952	994	905	Self-supplied
Mabank	Trinity	Van Zandt	TRWD Lake/Reservoir System	55	55	56	57	57	58	Tarrant Regional WD
MacBee SUD	Trinity	Van Zandt	Fork Lake/Reservoir	1,135	1,130	1,122	1,115	1,108	1,101	Sabine River Authority
Myrtle Springs WSC	Trinity	Van Zandt	Carrizo-Wilcox Aquifer	179	179	179	179	179	179	Self-supplied
Wills Point	Trinity	Van Zandt	Tawakoni Lake/Reservoir	546	602	657	713	770	828	Sabine River Authority
County Total - Round VI				**13,754**	**13,913**	**14,011**	**14,145**	**14,311**	**14,324**	
County Total - Round V				**12,594**	**12,614**	**12,463**	**12,563**	**12,495**		
Round VI minus Round V				**1,160**	**1,299**	**1,548**	**1,582**	**1,816**		
WOOD COUNTY										
County-Other, Wood	Cypress	Wood	Carrizo-Wilcox Aquifer	799	808	801	810	806	806	Self-supplied
Cypress Springs SUD	Cypress	Wood	Cypress Springs Lake/Reservoir	197	197	191	189	186	180	Franklin County WD
Sharon WSC	Cypress	Wood	Carrizo-Wilcox Aquifer	209	209	209	209	209	219	Self-supplied
Winnsboro	Cypress	Wood	Cypress Springs Lake/Reservoir	637	614	590	565	537	512	Franklin County WD
Bright Star Salem SUD	Sabine	Wood	Carrizo-Wilcox Aquifer	343	343	343	343	343	343	Self-supplied
Bright Star Salem SUD	Sabine	Wood	Fork Lake/Reservoir	320	321	318	323	325	327	Sabine River Authority
Cornersville WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	52	54	56	58	60	62	Self-supplied
County-Other, Wood	Sabine	Wood	Carrizo-Wilcox Aquifer	3,660	3,654	3,660	3,651	3,655	3,655	Self-supplied
Fouke WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	1,011	1,012	1,012	1,012	1,013	1,013	Self-supplied
Golden WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	501	492	483	477	471	465	Self-supplied
Hawkins	Sabine	Wood	Carrizo-Wilcox Aquifer	890	890	890	890	890	890	Self-supplied
Jones WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	938	940	940	833	942	942	Self-supplied
Lake Fork WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	690	690	690	690	690	690	Self-supplied
Liberty Utilities Silverleaf Water	Sabine	Wood	Carrizo-Wilcox Aquifer	817	794	778	767	757	748	Self-supplied
Mineola	Sabine	Wood	Carrizo-Wilcox Aquifer	1,743	1,743	1,743	1,743	1,743	1,743	Self-supplied
New Hope SUD	Sabine	Wood	Carrizo-Wilcox Aquifer	366	366	366	366	366	366	Self-supplied
Pritchett WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	12	13	33	69	119	167	Self-supplied
Quitman	Sabine	Wood	Fork Lake/Reservoir	1,003	992	981	970	959	948	Sabine River Authority
Ramey WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	900	900	900	900	900	900	Self-supplied
Sharon WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	471	471	471	471	471	461	Self-supplied
Shirley WSC	Sabine	Wood	Carrizo-Wilcox Aquifer	23	22	22	20	20	20	Self-supplied
Winnsboro	Sabine	Wood	Cypress Springs Lake/Reservoir	671	647	622	593	567	537	Franklin County WD
County Total - Round VI				**16,253**	**16,172**	**16,099**	**15,949**	**16,029**	**15,994**	
County Total - Round V				**14,774**	**14,687**	**14,608**	**14,514**	**14,435**		
Round VI minus Round V				**1,479**	**1,485**	**1,491**	**1,435**	**1,594**		

Region D 2026 - North East Texas Regional Water Plan
Municipal Water Supply by County, WUG, Basin for 2030-2080

Water User Group Name	Basin	County	Source Name	2030	2040	2050	2060	2070	2080	Sellers Name
TOTAL										
County Total - Round VI				239,383	239,282	239,152	238,757	237,451	236,554	
County Total - Round V				259,997	260,208	260,503	260,630	264,723		
County Total - Round IV				236,834	236,668	240,722	244,142	246,589		
County Total - Round III				402,967	396,567	392,914	383,799			
County Total - Round II				346,058	346,058	346,058	346,058			
Round VI minus Round V				-20,614	-20,926	-21,351	-21,873	-27,272		
Round V minus Round IV				23,163	23,540	19,781	16,488	18,134		
Round IV minus Round III				-166,133	-159,899	-152,192	-139,657			
Round III minus Round II				56,909	50,509	46,856	37,741			

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Bowie County WUG Total			**12,724**	**12,804**	**12,831**	**12,872**	**12,933**	**12,980**
Bowie County / Red Basin WUG Total			**7,363**	**7,391**	**7,406**	**7,424**	**7,447**	**7,465**
Burns Redbank WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Central Bowie County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
De Kalb	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Hooks	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
New Boston	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Texarkana	D	Red Run-of-River	0	0	0	0	0	0
Texarkana	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Nacatoch Aquifer | Bowie County	1,128	1,149	1,130	1,119	1,119	1,119
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Red Run-of-River	6	6	6	6	6	6
Manufacturing	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Mining	D	Carrizo-Wilcox Aquifer | Bowie County	753	760	794	823	846	864
Livestock	D	Local Surface Water Supply	752	752	752	752	752	752
Livestock	D	Nacatoch Aquifer | Bowie County	40	40	40	40	40	40
Irrigation	D	Red Run-of-River	4,684	4,684	4,684	4,684	4,684	4,684
Bowie County / Sulphur Basin WUG Total			**5,361**	**5,413**	**5,425**	**5,448**	**5,486**	**5,515**
Central Bowie County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
De Kalb	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Macedonia Eylau MUD 1	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Maud	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Nash	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
New Boston	D	Sulphur Run-of-River	75	75	75	75	75	75
New Boston	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Redwater	D	Carrizo-Wilcox Aquifer | Bowie County	66	66	66	66	66	66
Redwater	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Texarkana	D	Red Run-of-River	0	0	0	0	0	0
Texarkana	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Wake Village	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Bowie County	2,442	2,484	2,440	2,416	2,416	2,416
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Carrizo-Wilcox Aquifer | Bowie County	28	28	28	28	28	28
Manufacturing	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Mining	D	Carrizo-Wilcox Aquifer | Bowie County	1,228	1,238	1,294	1,341	1,379	1,408
Livestock	D	Carrizo-Wilcox Aquifer | Bowie County	68	68	68	68	68	68
Livestock	D	Local Surface Water Supply	1,287	1,287	1,287	1,287	1,287	1,287
Irrigation	D	Sulphur Run-of-River	167	167	167	167	167	167
Camp County WUG Total			**7,961**	**7,977**	**7,987**	**8,002**	**8,018**	**8,026**
Camp County / Cypress Basin WUG Total			**7,961**	**7,977**	**7,987**	**8,002**	**8,018**	**8,026**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Camp County	937	937	937	937	937	937
Bi County WSC	D	Carrizo-Wilcox Aquifer | Morris County	50	50	50	50	50	50

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Bi County WSC	D	Carrizo-Wilcox Aquifer | Titus County	50	50	50	50	50	50
Bi County WSC	D	Carrizo-Wilcox Aquifer | Upshur County	50	50	50	50	50	50
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	10	10	10	10	10	10
Pittsburg	D	Bob Sandlin Lake/Reservoir	0	0	0	0	0	0
Pittsburg	D	Carrizo-Wilcox Aquifer | Camp County	433	433	433	433	433	433
Pittsburg	D	O' the Pines Lake/Reservoir	841	848	850	857	864	872
Sharon WSC		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Camp County	444	453	461	469	478	478
Manufacturing	D	Carrizo-Wilcox Aquifer | Camp County	2	2	2	2	2	2
Livestock	D	Carrizo-Wilcox Aquifer | Camp County	1,056	1,056	1,056	1,056	1,056	1,056
Livestock	D	Local Surface Water Supply	3,083	3,083	3,083	3,083	3,083	3,083
Livestock	D	Queen City Aquifer | Camp County	1,000	1,000	1,000	1,000	1,000	1,000
Irrigation	D	Carrizo-Wilcox Aquifer | Camp County	5	5	5	5	5	5
Cass County WUG Total			**44,519**	**45,928**	**47,389**	**48,852**	**50,361**	**51,933**
Cass County / Cypress Basin WUG Total			**7,330**	**7,408**	**7,485**	**7,513**	**7,534**	**7,558**
Atlanta	D	Wright Patman Lake/Reservoir	1,071	1,131	1,205	1,202	1,202	1,201
Avinger	D	O' the Pines Lake/Reservoir	302	302	302	302	302	302
E M C WSC	D	Carrizo-Wilcox Aquifer | Cass County	43	43	43	43	43	43
E M C WSC	D	Carrizo-Wilcox Aquifer | Marion County	20	20	20	20	20	20
Eastern Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	581	581	581	581	581	581
Holly Springs WSC	D	O' the Pines Lake/Reservoir	60	60	59	59	59	59

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Hughes Springs	D	O' the Pines Lake/Reservoir	562	562	562	562	562	562
Linden	D	Carrizo-Wilcox Aquifer | Cass County	444	444	444	444	444	444
Mims WSC	D	O' the Pines Lake/Reservoir	133	133	133	133	133	133
Queen City	D	Carrizo-Wilcox Aquifer | Cass County	169	169	169	169	169	169
Queen City	D	Wright Patman Lake/Reservoir	153	147	142	139	137	136
Western Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	895	895	895	895	895	895
County-Other	D	Carrizo-Wilcox Aquifer | Cass County	212	212	212	212	212	212
Manufacturing	D	Wright Patman Lake/Reservoir	14	15	15	16	17	17
Mining	D	Carrizo-Wilcox Aquifer | Cass County	33	33	20	20	20	20
Mining	D	Queen City Aquifer | Cass County	806	829	851	884	906	932
Livestock	D	Carrizo-Wilcox Aquifer | Cass County	19	19	19	19	19	19
Livestock	D	Cypress Run-of-River	7	7	7	7	7	7
Livestock	D	Local Surface Water Supply	1,806	1,806	1,806	1,806	1,806	1,806
Cass County / Sulphur Basin WUG Total			**37,189**	**38,520**	**39,904**	**41,339**	**42,827**	**44,375**
Atlanta	D	Wright Patman Lake/Reservoir	4	4	4	4	4	5
Eastern Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	38	38	38	38	38	38
Queen City	D	Carrizo-Wilcox Aquifer | Cass County	100	100	100	100	100	100
Queen City	D	Wright Patman Lake/Reservoir	87	83	81	79	77	77
Western Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	188	188	188	188	188	188
County-Other	D	Carrizo-Wilcox Aquifer | Cass County	80	80	80	80	80	80
County-Other	D	Wright Patman Lake/Reservoir	44	44	44	44	44	44

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	D	Carrizo-Wilcox Aquifer | Cass County	50	48	47	47	46	46
Manufacturing	D	Wright Patman Lake/Reservoir	36,138	37,475	38,862	40,299	41,790	43,337
Livestock	D	Carrizo-Wilcox Aquifer | Cass County	20	20	20	20	20	20
Livestock	D	Local Surface Water Supply	427	427	427	427	427	427
Livestock	D	Queen City Aquifer | Cass County	13	13	13	13	13	13
Delta County WUG Total			**6,635**	**6,645**	**6,646**	**6,639**	**6,643**	**6,564**
Delta County / Sulphur Basin WUG Total			**6,635**	**6,645**	**6,646**	**6,639**	**6,643**	**6,564**
Cooper	D	Big Creek Lake/Reservoir	464	461	458	376	188	0
Cooper	D	Chapman/Cooper Lake/Reservoir Non-System Portion	0	0	0	76	258	367
Delta County MUD*	D	Chapman/Cooper Lake/Reservoir Non-System Portion	191	194	196	199	201	204
North Hunt SUD*	D	Tawakoni Lake/Reservoir	7	6	4	3	3	3
North Hunt SUD*	D	Woodbine Aquifer | Hunt County	3	2	2	1	1	1
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	82	83	82	80	76	73
County-Other	D	Nacatoch Aquifer | Delta County	85	86	86	86	86	86
County-Other	D	Trinity Aquifer | Delta County	16	16	16	16	16	16
Livestock	D	Local Surface Water Supply	582	582	582	582	582	582
Livestock	D	Nacatoch Aquifer | Delta County	63	63	63	63	63	63
Livestock	D	Trinity Aquifer | Delta County	40	40	40	40	40	40
Irrigation	D	Nacatoch Aquifer | Delta County	51	61	66	66	78	78
Irrigation	D	Sulphur Run-of-River	5,051	5,051	5,051	5,051	5,051	5,051

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Franklin County WUG Total			**8,991**	**8,689**	**8,374**	**8,083**	**7,799**	**7,514**
Franklin County / Cypress Basin WUG Total			**3,893**	**3,752**	**3,608**	**3,481**	**3,362**	**3,239**
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	6	7	7	7	9	8
Cypress Springs SUD	D	Carrizo-Wilcox Aquifer | Franklin County	67	67	67	67	67	67
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	1,938	1,818	1,699	1,593	1,492	1,389
Winnsboro	D	Cypress Springs Lake/Reservoir	384	357	332	311	291	272
County-Other	D	Carrizo-Wilcox Aquifer | Franklin County	77	82	82	82	82	82
Livestock	D	Carrizo-Wilcox Aquifer | Franklin County	527	527	527	527	527	527
Livestock	D	Local Surface Water Supply	792	792	792	792	792	792
Irrigation	D	Sulphur Run-of-River	102	102	102	102	102	102
Franklin County / Sabine Basin WUG Total			**102**	**102**	**102**	**102**	**102**	**102**
Irrigation	D	Sulphur Run-of-River	102	102	102	102	102	102
Franklin County / Sulphur Basin WUG Total			**4,996**	**4,835**	**4,664**	**4,500**	**4,335**	**4,173**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	993	932	871	818	764	713
Mount Vernon	D	Cypress Springs Lake/Reservoir	2,538	2,426	2,315	2,204	2,093	1,982
Mount Vernon	D	Sulphur Run-of-River	46	46	46	46	46	46
County-Other	D	Bob Sandlin Lake/Reservoir	14	16	17	17	17	17
County-Other	D	Carrizo-Wilcox Aquifer | Franklin County	123	133	133	133	133	133
Livestock	D	Carrizo-Wilcox Aquifer | Franklin County	228	228	228	228	228	228
Livestock	D	Local Surface Water Supply	951	951	951	951	951	951
Irrigation	D	Sulphur Run-of-River	103	103	103	103	103	103

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Gregg County WUG Total			**69,410**	**69,494**	**69,529**	**69,544**	**69,471**	**69,139**
Gregg County / Cypress Basin WUG Total			**1,445**	**1,461**	**1,477**	**1,490**	**1,493**	**1,493**
East Mountain Water System		No water supply associated with WUG	0	0	0	0	0	0
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	24	25	25	25	25	25
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	165	165	164	153	139	139
Tryon Road SUD	D	O' the Pines Lake/Reservoir	948	948	948	948	948	948
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	207	220	237	261	278	278
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	19	19	19	19	19	19
County-Other	D	Fork Lake/Reservoir	31	33	37	41	45	45
County-Other	D	O' the Pines Lake/Reservoir	2	2	3	3	3	3
Mining	D	Carrizo-Wilcox Aquifer | Gregg County	22	22	17	13	9	9
Livestock	D	Carrizo-Wilcox Aquifer | Gregg County	27	27	27	27	27	27
Gregg County / Sabine Basin WUG Total			**67,965**	**68,033**	**68,052**	**68,054**	**67,978**	**67,646**
Chalk Hill SUD*	I	Carrizo-Wilcox Aquifer | Rusk County	2	2	2	2	2	2
Clarksville City	D	Carrizo-Wilcox Aquifer | Gregg County	245	245	245	245	245	245
Cross Roads SUD*	I	Carrizo-Wilcox Aquifer | Rusk County	45	46	47	48	49	50
Cross Roads SUD*	D	Fork Lake/Reservoir	32	34	36	39	43	47
East Mountain Water System		No water supply associated with WUG	0	0	0	0	0	0
Elderville WSC*	D	Carrizo-Wilcox Aquifer | Gregg County	38	38	38	33	30	20
Elderville WSC*	I	Carrizo-Wilcox Aquifer | Rusk County	227	229	231	234	236	238
Elderville WSC*	I	Cherokee Lake/Reservoir	185	185	185	186	170	170
Elderville WSC*	D	Fork Lake/Reservoir	188	188	188	188	189	189
Gladewater	D	Gladewater Lake/Reservoir	982	987	999	1,013	1,030	866

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Kilgore*	D	Carrizo-Wilcox Aquifer | Gregg County	1,139	1,139	1,140	1,143	1,148	1,148
Kilgore*	D	Fork Lake/Reservoir	3,794	3,739	3,658	3,561	3,450	3,437
Liberty City WSC	D	Carrizo-Wilcox Aquifer | Gregg County	838	838	838	838	838	838
Longview	I	Cherokee Lake/Reservoir	7,467	7,471	7,472	7,474	7,475	7,475
Longview	D	Fork Lake/Reservoir	15,153	15,194	15,228	15,267	15,303	15,258
Longview	D	O' the Pines Lake/Reservoir	16,630	16,630	16,630	16,630	16,630	16,630
Longview	D	Sabine Run-of-River	11,196	11,161	11,150	11,092	11,033	10,987
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Gregg County	60	60	60	60	60	60
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Smith County	38	38	38	38	38	38
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	128	128	128	128	128	128
Tryon Road SUD	D	O' the Pines Lake/Reservoir	340	340	340	340	340	240
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Gregg County	521	521	521	521	517	514
White Oak	D	Big Sandy Creek Lake/Reservoir	2,590	2,590	2,590	2,590	2,590	2,590
County-Other	D	Big Sandy Creek Lake/Reservoir	50	50	50	50	50	50
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	722	789	867	972	1,092	1,134
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	18	18	18	18	18	18
County-Other	D	Fork Lake/Reservoir	590	630	693	767	855	855
County-Other	D	Gladewater Lake/Reservoir	154	154	154	154	54	54
County-Other	D	O' the Pines Lake/Reservoir	48	48	47	47	47	47
Manufacturing	D	Carrizo-Wilcox Aquifer | Gregg County	30	30	30	30	30	30
Manufacturing	D	Local Surface Water Supply	450	450	450	450	450	450
Manufacturing	D	Sabine Run-of-River	1,092	1,092	1,092	1,092	1,092	1,092
Mining	D	Carrizo-Wilcox Aquifer | Gregg County	389	385	303	220	162	162
Mining	D	Sabine Run-of-River	3	3	3	3	3	3

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Gregg County	242	242	242	242	242	242
Steam Electric Power	I	Cherokee Lake/Reservoir	2,000	2,000	2,000	2,000	2,000	2,000
Livestock	D	Carrizo-Wilcox Aquifer | Gregg County	152	152	152	152	152	152
Irrigation	D	Cypress Run-of-River	40	40	40	40	40	40
Irrigation	D	Sabine Run-of-River	147	147	147	147	147	147
Harrison County WUG Total			**161,149**	**161,195**	**161,216**	**161,331**	**161,447**	**161,578**
Harrison County / Cypress Basin WUG Total			**10,324**	**10,328**	**10,331**	**10,342**	**10,368**	**10,465**
Blocker Crossroads WSC	D	Carrizo-Wilcox Aquifer | Harrison County	20	21	21	21	20	20
Cypress Valley WSC	D	Queen City Aquifer | Harrison County	316	316	316	316	316	316
Diana SUD	D	Carrizo-Wilcox Aquifer | Harrison County	47	47	47	47	47	47
Diana SUD	D	O' the Pines Lake/Reservoir	47	47	47	47	47	47
Gum Springs WSC	D	Carrizo-Wilcox Aquifer | Harrison County	300	300	300	300	300	300
Gum Springs WSC	I	Cherokee Lake/Reservoir	52	52	52	52	52	52
Gum Springs WSC	D	Fork Lake/Reservoir	200	200	200	200	201	201
Gum Springs WSC	D	O' the Pines Lake/Reservoir	536	536	537	536	538	538
Harleton WSC	D	Carrizo-Wilcox Aquifer | Harrison County	247	247	247	247	247	247
Harleton WSC	D	O' the Pines Lake/Reservoir	51	51	51	51	51	51
Leigh WSC	D	Carrizo-Wilcox Aquifer | Harrison County	517	517	517	517	517	517
Marshall	D	Cypress Run-of-River	1,286	1,286	1,286	1,286	1,287	1,287
Marshall	D	O' the Pines Lake/Reservoir	1,158	1,158	1,158	1,158	1,158	1,158
North Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	260	260	260	260	260	260
Panola-Bethany WSC*	I	Carrizo-Wilcox Aquifer | Panola County	31	25	20	17	14	11
Scottsville	D	Carrizo-Wilcox Aquifer | Harrison County	71	71	70	70	71	71

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Talley WSC	D	Carrizo-Wilcox Aquifer | Harrison County	114	114	114	112	112	112
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	0	0	1	12	26	26
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Harrison County	20	20	20	20	20	20
Tryon Road SUD	D	O' the Pines Lake/Reservoir	534	534	534	534	534	634
Waskom	D	Carrizo-Wilcox Aquifer | Harrison County	339	339	339	339	339	339
West Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	88	88	86	86	87	87
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	15	15	15	15	15	15
County-Other	D	Carrizo-Wilcox Aquifer | Harrison County	472	472	472	472	472	472
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	30	30	30	30	30	30
County-Other	D	O' the Pines Lake/Reservoir	253	253	253	253	253	253
Manufacturing	D	Carrizo-Wilcox Aquifer | Harrison County	147	147	147	147	147	147
Manufacturing	D	Cypress Run-of-River	2,341	2,341	2,341	2,341	2,341	2,341
Mining	D	Carrizo-Wilcox Aquifer | Harrison County	233	241	250	257	267	267
Mining	D	Cypress Run-of-River	66	66	66	66	66	66
Livestock	D	Carrizo-Wilcox Aquifer | Harrison County	22	22	22	22	22	22
Livestock	D	Cypress Run-of-River	47	47	47	47	47	47
Livestock	D	Local Surface Water Supply	398	399	399	398	398	398
Livestock	D	Queen City Aquifer | Harrison County	13	13	13	13	13	13
Irrigation	D	Carrizo-Wilcox Aquifer | Harrison County	25	25	25	25	25	25
Irrigation	D	Cypress Run-of-River	28	28	28	28	28	28
Harrison County / Sabine Basin WUG Total			**150,825**	**150,867**	**150,885**	**150,989**	**151,079**	**151,113**
Blocker Crossroads WSC	D	Carrizo-Wilcox Aquifer | Harrison County	192	191	191	191	192	192

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Elysian Fields WSC*	D	Carrizo-Wilcox Aquifer | Harrison County	165	191	195	224	252	279
Gill WSC*	D	Carrizo-Wilcox Aquifer | Harrison County	250	250	250	250	250	250
Gill WSC*	D	O' the Pines Lake/Reservoir	67	67	67	67	67	67
Gum Springs WSC	D	Carrizo-Wilcox Aquifer | Harrison County	127	127	127	127	127	127
Gum Springs WSC	I	Cherokee Lake/Reservoir	142	142	142	142	142	142
Gum Springs WSC	D	Fork Lake/Reservoir	546	546	546	546	545	545
Gum Springs WSC	D	O' the Pines Lake/Reservoir	1,464	1,464	1,463	1,464	1,462	1,462
Hallsville	D	Carrizo-Wilcox Aquifer | Harrison County	77	77	77	77	77	77
Hallsville	I	Cherokee Lake/Reservoir	553	553	553	553	553	553
Hallsville	D	Fork Lake/Reservoir	334	334	334	334	334	334
Longview	I	Cherokee Lake/Reservoir	170	166	165	163	162	162
Longview	D	Fork Lake/Reservoir	325	317	315	311	310	310
Longview	D	O' the Pines Lake/Reservoir	920	920	920	920	920	920
Longview	D	Sabine Run-of-River	382	417	428	486	545	591
Marshall	D	Cypress Run-of-River	5,954	5,954	5,954	5,954	5,953	5,953
Marshall	D	O' the Pines Lake/Reservoir	5,419	5,419	5,419	5,419	5,419	5,419
Panola-Bethany WSC*	I	Carrizo-Wilcox Aquifer | Panola County	51	41	34	27	22	18
Scottsville	D	Carrizo-Wilcox Aquifer | Harrison County	145	145	146	146	145	145
Talley WSC	D	Carrizo-Wilcox Aquifer | Harrison County	84	84	84	86	86	86
West Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	272	272	274	274	273	273
County-Other	D	Carrizo-Wilcox Aquifer | Harrison County	766	796	832	884	924	924
County-Other	D	O' the Pines Lake/Reservoir	70	70	70	70	70	70
Manufacturing	I	Cherokee Lake/Reservoir	5,004	5,004	5,004	5,004	5,004	5,004
Manufacturing	D	Fork Lake/Reservoir	3,135	3,100	3,066	3,032	2,998	2,963
Manufacturing	D	Grays Creek Run-of-River	12	12	12	12	12	12

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	D	O' the Pines Lake/Reservoir	2,400	2,400	2,400	2,400	2,400	2,400
Manufacturing	D	Sabine Run-of-River	94,382	94,382	94,382	94,382	94,382	94,382
Mining	D	Carrizo-Wilcox Aquifer | Harrison County	105	115	124	132	141	141
Mining	D	Sabine Run-of-River	435	435	435	435	435	435
Steam Electric Power	D	Brandy Branch Lake/Reservoir	2,347	2,347	2,347	2,347	2,347	2,347
Steam Electric Power	D	Direct Reuse	6,161	6,161	6,161	6,161	6,161	6,161
Steam Electric Power	D	O' the Pines Lake/Reservoir	18,000	18,000	18,000	18,000	18,000	18,000
Livestock	D	Carrizo-Wilcox Aquifer | Harrison County	27	27	27	27	27	27
Livestock	D	Local Surface Water Supply	309	308	308	309	309	309
Irrigation	D	Carrizo-Wilcox Aquifer | Harrison County	14	14	14	14	14	14
Irrigation	D	Sabine Run-of-River	19	19	19	19	19	19
Hopkins County WUG Total			**14,809**	**15,130**	**15,257**	**15,618**	**15,878**	**15,908**
Hopkins County / Cypress Basin WUG Total			**680**	**676**	**671**	**663**	**653**	**643**
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	91	89	88	88	86	85
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	186	184	180	172	164	155
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	201	201	201	201	201	201
Livestock	D	Local Surface Water Supply	201	201	201	201	201	201
Irrigation	D	Sabine Run-of-River	1	1	1	1	1	1
Hopkins County / Sabine Basin WUG Total			**3,476**	**3,484**	**3,464**	**3,462**	**3,441**	**3,440**
Brashear WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	70	74	77	82	87	87
Cash SUD*	C	North Texas MWD Lake/Reservoir System	5	4	4	3	3	3
Cash SUD*	D	Tawakoni Lake/Reservoir	11	11	11	11	11	12
Cash SUD*	C	Trinity Indirect Reuse	11	16	19	28	2	3

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Como	D	Carrizo-Wilcox Aquifer | Hopkins County	97	97	97	97	97	97
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	93	92	92	90	89	89
Cumby	D	Nacatoch Aquifer | Hopkins County	109	109	109	109	109	109
Jones WSC	D	Carrizo-Wilcox Aquifer | Wood County	19	17	17	14	15	15
Lake Fork WSC	D	Carrizo-Wilcox Aquifer | Wood County	46	46	46	46	46	46
Martin Springs WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	375	374	376	377	377	377
Martin Springs WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	188	188	189	189	188	188
Miller Grove WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	163	162	162	160	159	158
Shady Grove No 2 WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	25	27	27	29	31	31
Shady Grove No 2 WSC	D	Sulphur Springs Lake/Reservoir	25	26	28	30	31	31
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	232	231	228	224	220	217
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	102	101	100	99	97	96
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	360	360	361	359	356	358
County-Other	D	Carrizo-Wilcox Aquifer | Rains County	112	112	112	112	112	112
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	7	7	7	7	7	7
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	53	50	15	0	0	0
Mining	D	Nacatoch Aquifer | Hopkins County	192	193	193	195	195	195
Mining	D	Sulphur Springs Lake/Reservoir	68	74	81	88	96	96
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	249	249	249	249	249	249

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Livestock	D	Local Surface Water Supply	846	846	846	846	846	846
Irrigation	D	Sabine Run-of-River	18	18	18	18	18	18
Hopkins County / Sulphur Basin WUG Total			**10,653**	**10,970**	**11,122**	**11,493**	**11,784**	**11,825**
Brashear WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	85	89	93	99	105	105
Brinker WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	251	251	251	252	253	253
Brinker WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	77	77	77	77	77	77
Como	D	Carrizo-Wilcox Aquifer | Hopkins County	27	27	27	27	27	27
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	12	12	11	11	10	10
Cumby	D	Nacatoch Aquifer | Hopkins County	11	11	11	11	11	11
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	293	290	280	268	255	242
Gafford Chapel WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	111	115	121	128	135	135
Gafford Chapel WSC	D	Nacatoch Aquifer | Hopkins County	52	52	52	52	52	52
Gafford Chapel WSC	D	Nacatoch Aquifer | Hunt County	3	3	3	3	3	3
Martin Springs WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	69	69	69	69	69	69
Martin Springs WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	35	35	34	34	35	35
North Hopkins WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	921	921	921	921	921	921
Shady Grove No 2 WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	31	32	34	36	38	38
Shady Grove No 2 WSC	D	Sulphur Springs Lake/Reservoir	31	33	34	36	38	38

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Sulphur Springs	D	Chapman/Cooper Lake/Reservoir Non-System Portion	3,440	3,497	3,590	3,646	3,701	3,757
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	437	439	436	433	433	431
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	30	29	9	0	0	0
County-Other	D	Nacatoch Aquifer | Hopkins County	91	88	87	85	85	85
Manufacturing	D	Chapman/Cooper Lake/Reservoir Non-System Portion	1,561	1,592	1,611	1,701	1,802	1,802
Manufacturing	D	Sulphur Springs Lake/Reservoir	269	323	376	425	473	473
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	900	900	900	900	900	900
Livestock	D	Chapman/Cooper Lake/Reservoir Non-System Portion	1,551	1,720	1,730	1,914	1,996	1,996
Livestock	D	Local Surface Water Supply	184	184	184	184	184	184
Livestock	D	Nacatoch Aquifer | Hopkins County	77	77	77	77	77	77
Irrigation	D	Carrizo-Wilcox Aquifer | Hopkins County	49	49	49	49	49	49
Irrigation	D	Sulphur Run-of-River	55	55	55	55	55	55
Hunt County WUG Total			**23,359**	**23,545**	**23,948**	**23,890**	**23,167**	**23,116**
Hunt County / Sabine Basin WUG Total			**19,689**	**19,857**	**20,253**	**20,207**	**19,503**	**19,478**
Ables Springs SUD*	C	North Texas MWD Lake/Reservoir System	24	21	19	18	16	16
Ables Springs SUD*	D	Tawakoni Lake/Reservoir	1	1	1	1	1	1
Ables Springs SUD*	C	Trinity Indirect Reuse	14	14	12	12	12	12
B H P WSC	C	North Texas MWD Lake/Reservoir System	316	304	290	280	279	282
B H P WSC	D	Tawakoni Lake/Reservoir	11	11	10	10	9	10
B H P WSC	C	Trinity Indirect Reuse	188	207	219	233	242	257
Caddo Basin SUD*	C	North Texas MWD Lake/Reservoir System	1,110	834	821	740	667	679
Caddo Basin SUD*	D	Tawakoni Lake/Reservoir	40	32	32	30	28	29

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Caddo Basin SUD*	C	Trinity Indirect Reuse	665	528	538	503	475	502
Caddo Mills	C	North Texas MWD Lake/Reservoir System	67	67	67	67	67	67
Caddo Mills	D	Tawakoni Lake/Reservoir	186	201	242	309	319	319
Cash SUD*	D	Fork Lake/Reservoir	912	1,605	2,240	2,400	1,785	1,720
Cash SUD*	C	North Texas MWD Lake/Reservoir System	460	369	295	243	207	182
Cash SUD*	D	Tawakoni Lake/Reservoir	1,067	1,015	963	915	865	829
Cash SUD*	C	Trinity Indirect Reuse	279	217	149	89	181	170
Celeste	D	Woodbine Aquifer | Hunt County	95	95	95	95	95	95
Combined Consumers SUD	D	Fork Lake/Reservoir	1,668	1,648	1,627	1,606	1,583	1,563
Greenville	D	Greenville City Lake/Reservoir	3,215	3,215	3,215	3,215	3,215	3,215
Greenville	D	Tawakoni Lake/Reservoir	3,366	3,124	2,850	2,587	2,293	2,240
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	175	177	177	178	179	179
Josephine*	C	North Texas MWD Lake/Reservoir System	18	18	17	16	16	16
Josephine*	D	Tawakoni Lake/Reservoir	1	1	1	1	1	1
Josephine*	C	Trinity Indirect Reuse	11	12	11	11	12	12
MacBee SUD*	D	Fork Lake/Reservoir	71	59	50	41	34	28
Poetry WSC*	C	North Texas MWD Lake/Reservoir System	133	126	117	109	83	78
Poetry WSC*	D	Tawakoni Lake/Reservoir	5	5	4	4	3	3
Poetry WSC*	C	Trinity Indirect Reuse	79	80	77	74	58	57
Quinlan	D	Tawakoni Lake/Reservoir	240	258	276	292	307	322
Royse City*	C	North Texas MWD Lake/Reservoir System	345	411	437	460	489	524
Royse City*	D	Tawakoni Lake/Reservoir	13	16	17	18	20	22
Royse City*	C	Trinity Indirect Reuse	207	261	287	313	348	388
Shady Grove SUD	D	Tawakoni Lake/Reservoir	164	207	263	335	428	545
West Tawakoni	D	Tawakoni Lake/Reservoir	804	797	738	784	777	777
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	3	4	5	8	13	14
County-Other	D	Nacatoch Aquifer | Hunt County	391	391	392	392	392	392

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	D	Tawakoni Lake/Reservoir	806	806	806	806	806	734
County-Other	D	Woodbine Aquifer | Hunt County	15	15	15	15	15	15
Manufacturing	D	Chapman/Cooper Lake/Reservoir Non-System Portion	50	50	50	50	50	50
Manufacturing	D	Greenville City Lake/Reservoir	103	103	103	103	103	103
Manufacturing	D	Nacatoch Aquifer | Hunt County	200	200	200	200	200	200
Manufacturing	D	Tawakoni Lake/Reservoir	830	1,011	1,184	1,303	1,489	1,489
Manufacturing	C	Trinity Indirect Reuse	1	1	1	1	1	1
Steam Electric Power	D	Tawakoni Lake/Reservoir	373	373	373	373	373	373
Livestock	D	Local Surface Water Supply	854	854	854	854	854	854
Irrigation	D	Nacatoch Aquifer | Hunt County	94	94	94	94	94	94
Irrigation	D	Sabine Run-of-River	19	19	19	19	19	19
Hunt County / Sulphur Basin WUG Total			**3,539**	**3,556**	**3,562**	**3,547**	**3,527**	**3,499**
Commerce	D	Nacatoch Aquifer | Delta County	122	122	122	122	122	122
Commerce	D	Nacatoch Aquifer | Hunt County	122	122	122	122	122	122
Commerce	D	Tawakoni Lake/Reservoir	1,886	1,886	1,886	1,886	1,886	1,886
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	107	108	110	110	110	111
North Hunt SUD*	D	Tawakoni Lake/Reservoir	124	128	132	135	137	137
North Hunt SUD*	D	Woodbine Aquifer | Hunt County	46	48	49	50	51	51
Shady Grove SUD	D	Tawakoni Lake/Reservoir	10	13	17	22	27	35
Texas A&M University Commerce	D	Nacatoch Aquifer | Hunt County	157	157	157	157	157	157
Wolfe City*	D	Turkey Creek Lake/Reservoir	180	180	180	180	180	180
Wolfe City*	C	Woodbine Aquifer | Fannin County	71	72	72	73	72	72

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	1	2	3	4	6	7
County-Other	D	Fork Lake/Reservoir	138	143	143	134	122	103
County-Other	D	Nacatoch Aquifer | Hunt County	66	66	66	66	66	66
County-Other	D	Tawakoni Lake/Reservoir	138	143	142	135	122	103
County-Other	D	Woodbine Aquifer | Hunt County	24	19	14	4	0	0
Livestock	D	Local Surface Water Supply	347	347	347	347	347	347
Irrigation	D	Sulphur Run-of-River	0	0	0	0	0	0
Hunt County / Trinity Basin WUG Total			**131**	**132**	**133**	**136**	**137**	**139**
Frognot WSC*	C	Woodbine Aquifer | Collin County	2	3	3	4	4	5
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	60	60	60	61	62	62
West Leonard WSC*	C	Woodbine Aquifer | Fannin County	5	5	6	7	7	8
County-Other	D	Trinity Aquifer | Hunt County	3	3	3	3	3	3
Livestock	D	Local Surface Water Supply	49	49	49	49	49	49
Irrigation	D	Nacatoch Aquifer | Hunt County	12	12	12	12	12	12
Lamar County WUG Total			**34,216**	**34,251**	**34,283**	**34,348**	**34,358**	**34,358**
Lamar County / Red Basin WUG Total			**11,664**	**11,572**	**11,509**	**11,545**	**11,533**	**11,526**
Bois D Arc MUD*	C	Woodbine Aquifer | Fannin County	2	2	1	1	1	1
Lamar County WSD	D	Pat Mayse Lake/Reservoir	5,278	5,229	5,193	5,159	5,108	5,108
Paris	D	Crook Lake/Reservoir	625	625	625	625	625	625
Paris	D	Pat Mayse Lake/Reservoir	982	888	816	809	802	795
Reno (Lamar)	D	Pat Mayse Lake/Reservoir	128	138	149	160	171	171
County-Other	D	Pat Mayse Lake/Reservoir	6	6	6	6	6	6
County-Other	D	Trinity Aquifer | Lamar County	0	0	0	0	0	0
Manufacturing	D	Direct Reuse	12	12	12	12	12	12
Manufacturing	D	Pat Mayse Lake/Reservoir	1,300	1,341	1,376	1,442	1,477	1,477

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Pat Mayse Lake/Reservoir	683	683	683	683	683	683
Livestock	D	Local Surface Water Supply	532	532	532	532	532	532
Livestock	D	Trinity Aquifer | Lamar County	0	0	0	0	0	0
Livestock	D	Woodbine Aquifer | Lamar County	0	0	0	0	0	0
Irrigation	D	Red Run-of-River	2,116	2,116	2,116	2,116	2,116	2,116
Lamar County / Sulphur Basin WUG Total			**22,552**	**22,679**	**22,774**	**22,803**	**22,825**	**22,832**
Blossom	D	Pat Mayse Lake/Reservoir	230	245	245	245	245	245
Lamar County WSD	D	Pat Mayse Lake/Reservoir	3,518	3,486	3,462	3,438	3,404	3,404
Paris	D	Crook Lake/Reservoir	967	967	967	967	967	967
Paris	D	Pat Mayse Lake/Reservoir	1,519	1,373	1,263	1,252	1,242	1,231
Reno (Lamar)	D	Pat Mayse Lake/Reservoir	571	616	665	713	764	764
County-Other	D	Pat Mayse Lake/Reservoir	274	279	277	275	273	273
County-Other	D	Trinity Aquifer | Lamar County	1	1	1	1	1	1
Manufacturing	D	Pat Mayse Lake/Reservoir	4,940	5,180	5,362	5,380	5,397	5,415
Steam Electric Power	D	Pat Mayse Lake/Reservoir	8,278	8,278	8,278	8,278	8,278	8,278
Livestock	D	Local Surface Water Supply	468	468	468	468	468	468
Livestock	D	Sulphur Run-of-River	497	497	497	497	497	497
Livestock	D	Trinity Aquifer | Lamar County	1	1	1	1	1	1
Irrigation	D	Red Run-of-River	739	739	739	739	739	739
Irrigation	D	Sulphur Run-of-River	500	500	500	500	500	500
Irrigation	D	Woodbine Aquifer | Lamar County	49	49	49	49	49	49
Marion County WUG Total			**9,687**	**10,081**	**10,560**	**11,140**	**11,539**	**11,559**
Marion County / Cypress Basin WUG Total			**9,687**	**10,081**	**10,560**	**11,140**	**11,539**	**11,559**
Diana SUD	D	Carrizo-Wilcox Aquifer | Marion County	27	27	27	27	27	27
Diana SUD	D	O' the Pines Lake/Reservoir	24	24	24	24	24	24
E M C WSC	D	Carrizo-Wilcox Aquifer | Marion County	243	243	243	243	243	243

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Harleton WSC	D	Carrizo-Wilcox Aquifer | Harrison County	81	81	81	81	81	81
Harleton WSC	D	O' the Pines Lake/Reservoir	17	17	17	17	17	17
Jefferson	D	Cypress Run-of-River	763	763	763	763	763	763
Jefferson	D	O' the Pines Lake/Reservoir	1,509	1,509	1,509	1,509	1,509	1,509
Kellyville-Berea WSC	D	Carrizo-Wilcox Aquifer | Marion County	148	148	148	148	148	148
Mims WSC	D	O' the Pines Lake/Reservoir	763	763	763	763	763	763
Ore City	D	Carrizo-Wilcox Aquifer | Upshur County	16	19	25	29	33	37
County-Other	D	Carrizo-Wilcox Aquifer | Marion County	451	451	451	451	451	451
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	35	35	35	35	35	35
County-Other	D	O' the Pines Lake/Reservoir	169	169	169	169	169	169
Manufacturing	D	Queen City Aquifer | Marion County	151	157	163	169	175	191
Mining	D	Carrizo-Wilcox Aquifer | Marion County	119	122	124	126	128	128
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Marion County	75	75	75	75	75	75
Steam Electric Power	D	Johnson Creek Lake/Reservoir	2,280	2,280	2,280	2,280	2,280	2,280
Steam Electric Power	D	O' the Pines Lake/Reservoir	2,090	2,472	2,937	3,505	3,892	3,892
Livestock	D	Carrizo-Wilcox Aquifer | Marion County	130	130	130	130	130	130
Livestock	D	Queen City Aquifer | Marion County	281	281	281	281	281	281
Irrigation	D	Carrizo-Wilcox Aquifer | Marion County	12	12	12	12	12	12
Irrigation	D	Cypress Run-of-River	303	303	303	303	303	303
Morris County WUG Total			**121,590**	**116,270**	**117,518**	**126,390**	**120,162**	**120,154**
Morris County / Cypress Basin WUG Total			**120,524**	**115,204**	**116,452**	**125,324**	**119,096**	**119,088**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Morris County	132	132	132	132	132	132

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Daingerfield	D	O' the Pines Lake/Reservoir	1,582	1,582	1,582	1,582	1,582	1,582
Holly Springs WSC	D	O' the Pines Lake/Reservoir	32	32	33	33	33	33
Lone Star	D	O' the Pines Lake/Reservoir	747	747	747	747	747	747
Naples	D	Carrizo-Wilcox Aquifer | Morris County	116	116	116	116	116	116
Omaha	D	Carrizo-Wilcox Aquifer | Morris County	165	165	165	165	165	165
Tri SUD	D	Bob Sandlin Lake/Reservoir	155	151	142	140	138	130
Western Cass WSC		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Morris County	353	353	353	353	353	353
Manufacturing	D	Direct Reuse	66,660	61,344	62,600	71,474	65,248	65,248
Manufacturing	D	Ellison Creek Lake/Reservoir	13,037	13,037	13,037	13,037	13,037	13,037
Manufacturing	D	O' the Pines Lake/Reservoir	32,400	32,400	32,400	32,400	32,400	32,400
Manufacturing	D	Queen City Aquifer | Morris County	3,163	3,163	3,163	3,163	3,163	3,163
Steam Electric Power	D	Ellison Creek Lake/Reservoir	820	820	820	820	820	820
Livestock	D	Local Surface Water Supply	991	991	991	991	991	991
Livestock	D	Queen City Aquifer | Morris County	110	110	110	110	110	110
Irrigation	D	Carrizo-Wilcox Aquifer | Morris County	3	3	3	3	3	3
Irrigation	D	Cypress Run-of-River	58	58	58	58	58	58
Morris County / Sulphur Basin WUG Total			**1,066**	**1,066**	**1,066**	**1,066**	**1,066**	**1,066**
Naples	D	Carrizo-Wilcox Aquifer | Morris County	109	109	109	109	109	109
Omaha	D	Carrizo-Wilcox Aquifer | Morris County	125	125	125	125	125	125
Western Cass WSC		No water supply associated with WUG	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	D	Carrizo-Wilcox Aquifer | Morris County	187	187	187	187	187	187
Livestock	D	Carrizo-Wilcox Aquifer | Morris County	63	63	63	63	63	63
Livestock	D	Local Surface Water Supply	574	574	574	574	574	574
Irrigation	D	Carrizo-Wilcox Aquifer | Morris County	8	8	8	8	8	8
Rains County WUG Total			**5,597**	**5,576**	**5,562**	**5,555**	**5,415**	**5,382**
Rains County / Sabine Basin WUG Total			**5,597**	**5,576**	**5,562**	**5,555**	**5,415**	**5,382**
Bright Star Salem SUD	D	Carrizo-Wilcox Aquifer | Rains County	344	344	344	344	344	344
Bright Star Salem SUD	D	Fork Lake/Reservoir	432	423	418	405	394	384
Cash SUD*	C	North Texas MWD Lake/Reservoir System	22	17	14	14	13	13
Cash SUD*	D	Tawakoni Lake/Reservoir	50	46	47	52	56	60
Cash SUD*	C	Trinity Indirect Reuse	45	64	89	119	12	12
East Tawakoni	D	Tawakoni Lake/Reservoir	246	247	247	248	248	248
Emory	D	Fork Lake/Reservoir	1,806	1,786	1,766	1,746	1,727	1,707
Emory	D	Tawakoni Lake/Reservoir	715	709	701	692	682	673
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	8	10	9	8	8	8
Miller Grove WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	33	34	34	36	37	38
Point	D	Fork Lake/Reservoir	201	198	196	194	192	190
Point	D	Tawakoni Lake/Reservoir	201	199	198	196	194	193
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	110	112	115	120	124	127
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	48	50	51	53	55	56
South Rains SUD	D	Carrizo-Wilcox Aquifer | Rains County	90	90	90	90	90	90
South Rains SUD	D	Tawakoni Lake/Reservoir	192	188	187	187	188	188
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	113	113	113	113	113	113
County-Other	D	Carrizo-Wilcox Aquifer | Rains County	217	220	218	215	215	215

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	7	7	7	7	7	7
County-Other	D	Nacatoch Aquifer | Hopkins County	75	77	76	74	74	74
Manufacturing	D	Tawakoni Lake/Reservoir	12	12	12	12	12	12
Livestock	D	Carrizo-Wilcox Aquifer | Rains County	29	29	29	29	29	29
Livestock	D	Local Surface Water Supply	544	544	544	544	544	544
Irrigation	D	Sabine Run-of-River	57	57	57	57	57	57
Red River County WUG Total			**10,215**	**10,199**	**10,198**	**10,197**	**10,197**	**10,197**
Red River County / Red Basin WUG Total			**7,059**	**7,049**	**7,048**	**7,048**	**7,047**	**7,047**
410 WSC	D	Pat Mayse Lake/Reservoir	66	64	64	63	63	63
Red River County WSC	D	Blossom Aquifer | Red River County	30	30	30	30	30	30
Red River County WSC	D	Pat Mayse Lake/Reservoir	184	184	184	184	184	184
Red River County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Pat Mayse Lake/Reservoir	64	63	62	63	62	62
County-Other	D	Trinity Aquifer | Red River County	23	23	23	23	23	23
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Blossom Aquifer | Red River County	1	1	1	1	1	1
Manufacturing	D	Langford Lake/Reservoir	7	0	0	0	0	0
Manufacturing	D	Sulphur Run-of-River	5,046	5,046	5,046	5,046	5,046	5,046
Livestock	D	Blossom Aquifer | Red River County	64	64	64	64	64	64
Livestock	D	Local Surface Water Supply	549	549	549	549	549	549
Livestock	D	Nacatoch Aquifer | Red River County	8	8	8	8	8	8
Livestock	D	Woodbine Aquifer | Red River County	2	2	2	2	2	2
Irrigation	D	Red Run-of-River	1,015	1,015	1,015	1,015	1,015	1,015

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Red River County / Sulphur Basin WUG Total			**3,156**	**3,150**	**3,150**	**3,149**	**3,150**	**3,150**
410 WSC	D	Pat Mayse Lake/Reservoir	152	149	148	148	148	148
Bogata	D	Nacatoch Aquifer | Red River County	510	510	510	510	510	510
Clarksville	D	Blossom Aquifer | Red River County	371	371	371	371	371	371
Red River County WSC	D	Blossom Aquifer | Red River County	223	223	223	223	223	223
Red River County WSC	D	Nacatoch Aquifer | Red River County	188	188	188	188	188	188
Red River County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Talco	D	Nacatoch Aquifer | Red River County	16	16	16	16	16	16
County-Other	D	Nacatoch Aquifer | Red River County	55	54	54	54	54	54
County-Other	D	Pat Mayse Lake/Reservoir	186	184	185	184	185	185
County-Other	D	Trinity Aquifer | Red River County	0	0	0	0	0	0
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Livestock	D	Local Surface Water Supply	1,207	1,207	1,207	1,207	1,207	1,207
Livestock	D	Nacatoch Aquifer | Red River County	161	161	161	161	161	161
Irrigation	D	Sulphur Run-of-River	87	87	87	87	87	87
Smith County WUG Total			**11,427**	**11,503**	**11,550**	**11,579**	**11,553**	**11,418**
Smith County / Sabine Basin WUG Total			**11,427**	**11,503**	**11,550**	**11,579**	**11,553**	**11,418**
Carroll WSC*	I	Carrizo-Wilcox Aquifer | Smith County	57	59	63	67	71	70
Crystal Systems Texas*	D	Carrizo-Wilcox Aquifer | Smith County	1,376	1,376	1,376	1,376	1,376	1,376
Crystal Systems Texas*	I	Carrizo-Wilcox Aquifer | Smith County	300	300	300	300	300	300
East Texas MUD	D	Carrizo-Wilcox Aquifer | Smith County	1,263	1,263	1,263	1,263	1,263	1,263
East Texas MUD	D	Queen City Aquifer | Smith County	269	269	269	269	269	269
Jackson WSC*	D	Carrizo-Wilcox Aquifer | Smith County	175	188	198	205	213	220

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Liberty City WSC	D	Carrizo-Wilcox Aquifer | Gregg County	43	43	43	43	43	43
Lindale Rural WSC*	D	Carrizo-Wilcox Aquifer | Smith County	1,011	1,011	1,011	1,011	1,011	1,011
Lindale Rural WSC*	I	Carrizo-Wilcox Aquifer | Smith County	300	300	300	300	300	300
Lindale*	D	Carrizo-Wilcox Aquifer | Smith County	575	575	575	575	575	575
Lindale*	I	Carrizo-Wilcox Aquifer | Smith County	779	773	756	762	773	773
Overton*	I	Carrizo-Wilcox Aquifer | Rusk County	30	32	34	35	36	37
Pine Ridge WSC	D	Carrizo-Wilcox Aquifer | Smith County	271	271	271	271	271	271
Sand Flat WSC	D	Carrizo-Wilcox Aquifer | Smith County	546	546	546	546	546	546
Southern Utilities*	D	Carrizo-Wilcox Aquifer | Smith County	2,194	2,306	2,326	2,328	2,329	2,332
Southern Utilities*	I	Carrizo-Wilcox Aquifer | Smith County	0	0	64	116	102	0
Star Mountain WSC	D	Carrizo-Wilcox Aquifer | Smith County	339	339	339	339	339	339
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Gregg County	147	147	147	147	147	147
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Smith County	92	92	92	92	92	92
Tyler*	I	Palestine Lake/Reservoir	118	106	99	89	78	68
Tyler*	I	Tyler Lake/Reservoir	115	103	95	84	75	65
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Gregg County	0	0	0	0	3	3
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Smith County	132	132	132	132	132	132
Winona	D	Carrizo-Wilcox Aquifer | Smith County	169	169	169	169	169	169
County-Other*	D	Carrizo-Wilcox Aquifer | Smith County	308	284	269	247	225	203
County-Other*	D	Gladewater Lake/Reservoir	23	23	23	23	23	23
Manufacturing*	I	Carrizo-Wilcox Aquifer | Smith County	7	8	2	2	2	2
Manufacturing*	I	Palestine Lake/Reservoir	6	6	6	7	7	7
Manufacturing*	I	Tyler Lake/Reservoir	6	6	6	5	7	6

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock*	D	Queen City Aquifer | Smith County	465	465	465	465	465	465
Irrigation*	D	Carrizo-Wilcox Aquifer | Smith County	47	47	47	47	47	47
Irrigation*	D	Queen City Aquifer | Smith County	264	264	264	264	264	264
Titus County WUG Total			**60,600**	**59,423**	**58,142**	**56,938**	**55,482**	**54,446**
Titus County / Cypress Basin WUG Total			**56,181**	**54,888**	**53,495**	**52,171**	**50,603**	**49,450**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Titus County	126	126	126	126	126	126
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	109	121	141	149	155	165
Mount Pleasant	D	Bob Sandlin Lake/Reservoir	13,423	13,174	12,940	12,551	12,242	12,242
Mount Pleasant	D	Cypress Run-of-River	400	400	400	400	400	400
Mount Pleasant	D	Cypress Springs Lake/Reservoir	2,464	2,356	2,248	2,140	2,032	1,924
Mount Pleasant	D	Tankersley Lake/Reservoir	950	950	950	950	950	950
Tri SUD	D	Bob Sandlin Lake/Reservoir	1,002	1,088	1,192	1,313	1,453	1,606
County-Other	D	Bob Sandlin Lake/Reservoir	263	283	297	310	322	340
County-Other	D	Carrizo-Wilcox Aquifer | Titus County	438	457	475	439	416	416
Manufacturing	D	Bob Sandlin Lake/Reservoir	2,795	2,859	2,922	2,933	3,067	3,101
Manufacturing	D	Carrizo-Wilcox Aquifer | Titus County	2,027	2,150	2,140	1,881	1,751	1,751
Manufacturing	D	Direct Reuse	160	160	160	160	160	160
Manufacturing	D	Tankersley Lake/Reservoir	550	550	550	550	550	550
Steam Electric Power	D	Bob Sandlin Lake/Reservoir	7,300	6,760	6,220	5,680	5,140	4,600
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Titus County	3	3	3	578	548	548
Steam Electric Power	D	Monticello Lake/Reservoir	5,000	4,560	4,120	3,680	3,240	2,800
Steam Electric Power	D	O' the Pines Lake/Reservoir	14,400	14,400	14,400	14,400	14,400	14,400
Steam Electric Power	D	Welsh Lake/Reservoir	2,900	2,620	2,340	2,060	1,780	1,500

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	D	Carrizo-Wilcox Aquifer | Titus County	350	350	350	350	350	350
Livestock	D	Local Surface Water Supply	1,400	1,400	1,400	1,400	1,400	1,400
Irrigation	D	Cypress Run-of-River	3	3	3	3	3	3
Irrigation	D	Sulphur Run-of-River	118	118	118	118	118	118
Titus County / Sulphur Basin WUG Total			**4,419**	**4,535**	**4,647**	**4,767**	**4,879**	**4,996**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	80	88	101	107	114	119
Talco	D	Nacatoch Aquifer | Red River County	467	467	467	467	467	467
Tri SUD	D	Bob Sandlin Lake/Reservoir	570	620	677	747	826	914
County-Other	D	Bob Sandlin Lake/Reservoir	424	460	479	500	526	550
County-Other	D	Carrizo-Wilcox Aquifer | Titus County	432	454	477	500	500	500
County-Other	D	Nacatoch Aquifer | Red River County	76	76	76	76	76	76
Livestock	D	Carrizo-Wilcox Aquifer | Titus County	258	258	258	258	258	258
Livestock	D	Local Surface Water Supply	1,033	1,033	1,033	1,033	1,033	1,033
Livestock	D	Sulphur Run-of-River	1	1	1	1	1	1
Irrigation	D	Sulphur Run-of-River	1,078	1,078	1,078	1,078	1,078	1,078
Upshur County WUG Total			**13,011**	**13,110**	**13,038**	**12,975**	**12,904**	**12,808**
Upshur County / Cypress Basin WUG Total			**9,567**	**9,648**	**9,622**	**9,602**	**9,570**	**9,519**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Upshur County	479	479	479	479	479	479
Diana SUD	D	Carrizo-Wilcox Aquifer | Upshur County	598	598	598	598	598	598
Diana SUD	D	O' the Pines Lake/Reservoir	524	524	524	524	524	524
East Mountain Water System	D	Carrizo-Wilcox Aquifer | Upshur County	85	85	85	85	85	85
Gilmer	D	Carrizo-Wilcox Aquifer | Upshur County	1,226	1,226	1,226	1,226	1,226	1,226
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	342	341	341	341	341	341

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Ore City	D	Carrizo-Wilcox Aquifer | Upshur County	198	195	189	185	181	177
Ore City	D	O' the Pines Lake/Reservoir	1,504	1,504	1,504	1,504	1,504	1,504
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	1,143	1,143	1,123	1,087	1,037	990
Sharon WSC	D	Carrizo-Wilcox Aquifer | Upshur County	313	313	313	313	313	313
Union Grove WSC	D	Carrizo-Wilcox Aquifer | Upshur County	14	14	15	14	14	14
County-Other	D	Big Sandy Creek Lake/Reservoir	27	27	27	27	27	27
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	297	297	297	297	297	297
County-Other	D	Gladewater Lake/Reservoir	76	76	76	76	76	76
County-Other	D	Queen City Aquifer | Upshur County	786	871	870	891	913	913
Manufacturing	D	Carrizo-Wilcox Aquifer | Upshur County	6	6	6	6	6	6
Livestock	D	Carrizo-Wilcox Aquifer | Upshur County	186	186	186	186	186	186
Livestock	D	Local Surface Water Supply	1,052	1,052	1,052	1,052	1,052	1,052
Irrigation	D	Carrizo-Wilcox Aquifer | Upshur County	240	240	240	240	240	240
Irrigation	D	Cypress Run-of-River	21	21	21	21	21	21
Irrigation	D	Loma Lake/Reservoir	350	350	350	350	350	350
Irrigation	D	Sabine Run-of-River	100	100	100	100	100	100
Upshur County / Sabine Basin WUG Total			**3,444**	**3,462**	**3,416**	**3,373**	**3,334**	**3,289**
Big Sandy	D	Carrizo-Wilcox Aquifer | Upshur County	247	247	247	247	247	247
East Mountain Water System	D	Carrizo-Wilcox Aquifer | Upshur County	122	122	122	122	122	122
Fouke WSC	D	Carrizo-Wilcox Aquifer | Wood County	13	12	12	12	11	11
Gladewater	D	Gladewater Lake/Reservoir	597	592	580	566	549	505
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	10	10	10	10	10	10
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	727	726	726	726	726	725

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Union Grove WSC	D	Carrizo-Wilcox Aquifer | Upshur County	362	362	361	362	362	362
County-Other	D	Big Sandy Creek Lake/Reservoir	13	13	13	13	13	13
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	54	54	54	54	54	54
County-Other	D	Gladewater Lake/Reservoir	36	36	36	36	36	36
County-Other	D	Loma Lake/Reservoir	400	400	400	400	400	400
County-Other	D	Queen City Aquifer | Upshur County	145	160	161	165	169	169
Manufacturing		No water supply associated with WUG	0	0	0	0	0	0
Mining	D	Queen City Aquifer | Upshur County	153	163	129	95	70	70
Mining	D	Sabine Run-of-River	105	105	105	105	105	105
Livestock	D	Carrizo-Wilcox Aquifer | Upshur County	69	69	69	69	69	69
Livestock	D	Local Surface Water Supply	391	391	391	391	391	391
Van Zandt County WUG Total			**18,803**	**19,116**	**19,427**	**19,745**	**19,990**	**20,192**
Van Zandt County / Neches Basin WUG Total			**3,393**	**3,292**	**3,154**	**3,089**	**3,107**	**3,067**
Ben Wheeler WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	304	294	286	277	267	266
Bethel Ash WSC*	I	Carrizo-Wilcox Aquifer | Henderson County	134	146	159	172	185	198
Carroll WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	0	0	1	1	1	1
Edom WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	88	85	82	79	77	77
Little Hope Moore WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	39	38	37	36	35	35
R P M WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	91	90	89	82	78	76
R P M WSC*	D	Queen City Aquifer | Van Zandt County	132	125	126	126	126	126
Van	D	Carrizo-Wilcox Aquifer | Van Zandt County	379	357	342	323	304	303
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	1,260	1,195	1,073	1,037	1,083	1,037

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	44	42	41	40	39	38
Livestock	D	Local Surface Water Supply	500	500	500	500	500	500
Irrigation	D	Carrizo-Wilcox Aquifer | Van Zandt County	33	33	33	33	30	30
Irrigation	D	Fork Lake/Reservoir	165	163	161	159	158	156
Irrigation	D	Neches Run-of-River	150	150	150	150	150	150
Irrigation	D	Sabine Run-of-River	74	74	74	74	74	74
Van Zandt County / Sabine Basin WUG Total			**12,153**	**12,457**	**12,862**	**13,160**	**13,292**	**13,564**
Ables Springs SUD*	C	North Texas MWD Lake/Reservoir System	1	1	1	1	1	1
Canton	D	Carrizo-Wilcox Aquifer | Van Zandt County	282	282	294	298	262	270
Canton	D	Mill Creek Lake/Reservoir	1,190	1,190	1,190	1,190	1,190	1,190
Canton	D	Sabine Run-of-River	903	903	903	903	903	903
Carroll WSC*	I	Carrizo-Wilcox Aquifer | Smith County	0	0	0	0	0	5
Carroll WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	93	93	92	92	92	92
Combined Consumers SUD	D	Fork Lake/Reservoir	338	336	335	334	335	334
Edgewood	D	Edgewood City Lake/Reservoir	0	0	0	0	0	0
Edgewood	D	Fork Lake/Reservoir	560	560	560	560	560	560
Fruitvale WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	358	358	373	378	375	386
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	134	141	151	158	164	170
Grand Saline	D	Carrizo-Wilcox Aquifer | Van Zandt County	345	345	359	364	362	374
Little Hope Moore WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	82	80	78	75	73	73
MacBee SUD*	D	Carrizo-Wilcox Aquifer | Van Zandt County	66	58	60	61	60	62
MacBee SUD*	D	Fork Lake/Reservoir	739	735	730	726	721	716
Myrtle Springs WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	42	42	44	44	44	45
Pine Ridge WSC	D	Carrizo-Wilcox Aquifer | Smith County	89	89	89	89	89	89

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Pruitt Sandflat WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	226	226	235	238	237	244
South Tawakoni WSC	D	Fork Lake/Reservoir	1,505	1,488	1,472	1,455	1,439	1,422
Van	D	Carrizo-Wilcox Aquifer | Van Zandt County	98	104	108	112	117	117
Wills Point	D	Sabine Run-of-River	19	19	19	19	19	19
Wills Point	D	Tawakoni Lake/Reservoir	495	546	596	647	698	750
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	461	560	652	694	730	733
County-Other	D	Sabine Run-of-River	170	170	170	170	170	170
Manufacturing	D	Carrizo-Wilcox Aquifer | Van Zandt County	154	154	161	163	153	157
Manufacturing	D	Sabine Run-of-River	54	54	54	54	54	54
Mining	D	Carrizo-Wilcox Aquifer | Van Zandt County	1,006	1,020	1,068	1,099	1,051	1,089
Mining	D	Local Surface Water Supply	847	1,007	1,170	1,337	1,498	1,642
Mining	D	Rhines Lake/Reservoir	1,170	1,170	1,170	1,170	1,170	1,170
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	66	66	68	69	65	67
Livestock	D	Local Surface Water Supply	660	660	660	660	660	660
Van Zandt County / Trinity Basin WUG Total			**3,257**	**3,367**	**3,411**	**3,496**	**3,591**	**3,561**
Bethel Ash WSC*	I	Carrizo-Wilcox Aquifer | Henderson County	34	38	41	44	48	51
Mabank*	C	TRWD Lake/Reservoir System	55	55	56	57	57	58
MacBee SUD*	D	Fork Lake/Reservoir	1,135	1,130	1,122	1,115	1,108	1,101
Myrtle Springs WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	103	103	108	109	108	112
Wills Point	D	Tawakoni Lake/Reservoir	546	602	657	713	770	828
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	878	933	921	952	994	905
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	127	127	127	127	127	127
Livestock	D	Local Surface Water Supply	379	379	379	379	379	379

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Wood County WUG Total			**22,686**	**22,609**	**22,540**	**22,394**	**22,477**	**22,446**
Wood County / Cypress Basin WUG Total			**2,643**	**2,629**	**2,592**	**2,574**	**2,539**	**2,518**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	197	197	191	189	186	180
Sharon WSC	D	Carrizo-Wilcox Aquifer | Upshur County	50	50	50	50	50	50
Sharon WSC	D	Carrizo-Wilcox Aquifer | Wood County	159	159	159	159	159	169
Winnsboro	D	Cypress Springs Lake/Reservoir	637	614	590	565	537	512
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	799	808	801	810	806	806
Livestock	D	Local Surface Water Supply	642	642	642	642	642	642
Livestock	D	Queen City Aquifer | Wood County	34	34	34	34	34	34
Irrigation	D	Carrizo-Wilcox Aquifer | Wood County	125	125	125	125	125	125
Wood County / Sabine Basin WUG Total			**20,043**	**19,980**	**19,948**	**19,820**	**19,938**	**19,928**
Bright Star Salem SUD	D	Carrizo-Wilcox Aquifer | Wood County	343	343	343	343	343	343
Bright Star Salem SUD	D	Fork Lake/Reservoir	320	321	318	323	325	327
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	52	54	56	58	60	62
Fouke WSC	D	Carrizo-Wilcox Aquifer | Wood County	1,011	1,012	1,012	1,012	1,013	1,013
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	501	492	483	477	471	465
Hawkins	D	Carrizo-Wilcox Aquifer | Wood County	890	890	890	890	890	890
Jones WSC	D	Carrizo-Wilcox Aquifer | Wood County	938	940	940	833	942	942
Lake Fork WSC	D	Carrizo-Wilcox Aquifer | Wood County	690	690	690	690	690	690
Liberty Utilities Silverleaf Water*	D	Carrizo-Wilcox Aquifer | Wood County	817	794	778	767	757	748
Mineola	D	Carrizo-Wilcox Aquifer | Wood County	1,743	1,743	1,743	1,743	1,743	1,743

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
New Hope SUD	D	Carrizo-Wilcox Aquifer | Wood County	366	366	366	366	366	366
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	7	8	8	8	8	9
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Wood County	5	5	25	61	111	158
Quitman	D	Fork Lake/Reservoir	1,003	992	981	970	959	948
Ramey WSC	D	Carrizo-Wilcox Aquifer | Wood County	900	900	900	900	900	900
Sharon WSC	D	Carrizo-Wilcox Aquifer | Wood County	471	471	471	471	471	461
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	16	15	15	14	14	14
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	7	7	7	6	6	6
Winnsboro	D	Cypress Springs Lake/Reservoir	671	647	622	593	567	537
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	2	2	2	2	2	2
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	3,658	3,652	3,658	3,649	3,653	3,653
Manufacturing	D	Carrizo-Wilcox Aquifer | Wood County	1,502	1,502	1,502	1,502	1,502	1,502
Mining	D	Queen City Aquifer | Wood County	309	313	317	321	324	328
Livestock	D	Local Surface Water Supply	2,428	2,428	2,428	2,428	2,428	2,428
Livestock	D	Queen City Aquifer | Wood County	129	129	129	129	129	129
Livestock	D	Sabine Run-of-River	29	29	29	29	29	29
Irrigation	D	Carrizo-Wilcox Aquifer | Wood County	22	22	22	22	22	22
Irrigation	D	Queen City Aquifer | Wood County	226	226	226	226	226	226
Irrigation	D	Sabine Run-of-River	987	987	987	987	987	987
Region D WUG Existing Water Supply Total			**657,389**	**653,545**	**655,995**	**666,092**	**659,794**	**659,718**

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Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
WUG Demands on Cash SUD						
Caddo Mills	67	67	67	67	67	67
County-Other, Hunt	276	286	285	269	244	206
Manufacturing, Hunt	17	17	17	17	17	17
Quinlan	240	258	276	292	307	322
Cash SUD	2,967	3,423	3,918	4,339	4,539	4,940
	3,567	**4,051**	**4,563**	**4,984**	**5,174**	**5,552**
Fork Lake/Reservoir	3,694	3,654	3,614	3,573	3,533	3,492
Indirect Reuse	375	331	289	262	249	242
North Texas MWD Lake/Reservoir System	625	523	441	386	351	326
Tawakoni Lake/Reservoir	1,618	1,603	1,588	1,574	1,563	1,550
	6,312	**6,111**	**5,932**	**5,795**	**5,696**	**5,610**
WUG Demands on Cherokee Water Company						
Longview	16,000	16,000	16,000	16,000	16,000	16,000
Steam-Electric Power, Gregg	2,000	2,000	2,000	2,000	2,000	2,094
	18,000	**18,000**	**18,000**	**18,000**	**18,000**	**18,094**
Current Supply						
Cherokee Lake/Reservoir	31,480	31,224	30,960	30,712	30,456	30,200
WUG Demands on Commerce						
County-Other, Delta	74	74	74	74	74	74
Gafford Chapel WSC	3	3	3	3	3	3
Manufacturing, Hunt	67	67	67	67	67	67
North Hunt SUD	147	147	147	147	147	147
Texas A&M University Commerce	1	1	1	1	1	1
Commerce	1,590	1,537	1,497	1,436	1,375	1,314
	1,882	**1,829**	**1,789**	**1,728**	**1,667**	**1,606**
Nacatoch Aquifer	322	322	322	322	322	322
Tawakoni Lake/Reservoir	7,978	7,918	7,858	7,798	7,739	7,679
	8,300	**8,240**	**8,180**	**8,120**	**8,061**	**8,001**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
WUG Demands on City of Emory						
East Tawakoni	246	247	247	248	248	248
South Rains SUD	192	188	187	187	188	188
Emory	732	745	766	772	777	781
	1,170	**1,180**	**1,200**	**1,207**	**1,213**	**1,217**
Fork Lake/Reservoir	1,806	1,786	1,766	1,746	1,727	1,707
Tawakoni Lake/Reservoir	1,153	1,144	1,135	1,127	1,118	1,109
	1,806	**1,786**	**1,766**	**1,746**	**1,727**	**1,707**
WUG Demands on Franklin County WD						
Cypress Springs SUD	3,806	3,640	3,473	3,306	3,140	2,973
Mount Vernon	2,538	2,426	2,315	2,204	2,093	1,982
Winnsboro	1,692	1,618	1,544	1,469	1,395	1,321
	8,036	**7,684**	**7,332**	**6,979**	**6,628**	**6,276**
Cypress Springs Lake/Reservoir	8,036	7,684	7,332	6,980	6,628	6,276
WUG Demands on City of Greenville						
Caddo Mills	186	201	242	309	319	319
County-Other, Hunt	806	806	806	806	806	734
Manufacturing, Hunt	965	1,146	1,319	1,438	1,624	1,624
Shady Grove SUD	174	220	280	357	455	580
Steam-Electric Power, Hunt	373	373	373	373	373	373
Greenville	19,410	21,807	23,203	24,371	25,554	26,751
	21,914	**24,553**	**26,223**	**27,654**	**29,131**	**30,381**
Greenville City Lake/Reservoir	3,318	3,318	3,318	3,318	3,318	3,318
Tawakoni Lake/Reservoir	20,223	20,071	19,920	19,768	19,616	19,465
	23,541	**23,389**	**23,238**	**23,086**	**22,934**	**22,783**
WUG Demands on Lamar County WSD						
410 WSC	218	213	212	211	211	211
Blossom	230	245	245	245	245	245
County-Other, Lamar	280	285	283	281	279	279

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
County-Other, Red River	250	247	247	247	247	247
Manufacturing, Lamar	900	941	976	1,042	1,077	1,077
Red River County WSC	184	184	184	184	184	184
Reno (Lamar)	699	754	814	873	935	935
Lamar County WSD	2,906	2,903	2,889	2,876	2,862	2,849
	5,667	**5,772**	**5,850**	**5,959**	**6,040**	**6,027**
Pat Mayse Lake/Reservoir	13,442	13,442	13,442	13,442	13,442	13,442
WUG Demands on City of Longview						
County-Other, Gregg	50	50	50	50	50	50
Elderville WSC	566	566	566	566	566	566
Gum Springs WSC	2,940	2,940	2,940	2,940	2,940	2,940
Hallsville	887	887	887	887	887	887
Manufacturing, Gregg	1,092	1,092	1,092	1,092	1,092	1,092
Manufacturing, Harrison	5,404	5,404	5,404	5,404	5,404	5,404
Steam-Electric Power, Harrison	6,161	6,161	6,161	6,161	6,161	6,161
White Oak	2,680	2,680	2,680	2,680	2,680	2,680
Longview	23,556	23,914	24,207	24,345	24,480	24,607
	43,336	**43,694**	**43,987**	**44,125**	**44,260**	**44,387**
Big Sandy Creek Lake/Reservoir	2,680	2,680	2,680	2,680	2,680	2,680
Direct Reuse	6,161	6,161	6,161	6,161	6,161	6,161
Sabine Run-of-River	12,670	12,670	12,670	12,670	12,670	12,670
Cherokee Lake/Reservoir	16,000	16,000	16,000	16,000	16,000	16,000
Fork Lake/Reservoir	17,912	17,716	17,521	17,325	17,129	16,933
O' the Pines Lake/Reservoir	20,000	20,000	20,000	20,000	20,000	20,000
	75,423	**75,227**	**75,032**	**74,836**	**74,640**	**74,444**
WUG Demands on City of Marshall						
County-Other, Harrison	323	323	323	323	323	323
Gill WSC	100	100	100	100	100	100
Manufacturing, Harrison	2,000	2,000	2,000	2,000	2,000	2,000
Marshall	4,656	4,544	4,536	4,278	4,028	3,785
	7,079	**6,967**	**6,959**	**6,701**	**6,451**	**6,208**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Cypress Run-of-River	7,240	7,240	7,240	7,240	7,240	7,240
O' the Pines Lake/Reservoir	9,000	9,000	9,000	9,000	9,000	9,000
	16,240	**16,240**	**16,240**	**16,240**	**16,240**	**16,240**
WUG Demands on City of Mount Pleasant						
County-Other, Franklin	14	16	17	17	17	17
County-Other, Titus	687	743	776	810	848	890
Manufacturing, Titus	3,345	3,409	3,472	3,483	3,617	3,651
Tri SUD	2,224	2,439	2,583	2,741	2,882	3,005
Mount Pleasant	4,049	4,145	4,209	4,261	4,319	4,382
	10,319	**10,752**	**11,057**	**11,312**	**11,683**	**11,945**
Bob Sandlin Lake/Reservoir	18,900	18,900	18,900	18,900	18,900	18,900
Cypress Run-of-River	400	400	400	400	400	400
Cypress Springs Lake/Reservoir	2,464	2,356	2,248	2,140	2,032	1,924
Tankersley Lake/Reservoir	1,500	1,500	1,500	1,500	1,500	1,500
	23,264	**23,156**	**23,048**	**22,940**	**22,832**	**22,724**
WUG Demands on Northeast Texas MWD						
Avinger	302	302	302	302	302	302
County-Other, Cass	697	627	552	484	412	332
County-Other, Marion	169	169	169	169	169	169
Daingerfield	1,582	1,582	1,582	1,582	1,582	1,582
Diana SUD	595	595	595	595	595	595
Harleton WSC	68	68	68	68	68	68
Hughes Springs	656	656	656	656	656	656
Jefferson	1,509	1,509	1,509	1,509	1,509	1,509
Lone Star	747	747	747	747	747	747
Longview	20,000	20,000	20,000	20,000	20,000	20,000
Manufacturing, Camp	42	44	46	48	50	52
Manufacturing, Morris	45,437	45,437	45,437	45,437	45,437	45,437
Marshall	9,000	9,000	9,000	9,000	9,000	9,000
Mims WSC	896	896	896	896	896	896
Ore City	1,504	1,504	1,504	1,504	1,504	1,504

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Pittsburg	841	848	850	857	864	872
Steam-Electric Power, Harrison	18,000	18,000	18,000	18,000	18,000	18,000
Steam-Electric Power, Marion	6,668	6,668	6,668	6,668	6,668	6,668
Steam-Electric Power, Titus	22,300	21,580	20,860	20,140	19,420	18,700
Tryon Road SUD	1,822	1,822	1,822	1,822	1,822	1,822
	132,835	**132,054**	**131,263**	**130,484**	**129,701**	**128,911**
Bob Sandlin Lake/Reservoir	0	0	0	0	0	0
Ellison Creek Lake/Reservoir	22,180	22,180	22,180	22,180	22,180	22,180
Monticello Lake/Reservoir	5,000	4,560	4,120	3,680	3,240	2,800
O' the Pines Lake/Reservoir	159,000	157,500	156,000	154,500	153,000	151,500
Welsh Lake/Reservoir	2,900	2,620	2,340	2,060	1,780	1,500
	189,080	**186,860**	**184,640**	**182,420**	**180,200**	**177,980**
WUG Demands on City of Paris						
Lamar County WSD	13,442	13,442	13,442	13,442	13,442	13,442
Manufacturing, Lamar	5,340	5,580	5,762	5,780	5,797	5,815
Steam-Electric Power, Lamar	8,961	8,961	8,961	8,961	8,961	8,961
Paris	3,698	3,687	3,671	3,653	3,636	3,618
	31,441	**31,670**	**31,836**	**31,836**	**31,836**	**31,836**
Crook Lake/Reservoir	1,592	1,592	1,592	1,592	1,592	1,592
Pat Mayse Lake/Reservoir	30,244	30,244	30,244	30,244	30,244	30,244
	31,836	**31,836**	**31,836**	**31,836**	**31,836**	**31,836**
WUG Demands on Riverbend WRD/Texarkana						
#REF!	0	0	0	0	0	0
County-Other, Bowie	0	0	0	0	0	0
County-Other, Red River	0	0	0	0	0	0
De Kalb	0	0	0	0	0	0
Hooks	0	0	0	0	0	0
Macedonia Eylau MUD 1	0	0	0	0	0	0
Manufacturing, Bowie	0	0	0	0	0	0
Manufacturing, Cass	120,000	120,000	120,000	120,000	120,000	120,000
Maud	0	0	0	0	0	0

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Nash	0	0	0	0	0	0
New Boston	0	0	0	0	0	0
Red River County WSC	0	0	0	0	0	0
Redwater	0	0	0	0	0	0
Texarkana	0	0	0	0	0	0
Wake Village	0	0	0	0	0	0
Riverbend Water Resources District	380	375	371	365	359	353
Atlanta	2,328	2,328	2,328	2,328	2,328	2,328
County-Other, Cass	44	44	44	44	44	44
Queen City	240	230	223	218	214	213
Burns Redbank WSC	0	0	0	0	0	0
	122,992	**122,977**	**122,966**	**122,955**	**122,945**	**122,938**
Caney Creek Lake/Reservoir	792	792	792	792	792	792
Elliot Creek Lake/Reservoir	1,318	1,318	1,318	1,318	1,318	1,318
Wright Patman Lake/Reservoir	122,612	122,602	122,595	122,590	122,586	122,585
	124,722	**124,712**	**124,705**	**124,700**	**124,696**	**124,695**
WUG Demands on Sabine River Authority						
Bright Star Salem SUD	752	744	736	728	719	711
Cash SUD	5,289	5,237	5,185	5,132	5,081	5,028
Combined Consumers SUD	2,006	1,984	1,962	1,940	1,918	1,897
Commerce	7,978	7,918	7,858	7,798	7,739	7,679
Edgewood	752	744	736	728	719	711
Emory	2,959	2,930	2,901	2,873	2,845	2,816
Greenville	20,223	20,071	19,920	19,768	19,616	19,465
Irrigation, Van Zandt	165	163	161	159	158	156
Kilgore	6,019	5,954	5,888	5,822	5,756	5,690
Longview	17,912	17,716	17,521	17,325	17,129	16,933
MacBee SUD	2,006	1,984	1,962	1,940	1,918	1,897
Manufacturing, Harrison	3,135	3,100	3,066	3,032	2,998	2,963
Point	414	409	406	402	398	395
Quitman	1,003	992	981	970	959	948
South Tawakoni WSC	1,505	1,488	1,472	1,455	1,439	1,422

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
West Tawakoni	1,064	1,056	1,048	1,040	1,032	1,024
Wills Point	2,128	2,112	2,097	2,081	2,065	2,049
	75,310	**74,602**	**73,900**	**73,193**	**72,489**	**71,784**
Fork Lake/Reservoir	168,966	167,119	165,272	163,424	161,577	159,730
Sabine Run-of-River	129,961	129,961	129,961	129,961	129,961	129,961
Tawakoni Lake/Reservoir	226,239	224,543	222,847	221,152	219,456	217,760
Toledo Bend Lake/Reservoir	941,900	941,583	941,230	940,949	940,632	940,315
	1,467,066	**1,463,206**	**1,459,310**	**1,455,486**	**1,451,626**	**1,447,766**
WUG Demands on Sulphur River MWD						
Cooper	767	749	749	749	749	749
Sulphur Springs	12,971	12,662	12,336	12,009	11,682	11,355
	13,738	**13,411**	**13,085**	**12,758**	**12,431**	**12,104**
Chapman/Cooper Lake/Reservoir Non-System Portion	13,738	13,411	13,085	12,758	12,431	12,104
WUG Demands on Sulphur Springs						
Brashear WSC	155	163	170	181	192	192
Brinker WSC	77	77	77	77	77	77
County-Other, Hopkins	83	79	24	0	0	0
Gafford Chapel WSC	111	115	121	128	135	135
Livestock, Hopkins	1,551	1,720	1,730	1,914	1,996	1,996
Manufacturing, Hopkins	1,830	1,915	1,987	2,126	2,275	2,275
Manufacturing, Hunt	50	50	50	50	50	50
Martin Springs WSC	223	223	223	223	223	223
Mining, Hopkins	68	74	81	88	96	96
North Hopkins WSC	921	921	921	921	921	921
Shady Grove No 2 WSC	112	118	123	131	138	138
Sulphur Springs	3,440	3,497	3,590	3,646	3,701	3,757
	8,621	**8,952**	**9,097**	**9,485**	**9,804**	**9,860**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Chapman/Cooper Lake/Reservoir Non-System Portion	12,971	12,662	12,336	12,009	11,682	11,355
Sulphur Run-of-River	0	0	0	0	0	0
Sulphur Springs Lake/Reservoir	902	980	1,057	1,133	1,210	1,287
	13,873	**13,642**	**13,393**	**13,142**	**12,892**	**12,642**
WUG Demands on Titus County FWD #1						
Mount Pleasant	18,900	18,900	18,900	18,900	18,900	18,900
Steam-Electric Power, Titus	7,300	6,760	6,220	5,680	5,140	4,600
	26,200	**25,660**	**25,120**	**24,580**	**24,040**	**23,500**
Bob Sandlin Lake/Reservoir	26,200	25,660	25,120	24,580	24,040	23,500

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
WUG Demands on Cash SUD						
Caddo Mills	67	67	67	67	67	67
County-Other, Hunt	276	286	285	269	244	206
Manufacturing, Hunt	17	17	17	17	17	17
Quinlan	605	605	605	605	605	605
Cash SUD	2,967	3,423	3,918	4,339	4,539	4,940
	3,932	**4,398**	**4,892**	**5,297**	**5,472**	**5,835**
Fork Lake/Reservoir	3,694	3,654	3,614	3,573	3,533	3,492
Indirect Reuse	375	331	289	262	249	242
North Texas MWD Lake/Reservoir System	625	523	441	386	351	326
Tawakoni Lake/Reservoir	1,618	1,603	1,588	1,574	1,563	1,550
	6,312	**6,111**	**5,932**	**5,795**	**5,696**	**5,610**
WUG Demands on Cherokee Water Company						
Longview	16,000	16,000	16,000	16,000	16,000	16,000
Steam-Electric Power, Gregg	2,000	2,000	2,000	2,000	2,000	2,094
	18,000	**18,000**	**18,000**	**18,000**	**18,000**	**18,094**
Current Supply						
Cherokee Lake/Reservoir	31,480	31,224	30,960	30,712	30,456	30,200
WUG Demands on Commerce						
County-Other, Delta	74	74	74	74	74	74
Gafford Chapel WSC	3	3	3	3	3	3
Manufacturing, Hunt	67	67	67	67	67	67
North Hunt SUD	663	663	663	663	663	663
Texas A&M University Commerce	1	1	1	1	1	1
Commerce	1,590	1,537	1,497	1,436	1,375	1,314
	2,398	**2,345**	**2,305**	**2,244**	**2,183**	**2,122**
Nacatoch Aquifer	322	322	322	322	322	322
Tawakoni Lake/Reservoir	7,978	7,918	7,858	7,798	7,739	7,679
	8,300	**8,240**	**8,180**	**8,120**	**8,061**	**8,001**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
WUG Demands on City of Emory						
East Tawakoni	773	773	773	773	773	773
South Rains SUD	192	188	187	187	188	188
Emory	732	745	766	772	777	781
	1,697	**1,706**	**1,726**	**1,732**	**1,738**	**1,742**
Fork Lake/Reservoir	1,806	1,786	1,766	1,746	1,727	1,707
Tawakoni Lake/Reservoir	1,153	1,144	1,135	1,127	1,118	1,109
	1,806	**1,786**	**1,766**	**1,746**	**1,727**	**1,707**
WUG Demands on Franklin County WD						
Cypress Springs SUD	4,500	4,500	4,500	4,500	4,500	4,500
Mount Vernon	3,000	3,000	3,000	3,000	3,000	3,000
Winnsboro	2,000	2,000	2,000	2,000	2,000	2,000
	9,500	**9,500**	**9,500**	**9,500**	**9,500**	**9,500**
Cypress Springs Lake/Reservoir	8,036	7,684	7,332	6,980	6,628	6,276
WUG Demands on City of Greenville						
Caddo Mills	1,129	1,129	1,129	1,129	1,129	1,129
County-Other, Hunt	806	806	806	806	806	806
Manufacturing, Hunt	797	965	1,146	1,319	1,438	1,624
Shady Grove SUD	1,129	1,129	1,129	1,129	1,129	1,129
Steam-Electric Power, Hunt	373	373	373	373	373	373
Greenville	19,410	21,807	23,203	24,371	25,554	26,751
	23,644	**26,209**	**27,786**	**29,127**	**30,429**	**31,812**
Greenville City Lake/Reservoir	3,318	3,318	3,318	3,318	3,318	3,318
Tawakoni Lake/Reservoir	20,223	20,071	19,920	19,768	19,616	19,465
	23,541	**23,389**	**23,238**	**23,086**	**22,934**	**22,783**
WUG Demands on Lamar County WSD						
410 WSC	218	213	212	211	211	211
Blossom	230	245	245	245	245	245
County-Other, Lamar	280	285	283	281	279	279

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
County-Other, Red River	250	247	247	247	247	247
Manufacturing, Lamar	900	941	976	1,042	1,077	1,077
Red River County WSC	323	323	323	323	323	323
Reno (Lamar)	699	754	814	873	935	935
Lamar County WSD	2,906	2,903	2,889	2,876	2,862	2,849
	5,806	**5,911**	**5,989**	**6,098**	**6,179**	**6,166**
Pat Mayse Lake/Reservoir	13,442	13,442	13,442	13,442	13,442	13,442
WUG Demands on City of Longview						
County-Other, Gregg	50	50	50	50	50	50
Elderville WSC	1,473	1,473	1,473	1,473	1,473	1,473
Gum Springs WSC	2,940	2,940	2,940	2,940	2,940	2,940
Hallsville	1,105	1,105	1,105	1,105	1,105	1,105
Manufacturing, Gregg	1,092	1,094	1,094	1,094	1,094	1,094
Manufacturing, Harrison	8,344	8,344	8,344	8,344	8,344	8,344
Steam-Electric Power, Harrison	6,161	6,161	6,161	6,161	6,161	6,161
White Oak	5,600	5,600	5,600	5,600	5,600	5,600
Longview	23,556	23,914	24,207	24,345	24,480	24,607
	50,321	**50,681**	**50,974**	**51,112**	**51,247**	**51,374**
Big Sandy Creek Lake/Reservoir	2,680	2,680	2,680	2,680	2,680	2,680
Direct Reuse	6,161	6,161	6,161	6,161	6,161	6,161
Sabine Run-of-River	12,670	12,670	12,670	12,670	12,670	12,670
Cherokee Lake/Reservoir	16,000	16,000	16,000	16,000	16,000	16,000
Fork Lake/Reservoir	17,912	17,716	17,521	17,325	17,129	16,933
O' the Pines Lake/Reservoir	20,000	20,000	20,000	20,000	20,000	20,000
	75,423	**75,227**	**75,032**	**74,836**	**74,640**	**74,444**
WUG Demands on City of Marshall						
County-Other, Harrison	323	323	323	323	323	323
Gill WSC	100	100	100	100	100	100
Manufacturing, Harrison	2,000	2,000	2,000	2,000	2,000	2,000
Marshall	4,656	4,544	4,536	4,278	4,028	3,785
	7,079	**6,967**	**6,959**	**6,701**	**6,451**	**6,208**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Cypress Run-of-River	7,240	7,240	7,240	7,240	7,240	7,240
O' the Pines Lake/Reservoir	9,000	9,000	9,000	9,000	9,000	9,000
	16,240	**16,240**	**16,240**	**16,240**	**16,240**	**16,240**
WUG Demands on City of Mount Pleasant						
County-Other, Franklin	14	16	17	17	17	17
County-Other, Titus	687	743	776	810	848	890
Manufacturing, Titus	3,345	3,409	3,472	3,483	3,617	3,651
Tri SUD	2,224	2,439	2,583	2,741	2,882	3,005
Mount Pleasant	4,049	4,145	4,209	4,261	4,319	4,382
	10,319	**10,752**	**11,057**	**11,312**	**11,683**	**11,945**
Bob Sandlin Lake/Reservoir	18,900	18,900	18,900	18,900	18,900	18,900
Cypress Run-of-River	400	400	400	400	400	400
Cypress Springs Lake/Reservoir	2,464	2,356	2,248	2,140	2,032	1,924
Tankersley Lake/Reservoir	1,500	1,500	1,500	1,500	1,500	1,500
	23,264	**23,156**	**23,048**	**22,940**	**22,832**	**22,724**
WUG Demands on Northeast Texas MWD						
Avinger	302	302	302	302	302	302
County-Other, Cass	1,406	1,406	1,406	1,406	1,406	1,406
County-Other, Marion	828	828	828	828	828	828
Daingerfield	7,375	7,375	7,375	7,375	7,375	7,375
Diana SUD	739	739	739	739	739	739
Harleton WSC	315	315	315	315	315	315
Hughes Springs	3,058	3,058	3,058	3,058	3,058	3,058
Jefferson	7,031	7,031	7,031	7,031	7,031	7,031
Lone Star	3,482	3,482	3,482	3,482	3,482	3,482
Longview	20,000	20,000	20,000	20,000	20,000	20,000
Manufacturing, Camp	100	100	100	100	100	100
Manufacturing, Morris	45,437	45,437	45,437	45,437	45,437	45,437
Marshall	9,000	9,000	9,000	9,000	9,000	9,000
Mims WSC	896	896	896	896	896	896
Ore City	1,869	1,869	1,869	1,869	1,869	1,869

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Pittsburg	12,588	12,588	12,588	12,588	12,588	12,588
Steam-Electric Power, Harrison	18,000	18,000	18,000	18,000	18,000	18,000
Steam-Electric Power, Marion	6,668	6,668	6,668	6,668	6,668	6,668
Steam-Electric Power, Titus	22,300	21,580	20,860	20,140	19,420	18,700
Tryon Road SUD	2,263	2,263	2,263	2,263	2,263	2,263
	163,657	**162,937**	**162,217**	**161,497**	**160,777**	**160,057**
Bob Sandlin Lake/Reservoir	0	0	0	0	0	0
Ellison Creek Lake/Reservoir	22,180	22,180	22,180	22,180	22,180	22,180
Monticello Lake/Reservoir	5,000	4,560	4,120	3,680	3,240	2,800
O' the Pines Lake/Reservoir	159,000	157,500	156,000	154,500	153,000	151,500
Welsh Lake/Reservoir	2,900	2,620	2,340	2,060	1,780	1,500
	189,080	**186,860**	**184,640**	**182,420**	**180,200**	**177,980**
WUG Demands on City of Paris						
Lamar County WSD	13,442	13,442	13,442	13,442	13,442	13,442
Manufacturing, Lamar	5,340	5,580	5,787	6,183	6,386	6,386
Steam-Electric Power, Lamar	8,961	8,961	8,961	8,961	8,961	8,961
Paris	3,698	3,687	3,671	3,653	3,636	3,618
	31,441	**31,670**	**31,861**	**32,239**	**32,425**	**32,407**
Crook Lake/Reservoir	1,592	1,592	1,592	1,592	1,592	1,592
Pat Mayse Lake/Reservoir	30,244	30,244	30,244	30,244	30,244	30,244
	31,836	**31,836**	**31,836**	**31,836**	**31,836**	**31,836**
WUG Demands on Riverbend WRD/Texarkana						
Central Bowie County WSC	110	110	110	110	110	110
County-Other, Bowie	519	541	541	541	541	541
County-Other, Red River	106	108	109	109	109	111
De Kalb	292	289	291	294	298	298
Hooks	278	276	271	269	269	269
Macedonia Eylau MUD 1	552	552	552	552	552	552
Manufacturing, Bowie	33,604	59,928	66,509	74,735	82,961	100,813
Manufacturing, Cass	120,000	120,000	120,000	120,000	120,000	120,000
Maud	226	241	238	237	237	237

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Nash	368	368	368	368	368	368
New Boston	1,680	1,680	1,680	1,680	1,680	1,680
Red River County WSC	216	216	216	216	216	216
Redwater	55	55	55	55	55	55
Texarkana	7,282	7,459	7,706	8,028	8,380	8,380
Wake Village	750	802	861	932	931	931
Riverbend Water Resources District	380	375	371	365	359	353
Atlanta	2,328	2,328	2,328	2,328	2,328	2,328
County-Other, Cass	44	44	44	44	44	44
Queen City	240	230	223	218	214	213
Burns Redbank WSC	201	199	196	194	193	193
	169,231	**195,801**	**202,669**	**211,275**	**219,845**	**237,692**
Caney Creek Lake/Reservoir	792	792	792	792	792	792
Elliot Creek Lake/Reservoir	1,318	1,318	1,318	1,318	1,318	1,318
Wright Patman Lake/Reservoir	122,612	122,602	122,595	122,590	122,586	122,585
	124,722	**124,712**	**124,705**	**124,700**	**124,696**	**124,695**
WUG Demands on Sabine River Authority						
Bright Star Salem SUD	840	840	840	840	840	840
Cash SUD	5,804	5,804	5,804	5,804	5,804	5,804
Combined Consumers SUD	2,240	2,240	2,240	2,240	2,240	2,240
Commerce	8,396	8,396	8,396	8,396	8,396	8,396
Edgewood	840	840	840	840	840	840
Emory	3,229	3,229	3,229	3,229	3,229	3,229
Greenville	21,283	21,283	21,283	21,283	21,283	21,283
Irrigation, Van Zandt	184	184	184	184	184	184
Kilgore	6,721	6,721	6,721	6,721	6,721	6,721
Longview	20,000	20,000	20,000	20,000	20,000	20,000
MacBee SUD	2,240	2,240	2,240	2,240	2,240	2,240
Manufacturing, Harrison	3,500	3,500	3,500	3,500	3,500	3,500
Point	448	448	448	448	448	448
Quitman	1,120	1,120	1,120	1,120	1,120	1,120
South Tawakoni WSC	1,680	1,680	1,680	1,680	1,680	1,680

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
West Tawakoni	1,120	1,120	1,120	1,120	1,120	1,120
Wills Point	2,240	2,240	2,240	2,240	2,240	2,240
	81,885	**81,885**	**81,885**	**81,885**	**81,885**	**81,885**
Fork Lake/Reservoir	168,966	167,119	165,272	163,424	161,577	159,730
Sabine Run-of-River	129,961	129,961	129,961	129,961	129,961	129,961
Tawakoni Lake/Reservoir	226,239	224,543	222,847	221,152	219,456	217,760
Toledo Bend Lake/Reservoir	941,900	941,583	941,230	940,949	940,632	940,315
	1,467,066	**1,463,206**	**1,459,310**	**1,455,486**	**1,451,626**	**1,447,766**
WUG Demands on Sulphur River MWD						
Cooper	1,072	1,072	1,072	1,072	1,072	1,072
Sulphur Springs	13,738	13,411	13,085	12,758	12,431	12,104
	14,810	**14,483**	**14,157**	**13,830**	**13,503**	**13,176**
Chapman/Cooper Lake/Reservoir Non-System Portion	13,738	13,411	13,085	12,758	12,431	12,104
WUG Demands on Sulphur Springs						
Brashear WSC	155	163	170	181	192	192
Brinker WSC	77	77	77	77	77	77
County-Other, Hopkins	83	79	24	0	0	0
Gafford Chapel WSC	111	115	121	128	135	135
Livestock, Hopkins	1,551	1,720	1,730	1,914	1,996	1,996
Manufacturing, Hopkins	1,830	1,915	1,987	2,126	2,275	2,275
Manufacturing, Hunt	50	50	50	50	50	50
Martin Springs WSC	223	223	223	223	223	223
Mining, Hopkins	200	220	240	261	285	310
North Hopkins WSC	921	921	921	921	921	921
Shady Grove No 2 WSC	112	118	123	131	138	138
Sulphur Springs	3,440	3,497	3,590	3,646	3,701	3,757
	8,753	**9,098**	**9,256**	**9,658**	**9,993**	**10,074**

Values in Acre-Feet per Year						
Recipient Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2070**
Chapman/Cooper Lake/Reservoir Non-System Portion	12,971	12,662	12,336	12,009	11,682	11,355
Sulphur Run-of-River	0	0	0	0	0	0
Sulphur Springs Lake/Reservoir	902	980	1,057	1,133	1,210	1,287
	13,873	**13,642**	**13,393**	**13,142**	**12,892**	**12,642**
WUG Demands on Titus County FWD #1						
Mount Pleasant	30,000	30,000	30,000	30,000	30,000	30,000
Steam-Electric Power, Titus	10,000	10,000	10,000	10,000	10,000	10,000
	40,000	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**
Bob Sandlin Lake/Reservoir	26,200	25,660	25,120	24,580	24,040	23,500

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DRAFT DB27 RWP Data - Existing Source Availability Supply Remaining before WMS (volumes in acre-feet/year)

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
854	Big Creek Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
563	Big Sandy Creek Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
879	Blossom Aquifer	D	Bowie	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	21	21	21	21	21	21
884	Blossom Aquifer	D	Bowie	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	180	180	180	180	180	180
880	Blossom Aquifer	D	Lamar	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	323	323	323	323	323	323
882	Blossom Aquifer	D	Lamar	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	71	71	71	71	71	71
881	Blossom Aquifer	D	Red River	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	601	601	601	601	601	601
883	Blossom Aquifer	D	Red River	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	388	388	388	388	388	388
524	Bob Sandlin Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
570	Brandy Branch Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	17,542	17,542	17,542	17,542	17,542	17,542
520	Caddo Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	10,000	10,000	10,000	10,000	10,000	10,000
855	Caney Creek Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
907	Carrizo-Wilcox Aquifer	D	Bowie	Sulphur		Fresh	Groundwater	Groundwater	MAG	Y	No	5,060	5,001	4,955	4,903	4,842	4,795
914	Carrizo-Wilcox Aquifer	D	Camp	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	985	976	968	960	951	951
915	Carrizo-Wilcox Aquifer	D	Cass	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	10,477	10,477	10,477	10,489	10,489	10,489
908	Carrizo-Wilcox Aquifer	D	Cass	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,705	1,706	1,708	1,710	1,710	1,711
916	Carrizo-Wilcox Aquifer	D	Franklin	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	4,673	4,668	4,668	4,668	4,668	4,668
909	Carrizo-Wilcox Aquifer	D	Franklin	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	2,233	2,223	2,223	2,223	2,223	2,223
917	Carrizo-Wilcox Aquifer	D	Gregg	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	312	299	282	258	241	241
925	Carrizo-Wilcox Aquifer	D	Gregg	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	3,684	3,621	3,630	3,617	3,562	3,530
918	Carrizo-Wilcox Aquifer	D	Harrison	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	1,439	1,431	1,422	1,415	1,405	1,405
926	Carrizo-Wilcox Aquifer	D	Harrison	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	2,299	2,232	2,183	2,094	2,017	1,990
919	Carrizo-Wilcox Aquifer	D	Hopkins	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	104	104	105	105	105	105

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
927	Carrizo-Wilcox Aquifer	D	Hopkins	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	2,671	2,670	2,669	2,671	2,674	2,674
910	Carrizo-Wilcox Aquifer	D	Hopkins	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,162	1,162	1,162	1,163	1,163	1,163
920	Carrizo-Wilcox Aquifer	D	Marion	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	741	738	736	734	732	732
921	Carrizo-Wilcox Aquifer	D	Morris	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	1,125	1,125	1,125	1,125	1,125	1,125
911	Carrizo-Wilcox Aquifer	D	Morris	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	472	472	472	472	472	472
928	Carrizo-Wilcox Aquifer	D	Rains	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	461	458	460	463	463	463
912	Carrizo-Wilcox Aquifer	D	Red River	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	0	0	0	0	0	0
929	Carrizo-Wilcox Aquifer	D	Smith	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	2,827	2,704	2,673	2,673	2,673	2,673
922	Carrizo-Wilcox Aquifer	D	Titus	Cypress		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	4,336	4,194	4,186	3,906	4,089	4,089
913	Carrizo-Wilcox Aquifer	D	Titus	Sulphur		Fresh	Groundwater	Groundwater	MAG	Y	No	1,252	1,230	1,207	1,184	1,184	1,184
923	Carrizo-Wilcox Aquifer	D	Upshur	Cypress		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,410	1,391	1,390	1,408	1,433	1,459
930	Carrizo-Wilcox Aquifer	D	Upshur	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	263	263	263	263	263	263
933	Carrizo-Wilcox Aquifer	D	Van Zandt	Neches		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,520	1,520	1,520	1,520	1,520	1,520
931	Carrizo-Wilcox Aquifer	D	Van Zandt	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,666	1,666	1,665	1,667	1,665	1,667
934	Carrizo-Wilcox Aquifer	D	Van Zandt	Trinity		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	949	892	848	793	813	858
924	Carrizo-Wilcox Aquifer	D	Wood	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	610	610	610	610	610	610
932	Carrizo-Wilcox Aquifer	D	Wood	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	2,920	2,917	2,898	2,862	2,812	2,765
851	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	227	222	216	211	206	201
557	Crook Lake/Reservoir	D	Reservoir	Red		Fresh	Surface Water	Reservoir	N/A	Y	No	3,408	3,208	3,008	2,808	2,608	2,408
89	Cypress Livestock Local Supply	D	Camp	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
92	Cypress Livestock Local Supply	D	Cass	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
165	Cypress Livestock Local Supply	D	Franklin	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
202	Cypress Livestock Local Supply	D	Harrison	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
217	Cypress Livestock Local Supply	D	Hopkins	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
619	Cypress Livestock Local Supply	D	Morris	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
698	Cypress Livestock Local Supply	D	Upshur	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
729	Cypress Livestock Local Supply	D	Wood	Cypress		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
2020	Cypress Run-of-River	D	Camp	Cypress		Fresh	Surface Water	Run-of-River	N/A	Y	No	270	270	270	270	270	270
2023	Cypress Run-of-River	D	Cass	Cypress	Water Right 4587 4597 4598 4599	Fresh	Surface Water	Run-of-River	N/A	Y	No	167	167	167	167	167	167
2024	Cypress Run-of-River	D	Gregg	Cypress	Water Right 4608 5608	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
292	Cypress Run-of-River	D	Harrison	Cypress		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
398	Cypress Run-of-River	D	Marion	Cypress		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2025	Cypress Run-of-River	D	Morris	Cypress	Water Right 4577 4579	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2027	Cypress Run-of-River	D	Titus	Cypress	Water Right 4567 4568 4569 4570 4572	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2026	Cypress Run-of-River	D	Upshur	Cypress	Water Right 4584 4585 4604	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
526	Cypress Springs Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
819	Direct Reuse	D	Gregg	Sabine	Longview/ Steam-Electric, Harrison	Fresh	Reuse	Direct Non-Potable Reuse	N/A	Y	No	0	0	0	0	0	0
2038	Direct Reuse	D	Lamar	Red	Manufacturing, Lamar/Manufacturing, Lamar	Fresh	Reuse	Direct Non-Potable Reuse	N/A	Y	No	0	0	0	0	0	0
246	Direct Reuse	D	Morris	Cypress	Manufacturing, Morris/Manufacturing, Morris	Fresh	Reuse	Direct Non-Potable Reuse	N/A	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
2039	Direct Reuse	D	Titus	Cypress	Manufacturing, Titus/Manufacturing, Titus	Fresh	Reuse	Direct Non-Potable Reuse	N/A	Y	No	0	0	0	0	0	0
562	Edgewood City Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
856	Elliot Creek Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
522	Ellison Creek Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	10,640	10,640	10,640	10,640	10,640	10,640
564	Fork Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
519	Gilmer Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	120	120	120	120	120	120
565	Gladewater Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	2,672	2,076	1,480	884	288	0
2021	Grays Creek Run-of-River	D	Harrison	Cypress	Water Right 4254	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
569	Greenville City Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	102	102	102	102	102	102
3143	Indirect Reuse	D	Van Zandt	Sabine	NTMWD Sabine Creek WWTP/Lake Tawakoni	Fresh	Reuse	Indirect Potable Reuse	N/A	Y	No	0	0	0	0	0	0
528	Johnson Creek Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
850	Langford Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
566	Loma Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	130	130	130	130	130	130
568	Mill Creek Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
525	Monticello Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
1345	Nacatoch Aquifer	D	Bowie	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,903	1,882	1,901	1,912	1,912	1,912
1347	Nacatoch Aquifer	D	Bowie	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,942	1,942	1,942	1,942	1,942	1,942
1348	Nacatoch Aquifer	D	Delta	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	254	243	238	238	226	226
1349	Nacatoch Aquifer	D	Franklin	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	30	30	30	30	30	30
1354	Nacatoch Aquifer	D	Hopkins	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	171	171	171	171	171	171
1350	Nacatoch Aquifer	D	Hopkins	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
1355	Nacatoch Aquifer	D	Hunt	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	2,749	2,749	2,749	2,749	2,749	2,749
1351	Nacatoch Aquifer	D	Hunt	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	0	0	21	376	855	1,560
1352	Nacatoch Aquifer	D	Lamar	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	110	110	110	110	110	110
1356	Nacatoch Aquifer	D	Rains	Sabine		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1	1	1	1	1	1
1346	Nacatoch Aquifer	D	Red River	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	50	50	50	50	50	50
1353	Nacatoch Aquifer	D	Red River	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	1,450	1,450	1,451	1,451	1,451	1,451
703	Neches Livestock Local Supply	D	Van Zandt	Neches		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
2589	Neches Run-of-River	D	Van Zandt	Neches	Multiple/ Multiple Uses Primarily Irrigation	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
521	O' the Pines Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
556	Pat Mayse Lake/Reservoir	D	Reservoir	Red		Fresh	Surface Water	Reservoir	N/A	Y	No	20,246	20,008	19,770	19,532	19,294	19,056
2985	Peacock Site 1A Tailings Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	877	874	871	867	864	861
1439	Queen City Aquifer	D	Camp	Cypress		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	810	810	810	810	810	810
1440	Queen City Aquifer	D	Cass	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	15,380	15,370	15,361	15,339	15,330	15,317
1438	Queen City Aquifer	D	Cass	Sulphur		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	414	401	388	377	364	351
1441	Queen City Aquifer	D	Gregg	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	456	456	456	456	456	456
1447	Queen City Aquifer	D	Gregg	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	2,056	2,056	2,056	2,056	2,056	2,055
1442	Queen City Aquifer	D	Harrison	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	2,956	2,963	2,963	2,963	2,963	2,963
1448	Queen City Aquifer	D	Harrison	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	245	245	245	245	245	245
1443	Queen City Aquifer	D	Marion	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	5,405	5,399	5,393	5,387	5,381	5,365
1444	Queen City Aquifer	D	Morris	Cypress		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	35	35	35	35	35	35
1449	Queen City Aquifer	D	Smith	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	11,459	11,459	11,459	11,459	11,459	11,459
1503	Queen City Aquifer	D	Titus	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
1445	Queen City Aquifer	D	Upshur	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	5,227	4,869	4,844	4,954	5,059	5,151
1450	Queen City Aquifer	D	Upshur	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	5,554	5,528	5,552	5,579	5,598	5,598
1452	Queen City Aquifer	D	Van Zandt	Neches		Fresh	Groundwater	Groundwater	MAG	Y	No	2,176	2,176	2,176	2,176	2,176	2,176
1446	Queen City Aquifer	D	Wood	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	745	745	745	745	745	745
1451	Queen City Aquifer	D	Wood	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	5,067	5,063	5,059	5,055	5,052	5,048
69	Red Livestock Local Supply	D	Bowie	Red		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
582	Red Livestock Local Supply	D	Lamar	Red		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
648	Red Livestock Local Supply	D	Red River	Red		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
337	Red Run-of-River	D	Bowie	Red		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
394	Red Run-of-River	D	Lamar	Red		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
414	Red Run-of-River	D	Red River	Red		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2588	Rhines Lake/Reservoir	D	Reservoir	Neches	Single/Mining	Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
2986	River Crest Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	5,300	5,300	5,300	5,300	5,300	5,300
166	Sabine Livestock Local Supply	D	Franklin	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	1	1	1	1	1	1
218	Sabine Livestock Local Supply	D	Hopkins	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
223	Sabine Livestock Local Supply	D	Hunt	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
644	Sabine Livestock Local Supply	D	Rains	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
699	Sabine Livestock Local Supply	D	Upshur	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
704	Sabine Livestock Local Supply	D	Van Zandt	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
730	Sabine Livestock Local Supply	D	Wood	Sabine		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	29	29	29	29	29	29
764	Sabine Other Local Supply	D	Gregg	Sabine		Fresh	Surface Water	Other Local Supply	N/A	Y	No	2,050	2,050	2,050	2,050	2,050	2,050
790	Sabine Other Local Supply	D	Van Zandt	Sabine		Fresh	Surface Water	Other Local Supply	N/A	Y	No	0	0	0	0	0	0
369	Sabine Run-of-River	D	Gregg	Sabine		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
293	Sabine Run-of-River	D	Harrison	Sabine		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2034	Sabine Run-of-River	D	Hopkins	Sabine	Water Right 4699 4702 4703 5217	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
384	Sabine Run-of-River	D	Hunt	Sabine		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2035	Sabine Run-of-River	D	Rains	Sabine	Water Right 4681 4700	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
423	Sabine Run-of-River	D	Smith	Sabine		Fresh	Surface Water	Run-of-River	N/A	Y	No	889	889	889	889	889	889
2036	Sabine Run-of-River	D	Upshur	Sabine	Water Right 3899 3969 4763	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2037	Sabine Run-of-River	D	Van Zandt	Sabine	Water Right 4671 4673 4675 4676 4679 4682 4684 4688 4689	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
474	Sabine Run-of-River	D	Wood	Sabine		Fresh	Surface Water	Run-of-River	N/A	Y	No	9	9	9	9	9	9
2935	Sparta Aquifer	D	Cass	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
2936	Sparta Aquifer	D	Marion	Cypress		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1583	Sparta Aquifer	D	Smith	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1588	Sparta Aquifer	D	Upshur	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1590	Sparta Aquifer	D	Wood	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
70	Sulphur Livestock Local Supply	D	Bowie	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
2040	Sulphur Livestock Local Supply	D	Cass	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
132	Sulphur Livestock Local Supply	D	Delta	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
167	Sulphur Livestock Local Supply	D	Franklin	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
219	Sulphur Livestock Local Supply	D	Hopkins	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
224	Sulphur Livestock Local Supply	D	Hunt	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
583	Sulphur Livestock Local Supply	D	Lamar	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
2041	Sulphur Livestock Local Supply	D	Morris	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
649	Sulphur Livestock Local Supply	D	Red River	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
691	Sulphur Livestock Local Supply	D	Titus	Sulphur		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
755	Sulphur Other Local Supply	D	Delta	Sulphur		Fresh	Surface Water	Other Local Supply	N/A	Y	No	25	26	26	26	26	26

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
2028	Sulphur Run-of-River	D	Bowie	Sulphur	Water Right 4829 4830 4831 4832 4833 4834 4835 4837	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
353	Sulphur Run-of-River	D	Delta	Sulphur		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2029	Sulphur Run-of-River	D	Franklin	Sulphur	Water Right 4803 4816 4817 4818 5392	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2030	Sulphur Run-of-River	D	Hopkins	Sulphur	Water Right 4812 4813 4814 5150	Fresh	Surface Water	Run-of-River	N/A	Y	No	30	30	30	30	30	30
2031	Sulphur Run-of-River	D	Hunt	Sulphur	Water Right 4795 4796	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2032	Sulphur Run-of-River	D	Lamar	Sulphur	Water Right 5200	Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
294	Sulphur Run-of-River	D	Red River	Sulphur		Fresh	Surface Water	Run-of-River	N/A	Y	No	0	0	0	0	0	0
2033	Sulphur Run-of-River	D	Titus	Sulphur	Water Right 4805 4820 4821 4822 4823 4824 4825 4826 5285 5510 5562	Fresh	Surface Water	Run-of-River	N/A	Y	No	8	8	8	8	8	8
853	Sulphur Springs Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	6,828	6,750	6,673	6,597	6,520	6,443
527	Tankersley Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
567	Tawakoni Lake/Reservoir	D	Reservoir	Sabine		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
1616	Trinity Aquifer	D	Delta	Sulphur	Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1620	Trinity Aquifer	D	Hunt	Sabine	Glen Rose|Paluxy|Travis Peak|Twin Mountains	Fresh	Groundwater	Groundwater	Non-MAG	Y	No	213	213	213	213	213	213

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
1617	Trinity Aquifer	D	Hunt	Sulphur	Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1621	Trinity Aquifer	D	Hunt	Trinity	Glen Rose|Paluxy|Travis Peak|Twin Mountains	Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1614	Trinity Aquifer	D	Lamar	Red	Antlers|Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1618	Trinity Aquifer	D	Lamar	Sulphur	Antlers|Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	MAG	Y	No	6	6	6	6	6	6
1615	Trinity Aquifer	D	Red River	Red	Antlers|Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	MAG	Y	No	29	29	29	29	29	29
1619	Trinity Aquifer	D	Red River	Sulphur	Glen Rose|Paluxy|Travis Peak	Fresh	Groundwater	Groundwater	Non-MAG	Y	No	173	173	173	173	173	173
225	Trinity Livestock Local Supply	D	Hunt	Trinity		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
705	Trinity Livestock Local Supply	D	Van Zandt	Trinity		Fresh	Surface Water	Livestock Local Supply	N/A	Y	No	0	0	0	0	0	0
849	Turkey Creek Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
523	Welsh Lake/Reservoir	D	Reservoir	Cypress		Fresh	Surface Water	Reservoir	N/A	Y	No	0	0	0	0	0	0
1713	Woodbine Aquifer	D	Hunt	Sabine		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1712	Woodbine Aquifer	D	Hunt	Sulphur		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0

SourceId	Source Name	Source Region	Source County	Source Basin	Source Additional Details	Salinity Type	Source Type	Source Subtype	Groundwater Modeling Type	Reservoir availability based on firm yield?	Source Overallocated in at least one decade?	Source Remaining Availability Before WMS 2030	Source Remaining Availability Before WMS 2040	Source Remaining Availability Before WMS 2050	Source Remaining Availability Before WMS 2060	Source Remaining Availability Before WMS 2070	Source Remaining Availability Before WMS 2080
1714	Woodbine Aquifer	D	Hunt	Trinity		Fresh	Groundwater	Groundwater	MAG	Y	No	206	211	216	226	230	230
1710	Woodbine Aquifer	D	Lamar	Red		Fresh	Groundwater	Groundwater	Non-MAG	Y	No	22	22	22	22	22	22
1719	Woodbine Aquifer	D	Lamar	Sulphur		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
1711	Woodbine Aquifer	D	Red River	Red		Fresh	Groundwater	Groundwater	MAG	Y	No	0	0	0	0	0	0
852	Wright Patman Lake/Reservoir	D	Reservoir	Sulphur		Fresh	Surface Water	Reservoir	N/A	Y	No	141,618	132,564	123,507	114,448	105,388	96,325

APPENDIX C4

IDENTIFICATION OF WATER NEEDS

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APPENDIX C4

TABLE OF CONTENTS

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DRAFT Region D Water User Group (WUG) Needs or Surplus

WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Needs/Surplus report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Surplus volumes are shown as positive values, and needs are shown as negative values in parentheses.

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Burns Redbank WSC	Bowie	Red	(260)	(274)	(291)	(310)	(329)	(349)
Central Bowie County WSC	Bowie	Red	(118)	(118)	(119)	(120)	(121)	(122)
De Kalb	Bowie	Red	(48)	(48)	(47)	(47)	(46)	(45)
Hooks	Bowie	Red	(317)	(313)	(310)	(305)	(301)	(296)
New Boston	Bowie	Red	(403)	(399)	(396)	(389)	(383)	(377)
Riverbend Water Resources District	Bowie	Red	(211)	(209)	(206)	(203)	(200)	(196)
Texarkana	Bowie	Red	(840)	(832)	(825)	(813)	(802)	(790)
County-Other	Bowie	Red	660	694	686	694	712	732
Manufacturing	Bowie	Red	(289)	(300)	(311)	(323)	(335)	(348)
Mining	Bowie	Red	0	0	0	0	0	0
Livestock	Bowie	Red	305	350	413	467	489	489
Irrigation	Bowie	Red	(2,184)	(2,184)	(2,184)	(2,184)	(2,184)	(2,184)
Central Bowie County WSC	Bowie	Sulphur	(651)	(651)	(657)	(663)	(669)	(675)
De Kalb	Bowie	Sulphur	(218)	(215)	(214)	(210)	(208)	(205)
Macedonia Eylau MUD 1	Bowie	Sulphur	(710)	(705)	(698)	(688)	(677)	(666)
Maud	Bowie	Sulphur	(164)	(162)	(161)	(158)	(156)	(153)
Nash	Bowie	Sulphur	(314)	(309)	(306)	(302)	(297)	(292)
New Boston	Bowie	Sulphur	(831)	(823)	(814)	(801)	(787)	(773)
Redwater	Bowie	Sulphur	(337)	(333)	(329)	(323)	(317)	(311)
Riverbend Water Resources District	Bowie	Sulphur	(169)	(166)	(165)	(162)	(159)	(157)
Texarkana	Bowie	Sulphur	(5,929)	(5,870)	(5,824)	(5,741)	(5,657)	(5,572)
Wake Village	Bowie	Sulphur	(649)	(641)	(635)	(625)	(615)	(605)
County-Other	Bowie	Sulphur	1,313	1,386	1,370	1,389	1,435	1,481
Manufacturing	Bowie	Sulphur	(1,512)	(1,569)	(1,629)	(1,690)	(1,754)	(1,820)
Mining	Bowie	Sulphur	0	0	0	0	0	0
Livestock	Bowie	Sulphur	521	598	706	800	837	837
Irrigation	Bowie	Sulphur	(3,032)	(3,032)	(3,032)	(3,032)	(3,032)	(3,032)
Bi County WSC	Camp	Cypress	455	453	451	446	440	435

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Cypress Springs SUD	Camp	Cypress	0	0	0	0	0	0
Pittsburg	Camp	Cypress	433	433	433	433	433	433
Sharon WSC	Camp	Cypress	(4)	(4)	(4)	(4)	(4)	(4)
County-Other	Camp	Cypress	348	356	364	371	379	378
Manufacturing	Camp	Cypress	(42)	(44)	(46)	(48)	(50)	(52)
Livestock	Camp	Cypress	3,691	3,691	3,691	3,691	3,691	3,691
Irrigation	Camp	Cypress	0	0	0	0	0	0
Atlanta	Cass	Cypress	94	200	323	358	397	435
Avinger	Cass	Cypress	202	207	212	216	220	225
E M C WSC	Cass	Cypress	26	27	29	31	32	34
Eastern Cass WSC	Cass	Cypress	299	290	276	260	238	213
Holly Springs WSC	Cass	Cypress	(15)	(11)	(8)	(5)	(2)	1
Hughes Springs	Cass	Cypress	184	202	221	236	251	266
Linden	Cass	Cypress	97	113	129	142	155	168
Mims WSC	Cass	Cypress	118	119	119	120	121	121
Queen City	Cass	Cypress	169	169	169	169	169	169
Western Cass WSC	Cass	Cypress	686	698	709	717	726	734
County-Other	Cass	Cypress	(285)	(235)	(182)	(133)	(82)	(25)
Manufacturing	Cass	Cypress	0	0	0	0	0	0
Mining	Cass	Cypress	804	827	836	869	891	917
Livestock	Cass	Cypress	1,161	1,161	1,161	1,161	1,161	1,161
Atlanta	Cass	Sulphur	0	1	1	1	1	2
Eastern Cass WSC	Cass	Sulphur	15	15	14	12	11	9
Queen City	Cass	Sulphur	100	100	100	100	100	100
Western Cass WSC	Cass	Sulphur	114	117	121	125	128	131
County-Other	Cass	Sulphur	(76)	(56)	(34)	(15)	6	29
Manufacturing	Cass	Sulphur	50	48	47	47	46	46
Livestock	Cass	Sulphur	339	339	339	339	339	339
Cooper	Delta	Sulphur	0	0	0	0	0	0
Delta County MUD*	Delta	Sulphur	0	0	0	0	0	0
North Hunt SUD*	Delta	Sulphur	(20)	(22)	(23)	(25)	(25)	(24)
County-Other	Delta	Sulphur	109	114	116	119	119	121
Livestock	Delta	Sulphur	174	174	174	174	174	174
Irrigation	Delta	Sulphur	2,053	2,063	2,068	2,068	2,080	2,080
Cornersville WSC	Franklin	Cypress	3	3	3	3	4	3
Cypress Springs SUD	Franklin	Cypress	1,273	1,161	1,052	941	834	726

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Winnsboro	Franklin	Cypress	234	208	185	163	142	122
County-Other	Franklin	Cypress	73	78	78	78	78	78
Livestock	Franklin	Cypress	704	704	704	704	704	704
Irrigation	Franklin	Cypress	56	56	56	56	56	56
Irrigation	Franklin	Sabine	56	56	56	56	56	56
Cypress Springs SUD	Franklin	Sulphur	620	563	507	451	395	341
Mount Vernon	Franklin	Sulphur	2,103	1,997	1,892	1,778	1,663	1,549
County-Other	Franklin	Sulphur	79	93	95	95	95	96
Livestock	Franklin	Sulphur	440	440	440	440	440	440
Irrigation	Franklin	Sulphur	57	57	57	57	57	57
East Mountain Water System	Gregg	Cypress	(52)	(52)	(52)	(51)	(50)	(49)
Glenwood WSC	Gregg	Cypress	10	11	11	11	12	12
Tryon Road SUD	Gregg	Cypress	403	398	402	403	401	412
County-Other	Gregg	Cypress	194	210	236	269	295	300
Mining	Gregg	Cypress	12	12	7	3	(1)	(1)
Livestock	Gregg	Cypress	0	0	0	0	0	0
Chalk Hill SUD*	Gregg	Sabine	0	0	0	0	0	0
Clarksville City	Gregg	Sabine	119	119	119	121	123	125
Cross Roads SUD*	Gregg	Sabine	32	34	36	39	43	47
East Mountain Water System	Gregg	Sabine	(40)	(41)	(41)	(40)	(39)	(39)
Elderville WSC*	Gregg	Sabine	110	107	113	120	113	113
Gladewater	Gregg	Sabine	131	131	149	177	207	57
Kilgore*	Gregg	Sabine	1,747	1,670	1,611	1,568	1,513	1,551
Liberty City WSC	Gregg	Sabine	295	294	298	307	315	324
Longview	Gregg	Sabine	27,667	27,403	27,169	27,140	27,112	26,998
Starrville-Friendship WSC	Gregg	Sabine	34	34	34	35	36	37
Tryon Road SUD	Gregg	Sabine	256	255	256	260	263	167
West Gregg SUD*	Gregg	Sabine	171	158	141	122	98	74
White Oak	Gregg	Sabine	(66)	(88)	(69)	(26)	18	61
County-Other	Gregg	Sabine	1,088	1,207	1,373	1,588	1,734	1,815
Manufacturing	Gregg	Sabine	20	(38)	(98)	(160)	(224)	(291)
Mining	Gregg	Sabine	320	316	234	151	93	93
Steam Electric Power	Gregg	Sabine	1,302	1,302	1,302	1,302	1,302	1,302
Livestock	Gregg	Sabine	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	Gregg	Sabine	154	154	154	154	154	154
Blocker Crossroads WSC	Harrison	Cypress	5	6	6	6	4	4
Cypress Valley WSC	Harrison	Cypress	154	151	150	148	147	146
Diana SUD	Harrison	Cypress	56	55	55	54	53	52
Gum Springs WSC	Harrison	Cypress	690	659	655	624	598	570
Harleton WSC	Harrison	Cypress	14	6	5	0	(4)	(8)
Leigh WSC	Harrison	Cypress	118	160	165	228	289	348
Marshall	Harrison	Cypress	1,617	1,637	1,638	1,684	1,729	1,772
North Harrison WSC	Harrison	Cypress	97	90	89	85	80	76
Panola-Bethany WSC*	Harrison	Cypress	0	0	0	0	0	0
Scottsville	Harrison	Cypress	(31)	(42)	(45)	(56)	(66)	(76)
Talley WSC	Harrison	Cypress	39	38	38	36	37	37
Tryon Road SUD	Harrison	Cypress	227	157	148	79	15	39
Waskom	Harrison	Cypress	51	71	74	107	139	170
West Harrison WSC	Harrison	Cypress	46	41	38	32	27	22
County-Other	Harrison	Cypress	166	200	200	260	318	376
Manufacturing	Harrison	Cypress	2,476	2,476	2,475	2,475	2,474	2,474
Mining	Harrison	Cypress	(433)	(425)	(416)	(409)	(399)	(399)
Livestock	Harrison	Cypress	127	110	92	72	50	50
Irrigation	Harrison	Cypress	(283)	(283)	(283)	(283)	(283)	(283)
Blocker Crossroads WSC	Harrison	Sabine	55	52	51	50	51	50
Elysian Fields WSC*	Harrison	Sabine	0	0	0	0	0	0
Gill WSC*	Harrison	Sabine	115	117	117	124	131	137
Gum Springs WSC	Harrison	Sabine	1,000	899	882	787	691	601
Hallsville	Harrison	Sabine	311	263	256	211	168	127
Longview	Harrison	Sabine	1,020	959	932	858	786	728
Marshall	Harrison	Sabine	7,544	7,636	7,643	7,855	8,060	8,260
Panola-Bethany WSC*	Harrison	Sabine	0	0	0	0	0	0
Scottsville	Harrison	Sabine	(91)	(116)	(118)	(144)	(170)	(194)
Talley WSC	Harrison	Sabine	30	30	29	32	32	33
West Harrison WSC	Harrison	Sabine	119	100	99	78	57	37
County-Other	Harrison	Sabine	454	506	542	631	709	745
Manufacturing	Harrison	Sabine	78,959	77,958	76,923	75,850	74,739	73,586
Mining	Harrison	Sabine	(1,419)	(1,409)	(1,400)	(1,392)	(1,383)	(1,383)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	County	Basin	2030	2040	2050	2060	2070	2080
Steam Electric Power	Harrison	Sabine	3,363	3,363	3,363	3,363	3,363	3,363
Livestock	Harrison	Sabine	62	48	34	19	2	2
Irrigation	Harrison	Sabine	(191)	(191)	(191)	(191)	(191)	(191)
Cornersville WSC	Hopkins	Cypress	46	43	41	39	36	34
Cypress Springs SUD	Hopkins	Cypress	116	111	105	95	85	74
Livestock	Hopkins	Cypress	94	94	94	94	94	94
Irrigation	Hopkins	Cypress	(8)	(8)	(8)	(8)	(8)	(8)
Brashear WSC	Hopkins	Sabine	0	0	0	0	0	0
Cash SUD*	Hopkins	Sabine	0	0	0	0	(28)	(35)
Como	Hopkins	Sabine	9	10	10	10	10	10
Cornersville WSC	Hopkins	Sabine	47	44	43	40	38	36
Cumby	Hopkins	Sabine	21	24	20	20	21	22
Jones WSC	Hopkins	Sabine	7	6	5	2	3	3
Lake Fork WSC	Hopkins	Sabine	26	25	25	24	24	23
Martin Springs WSC	Hopkins	Sabine	164	152	145	138	128	120
Miller Grove WSC	Hopkins	Sabine	(30)	(40)	(44)	(51)	(58)	(64)
Shady Grove No 2 WSC	Hopkins	Sabine	0	0	0	0	0	0
Shirley WSC	Hopkins	Sabine	91	78	69	57	44	33
County-Other	Hopkins	Sabine	398	392	353	333	328	326
Mining	Hopkins	Sabine	258	265	272	281	289	289
Livestock	Hopkins	Sabine	(198)	(198)	(198)	(198)	(198)	(198)
Irrigation	Hopkins	Sabine	(106)	(106)	(106)	(106)	(106)	(106)
Brashear WSC	Hopkins	Sulphur	0	0	0	0	0	0
Brinker WSC	Hopkins	Sulphur	(97)	(122)	(130)	(143)	(157)	(171)
Como	Hopkins	Sulphur	3	3	3	3	3	3
Cornersville WSC	Hopkins	Sulphur	6	6	5	5	4	4
Cumby	Hopkins	Sulphur	1	1	1	1	1	1
Cypress Springs SUD	Hopkins	Sulphur	183	175	163	148	132	116
Gafford Chapel WSC	Hopkins	Sulphur	36	37	40	44	49	46
Martin Springs WSC	Hopkins	Sulphur	23	21	18	16	15	13
North Hopkins WSC	Hopkins	Sulphur	(231)	(271)	(297)	(325)	(354)	(383)
Shady Grove No 2 WSC	Hopkins	Sulphur	0	0	0	0	0	0
Sulphur Springs	Hopkins	Sulphur	0	0	0	0	0	0
County-Other	Hopkins	Sulphur	441	436	408	391	388	384

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	County	Basin	2030	2040	2050	2060	2070	2080
Manufacturing	Hopkins	Sulphur	788	834	866	963	1,069	1,024
Livestock	Hopkins	Sulphur	60	229	239	423	505	505
Irrigation	Hopkins	Sulphur	(3,673)	(3,673)	(3,673)	(3,673)	(3,673)	(3,673)
Ables Springs SUD*	Hunt	Sabine	(3)	(9)	(16)	(20)	(24)	(27)
B H P WSC	Hunt	Sabine	(53)	(134)	(217)	(288)	(357)	(414)
Caddo Basin SUD*	Hunt	Sabine	(174)	(392)	(695)	(879)	(963)	(1,115)
Caddo Mills	Hunt	Sabine	100	113	151	215	222	219
Cash SUD*	Hunt	Sabine	270	437	557	335	(272)	(579)
Celeste	Hunt	Sabine	(14)	(19)	(24)	(28)	(32)	(35)
Combined Consumers SUD	Hunt	Sabine	942	894	844	804	761	721
Greenville	Hunt	Sabine	(12,829)	(15,468)	(17,138)	(18,569)	(20,046)	(21,296)
Hickory Creek SUD*	Hunt	Sabine	(90)	(125)	(170)	(220)	(276)	(343)
Josephine*	Hunt	Sabine	(3)	(7)	(14)	(19)	(23)	(27)
MacBee SUD*	Hunt	Sabine	34	21	10	0	(8)	(15)
Poetry WSC*	Hunt	Sabine	(19)	(58)	(99)	(130)	(120)	(128)
Quinlan	Hunt	Sabine	0	0	0	0	0	0
Royse City*	Hunt	Sabine	(54)	(193)	(370)	(546)	(708)	(861)
Shady Grove SUD	Hunt	Sabine	0	0	0	0	0	0
West Tawakoni	Hunt	Sabine	481	443	355	376	344	318
County-Other	Hunt	Sabine	540	516	521	562	630	652
Manufacturing	Hunt	Sabine	549	706	854	948	1,108	1,081
Steam Electric Power	Hunt	Sabine	0	0	0	0	0	0
Livestock	Hunt	Sabine	19	19	19	19	19	19
Irrigation	Hunt	Sabine	(124)	(124)	(124)	(124)	(124)	(124)
Commerce	Hunt	Sulphur	540	593	633	694	755	816
Hickory Creek SUD*	Hunt	Sulphur	(75)	(101)	(129)	(164)	(204)	(249)
North Hunt SUD*	Hunt	Sulphur	(172)	(160)	(150)	(137)	(124)	(115)
Shady Grove SUD	Hunt	Sulphur	0	0	0	0	0	0
Texas A&M University Commerce	Hunt	Sulphur	(276)	(275)	(275)	(275)	(275)	(275)
Wolfe City*	Hunt	Sulphur	88	87	84	84	82	81
County-Other	Hunt	Sulphur	57	52	48	41	42	48
Livestock	Hunt	Sulphur	8	8	8	8	8	8
Irrigation	Hunt	Sulphur	(69)	(69)	(69)	(69)	(69)	(69)
Frognot WSC*	Hunt	Trinity	0	0	0	0	0	0
Hickory Creek SUD*	Hunt	Trinity	(59)	(76)	(96)	(118)	(144)	(174)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
West Leonard WSC*	Hunt	Trinity	0	0	0	0	0	0
County-Other	Hunt	Trinity	3	3	3	3	3	3
Livestock	Hunt	Trinity	1	1	1	1	1	1
Irrigation	Hunt	Trinity	2	2	2	2	2	2
Bois D Arc MUD*	Lamar	Red	0	0	(1)	(1)	(1)	(1)
Lamar County WSD	Lamar	Red	3,199	3,152	3,126	3,101	3,060	3,070
Paris	Lamar	Red	155	65	0	0	0	0
Reno (Lamar)	Lamar	Red	101	112	123	134	145	145
County-Other	Lamar	Red	(29)	(29)	(28)	(28)	(28)	(28)
Manufacturing	Lamar	Red	81	76	64	81	64	12
Steam Electric Power	Lamar	Red	297	297	297	297	297	297
Livestock	Lamar	Red	(47)	(47)	(47)	(47)	(47)	(47)
Irrigation	Lamar	Red	(3,883)	(3,883)	(3,883)	(3,883)	(3,883)	(3,883)
Blossom	Lamar	Sulphur	93	109	109	110	111	111
Lamar County WSD	Lamar	Sulphur	2,691	2,660	2,640	2,620	2,590	2,593
Paris	Lamar	Sulphur	240	101	0	0	0	0
Reno (Lamar)	Lamar	Sulphur	196	241	292	342	394	396
County-Other	Lamar	Sulphur	(92)	(85)	(86)	(86)	(87)	(85)
Manufacturing	Lamar	Sulphur	661	742	758	605	445	278
Steam Electric Power	Lamar	Sulphur	2,958	2,958	2,958	2,958	2,958	2,958
Livestock	Lamar	Sulphur	(83)	(83)	(83)	(83)	(83)	(83)
Irrigation	Lamar	Sulphur	(808)	(808)	(808)	(808)	(808)	(808)
Diana SUD	Marion	Cypress	2	11	17	22	27	31
E M C WSC	Marion	Cypress	113	127	142	152	163	174
Harleton WSC	Marion	Cypress	33	43	54	61	68	76
Jefferson	Marion	Cypress	1,829	1,860	1,892	1,914	1,936	1,957
Kellyville-Berea WSC	Marion	Cypress	23	26	29	31	32	33
Mims WSC	Marion	Cypress	640	635	628	624	620	614
Ore City	Marion	Cypress	1	0	0	0	0	0
County-Other	Marion	Cypress	550	564	582	593	605	619
Manufacturing	Marion	Cypress	0	0	0	0	0	10
Mining	Marion	Cypress	95	98	100	102	104	104
Steam Electric Power	Marion	Cypress	188	570	1,035	1,603	1,990	1,990
Livestock	Marion	Cypress	242	242	242	242	242	242

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	Marion	Cypress	310	310	310	310	310	310
Bi County WSC	Morris	Cypress	10	22	35	43	51	60
Daingerfield	Morris	Cypress	1,130	1,119	1,103	1,095	1,086	1,077
Holly Springs WSC	Morris	Cypress	(20)	(15)	(8)	(4)	0	3
Lone Star	Morris	Cypress	541	557	575	587	598	611
Naples	Morris	Cypress	23	24	24	25	25	26
Omaha	Morris	Cypress	78	80	83	84	86	88
Tri SUD	Morris	Cypress	0	0	0	0	0	0
Western Cass WSC	Morris	Cypress	(6)	(5)	(5)	(5)	(5)	(5)
County-Other	Morris	Cypress	162	166	169	170	173	174
Manufacturing	Morris	Cypress	87,699	81,358	81,551	89,323	81,954	80,768
Steam Electric Power	Morris	Cypress	770	770	770	770	770	770
Livestock	Morris	Cypress	730	730	730	730	730	730
Irrigation	Morris	Cypress	58	58	58	58	58	58
Naples	Morris	Sulphur	20	21	22	22	23	23
Omaha	Morris	Sulphur	57	59	60	62	63	64
Western Cass WSC	Morris	Sulphur	(10)	(10)	(10)	(10)	(10)	(10)
County-Other	Morris	Sulphur	114	115	116	117	117	118
Livestock	Morris	Sulphur	422	422	422	422	422	422
Irrigation	Morris	Sulphur	1	1	1	1	1	1
Bright Star Salem SUD	Rains	Sabine	369	332	304	260	217	174
Cash SUD*	Rains	Sabine	1	0	0	0	(133)	(163)
East Tawakoni	Rains	Sabine	63	62	58	60	61	62
Emory	Rains	Sabine	1,789	1,750	1,701	1,666	1,632	1,599
Golden WSC	Rains	Sabine	3	4	3	2	2	2
Miller Grove WSC	Rains	Sabine	(6)	(8)	(10)	(11)	(14)	(16)
Point	Rains	Sabine	173	164	155	150	145	142
Shirley WSC	Rains	Sabine	43	38	35	31	26	19
South Rains SUD	Rains	Sabine	11	(12)	(28)	(49)	(70)	(92)
County-Other	Rains	Sabine	158	146	130	107	88	69
Manufacturing	Rains	Sabine	11	11	11	11	11	11
Livestock	Rains	Sabine	70	70	70	70	70	70
Irrigation	Rains	Sabine	(3)	(3)	(3)	(3)	(3)	(3)
410 WSC	Red River	Red	(87)	(81)	(74)	(69)	(64)	(58)
Red River County WSC	Red River	Red	74	82	88	91	92	89

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
County-Other	Red River	Red	42	47	54	62	71	84
Manufacturing	Red River	Red	5,051	5,044	5,044	5,044	5,044	5,044
Livestock	Red River	Red	125	125	125	125	125	125
Irrigation	Red River	Red	(212)	(212)	(212)	(212)	(212)	(212)
410 WSC	Red River	Sulphur	(48)	(41)	(32)	(25)	(17)	(10)
Bogata	Red River	Sulphur	340	350	359	367	374	381
Clarksville	Red River	Sulphur	(252)	(179)	(106)	(49)	10	69
Red River County WSC	Red River	Sulphur	48	69	82	90	92	87
Talco	Red River	Sulphur	12	11	11	11	10	10
County-Other	Red River	Sulphur	109	124	147	168	197	236
Livestock	Red River	Sulphur	274	274	274	274	274	274
Irrigation	Red River	Sulphur	(2,469)	(2,469)	(2,469)	(2,469)	(2,469)	(2,469)
Carroll WSC*	Smith	Sabine	9	9	12	15	19	17
Crystal Systems Texas*	Smith	Sabine	187	124	77	53	27	1
East Texas MUD	Smith	Sabine	204	(9)	(161)	(302)	(444)	(586)
Jackson WSC*	Smith	Sabine	0	0	0	0	0	0
Liberty City WSC	Smith	Sabine	19	17	15	13	11	9
Lindale Rural WSC*	Smith	Sabine	9	(119)	(214)	(294)	(375)	(456)
Lindale*	Smith	Sabine	489	459	422	421	425	417
Overton*	Smith	Sabine	0	0	0	0	0	0
Pine Ridge WSC	Smith	Sabine	72	49	32	18	3	(11)
Sand Flat WSC	Smith	Sabine	227	215	207	203	200	196
Southern Utilities*	Smith	Sabine	0	0	0	0	(68)	(223)
Star Mountain WSC	Smith	Sabine	95	84	74	69	63	57
Starrville-Friendship WSC	Smith	Sabine	81	83	83	86	89	92
Tyler*	Smith	Sabine	0	0	0	0	0	0
West Gregg SUD*	Smith	Sabine	28	23	18	16	16	13
Winona	Smith	Sabine	(11)	(30)	(43)	(55)	(66)	(77)
County-Other*	Smith	Sabine	23	23	23	23	23	23
Manufacturing*	Smith	Sabine	0	0	(7)	(8)	(7)	(9)
Livestock*	Smith	Sabine	0	0	0	0	0	0
Irrigation*	Smith	Sabine	0	0	0	0	0	0
Bi County WSC	Titus	Cypress	81	71	56	43	30	15
Cypress Springs SUD	Titus	Cypress	68	73	82	82	80	79
Mount Pleasant	Titus	Cypress	12,945	12,404	11,991	11,628	11,149	10,779

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Tri SUD	Titus	Cypress	0	0	0	0	0	0
County-Other	Titus	Cypress	628	674	718	705	705	735
Manufacturing	Titus	Cypress	1,077	1,098	979	553	372	214
Steam Electric Power	Titus	Cypress	62	(1,198)	(2,458)	(3,143)	(4,433)	(5,693)
Livestock	Titus	Cypress	1,075	1,075	1,075	1,075	1,075	1,075
Irrigation	Titus	Cypress	3	3	3	3	3	3
Cypress Springs SUD	Titus	Sulphur	50	53	59	59	59	57
Talco	Titus	Sulphur	348	349	353	356	360	364
Tri SUD	Titus	Sulphur	0	0	0	0	0	0
County-Other	Titus	Sulphur	814	883	945	1,005	1,048	1,092
Livestock	Titus	Sulphur	794	794	794	794	794	794
Irrigation	Titus	Sulphur	4	4	4	4	4	4
Bi County WSC	Upshur	Cypress	77	76	78	83	89	95
Diana SUD	Upshur	Cypress	605	559	504	445	379	307
East Mountain Water System	Upshur	Cypress	8	8	8	9	10	11
Gilmer	Upshur	Cypress	280	275	279	292	306	320
Glenwood WSC	Upshur	Cypress	15	13	14	19	23	28
Ore City	Upshur	Cypress	1,510	1,506	1,501	1,500	1,498	1,497
Pritchett WSC	Upshur	Cypress	888	887	868	835	789	746
Sharon WSC	Upshur	Cypress	83	82	83	86	89	92
Union Grove WSC	Upshur	Cypress	6	6	7	6	6	7
County-Other	Upshur	Cypress	669	790	838	921	1,011	1,085
Manufacturing	Upshur	Cypress	(27)	(28)	(30)	(31)	(32)	(33)
Livestock	Upshur	Cypress	430	430	430	430	430	430
Irrigation	Upshur	Cypress	568	568	568	568	568	568
Big Sandy	Upshur	Sabine	(19)	(20)	(20)	(16)	(12)	(8)
East Mountain Water System	Upshur	Sabine	(175)	(177)	(176)	(172)	(167)	(163)
Fouke WSC	Upshur	Sabine	3	2	2	2	1	1
Gladewater	Upshur	Sabine	72	64	54	47	38	2
Glenwood WSC	Upshur	Sabine	3	3	3	3	4	4
Pritchett WSC	Upshur	Sabine	104	100	103	112	121	129
Union Grove WSC	Upshur	Sabine	138	136	136	141	144	146
County-Other	Upshur	Sabine	448	476	496	525	555	583
Manufacturing	Upshur	Sabine	(52)	(54)	(55)	(57)	(59)	(62)
Mining	Upshur	Sabine	119	129	95	61	36	36

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Livestock	Upshur	Sabine	160	160	160	160	160	160
Ben Wheeler WSC*	Van Zandt	Neches	13	(36)	(83)	(134)	(186)	(230)
Bethel Ash WSC*	Van Zandt	Neches	0	0	0	0	0	0
Carroll WSC*	Van Zandt	Neches	0	0	0	0	0	0
Edom WSC*	Van Zandt	Neches	(46)	(51)	(56)	(59)	(60)	(60)
Little Hope Moore WSC	Van Zandt	Neches	(4)	(6)	(9)	(11)	(14)	(15)
R P M WSC*	Van Zandt	Neches	(21)	(26)	(24)	(23)	(19)	(14)
Van	Van Zandt	Neches	136	131	126	127	127	127
County-Other	Van Zandt	Neches	685	532	344	250	265	216
Livestock	Van Zandt	Neches	(84)	(86)	(87)	(88)	(89)	(90)
Irrigation	Van Zandt	Neches	16	14	12	10	6	4
Ables Springs SUD*	Van Zandt	Sabine	(1)	(1)	(2)	(2)	(2)	(2)
Canton	Van Zandt	Sabine	640	444	254	58	(197)	(400)
Carroll WSC*	Van Zandt	Sabine	35	27	20	11	3	0
Combined Consumers SUD	Van Zandt	Sabine	191	182	174	167	161	154
Edgewood	Van Zandt	Sabine	238	228	219	214	209	203
Fruitvale WSC	Van Zandt	Sabine	26	(3)	(18)	(43)	(76)	(95)
Golden WSC	Van Zandt	Sabine	52	50	50	47	43	39
Grand Saline	Van Zandt	Sabine	(121)	(128)	(122)	(117)	(120)	(109)
Little Hope Moore WSC	Van Zandt	Sabine	(8)	(14)	(19)	(25)	(30)	(33)
MacBee SUD*	Van Zandt	Sabine	420	317	201	58	(121)	(338)
Myrtle Springs WSC	Van Zandt	Sabine	(7)	(25)	(42)	(62)	(82)	(102)
Pine Ridge WSC	Van Zandt	Sabine	46	34	22	9	(5)	(18)
Pruitt Sandflat WSC	Van Zandt	Sabine	101	101	110	116	117	127
South Tawakoni WSC	Van Zandt	Sabine	1,210	1,252	1,281	1,304	1,320	1,327
Van	Van Zandt	Sabine	92	90	86	86	86	86
Wills Point	Van Zandt	Sabine	19	19	19	19	19	19
County-Other	Van Zandt	Sabine	0	0	20	0	0	0
Manufacturing	Van Zandt	Sabine	(344)	(365)	(380)	(400)	(433)	(453)
Mining	Van Zandt	Sabine	3,017	3,191	3,402	3,600	3,713	3,895
Livestock	Van Zandt	Sabine	(104)	(104)	(102)	(101)	(105)	(103)
Bethel Ash WSC*	Van Zandt	Trinity	0	0	0	0	0	0
Mabank*	Van Zandt	Trinity	(9)	(17)	(24)	(31)	(39)	(46)
MacBee SUD*	Van Zandt	Trinity	544	398	216	(5)	(278)	(614)
Myrtle Springs WSC	Van Zandt	Trinity	(17)	(61)	(104)	(154)	(203)	(253)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Wills Point	Van Zandt	Trinity	0	0	0	0	0	0
County-Other	Van Zandt	Trinity	302	269	191	164	175	82
Livestock	Van Zandt	Trinity	30	30	30	30	30	30
Cypress Springs SUD	Wood	Cypress	123	119	111	104	96	86
Sharon WSC	Wood	Cypress	49	39	33	21	8	6
Winnsboro	Wood	Cypress	388	358	329	296	262	229
County-Other	Wood	Cypress	740	750	747	759	758	763
Livestock	Wood	Cypress	330	330	330	330	330	330
Irrigation	Wood	Cypress	60	60	60	60	60	60
Bright Star Salem SUD	Wood	Sabine	362	334	313	277	238	199
Cornersville WSC	Wood	Sabine	26	26	26	26	25	25
Fouke WSC	Wood	Sabine	228	197	175	137	100	61
Golden WSC	Wood	Sabine	195	175	159	142	124	107
Hawkins	Wood	Sabine	536	530	526	525	523	521
Jones WSC	Wood	Sabine	348	315	294	143	208	164
Lake Fork WSC	Wood	Sabine	393	375	364	342	320	298
Liberty Utilities Silverleaf Water*	Wood	Sabine	113	65	35	3	(28)	(59)
Mineola	Wood	Sabine	806	764	736	685	634	582
New Hope SUD	Wood	Sabine	(167)	(162)	(160)	(141)	(122)	(105)
Pritchett WSC	Wood	Sabine	6	6	26	62	112	160
Quitman	Wood	Sabine	658	648	637	635	631	628
Ramey WSC	Wood	Sabine	319	236	137	24	(106)	(255)
Sharon WSC	Wood	Sabine	126	106	93	66	40	3
Shirley WSC	Wood	Sabine	6	5	5	3	3	2
Winnsboro	Wood	Sabine	409	377	347	311	277	240
County-Other	Wood	Sabine	3,270	3,273	3,307	3,312	3,339	3,371
Manufacturing	Wood	Sabine	(1,410)	(1,518)	(1,630)	(1,746)	(1,866)	(1,991)
Mining	Wood	Sabine	(38)	(36)	(34)	(31)	(29)	(25)
Livestock	Wood	Sabine	1,262	1,262	1,262	1,262	1,262	1,262
Irrigation	Wood	Sabine	775	775	775	775	775	775

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DRAFT RWP27 Database Report - Water Use Category Summary - Region D

Municipal	2030	2040	2050	2060	2070	2080
Population	873,433	904,455	928,548	947,851	964,080	983,981
Demand (acre-feet per year)	156,589	162,106	166,418	169,711	172,670	176,095
Existing supplies (acre-feet per year)	239,443	239,351	239,213	238,812	237,501	236,617
Needs (acre-feet per year)*	28,184	31,535	34,102	36,254	39,588	43,049

Manufacturing	2030	2040	2050	2060	2070	2080
Demand (acre-feet per year)	108,499	112,529	116,707	121,036	125,527	130,187
Existing supplies (acre-feet per year)	282,245	278,964	282,093	292,473	288,093	289,676
Needs (acre-feet per year)*	3,676	3,916	4,186	4,463	4,760	5,059

Mining	2030	2040	2050	2060	2070	2080
Demand (acre-feet per year)	5,307	5,326	5,418	5,495	5,557	5,604
Existing supplies (acre-feet per year)	8,042	8,294	8,514	8,730	8,871	9,130
Needs (acre-feet per year)*	1,890	1,870	1,850	1,832	1,812	1,808

Steam-electric power	2030	2040	2050	2060	2070	2080
Demand (acre-feet per year)	64,012	64,012	64,012	64,012	64,012	64,012
Existing supplies (acre-feet per year)	72,952	72,074	71,279	71,162	70,259	68,999
Needs (acre-feet per year)*	0	1,198	2,458	3,143	4,433	5,693

Livestock	2030	2040	2050	2060	2070	2080
Demand (acre-feet per year)	22,535	22,444	22,305	22,192	22,172	22,172
Existing supplies (acre-feet per year)	35,669	35,836	35,847	36,031	36,108	36,109
Needs (acre-feet per year)*	516	518	517	517	522	521

Irrigation	2030	2040	2050	2060	2070	2080
Demand (acre-feet per year)	32,608	32,608	32,608	32,608	32,608	32,608
Existing supplies (acre-feet per year)	19,736	19,744	19,747	19,745	19,753	19,751
Needs (acre-feet per year)*	17,045	17,045	17,045	17,045	17,045	17,045

*Water User Group (WUG) supplies and projected demands are entered for each of a WUG’s region-county-basin divisions. The needs shown in this report are calculated by first deducting the WUG split’s projected demand from its total existing water supply volume. Calculated water supply surpluses for each WUG split are updated to zero before calculating the WUG category's total water supply needs.

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

Second-tier needs are WUG split needs adjusted to include the implementation of recommended conservation and direct reuse water management strategies.

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Bowie County WUG Total	**19,186**	**19,153**	**19,153**	**19,089**	**19,029**	**18,968**
Bowie County / Red Basin WUG	**4,670**	**4,677**	**4,689**	**4,694**	**4,701**	**4,707**
Burns Redbank WSC	260	274	291	310	329	349
Central Bowie County WSC	118	118	119	120	121	122
De Kalb	48	48	47	47	46	45
Hooks	317	313	310	305	301	296
New Boston	403	399	396	389	383	377
Riverbend Water Resources District	211	209	206	203	200	196
Texarkana	840	832	825	813	802	790
County-Other	0	0	0	0	0	0
Manufacturing	289	300	311	323	335	348
Mining	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	2,184	2,184	2,184	2,184	2,184	2,184
Bowie County / Sulphur Basin WUG	**14,516**	**14,476**	**14,464**	**14,395**	**14,328**	**14,261**
Central Bowie County WSC	651	651	657	663	669	675
De Kalb	218	215	214	210	208	205
Macedonia Eylau MUD 1	710	705	698	688	677	666
Maud	164	162	161	158	156	153
Nash	314	309	306	302	297	292
New Boston	831	823	814	801	787	773
Redwater	337	333	329	323	317	311
Riverbend Water Resources District	169	166	165	162	159	157
Texarkana	5,929	5,870	5,824	5,741	5,657	5,572

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Bowie County / Sulphur Basin WUG	**14,516**	**14,476**	**14,464**	**14,395**	**14,328**	**14,261**
Wake Village	649	641	635	625	615	605
County-Other	0	0	0	0	0	0
Manufacturing	1,512	1,569	1,629	1,690	1,754	1,820
Mining	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	3,032	3,032	3,032	3,032	3,032	3,032
Camp County WUG Total	**46**	**48**	**50**	**52**	**54**	**56**
Camp County / Cypress Basin WUG	**46**	**48**	**50**	**52**	**54**	**56**
Bi County WSC	0	0	0	0	0	0
Cypress Springs SUD	0	0	0	0	0	0
Pittsburg	0	0	0	0	0	0
Sharon WSC	4	4	4	4	4	4
County-Other	0	0	0	0	0	0
Manufacturing	42	44	46	48	50	52
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Cass County WUG Total	**376**	**302**	**224**	**153**	**84**	**25**
Cass County / Cypress Basin WUG	**300**	**246**	**190**	**138**	**84**	**25**
Atlanta	0	0	0	0	0	0
Avinger	0	0	0	0	0	0
E M C WSC	0	0	0	0	0	0
Eastern Cass WSC	0	0	0	0	0	0
Holly Springs WSC	15	11	8	5	2	0
Hughes Springs	0	0	0	0	0	0
Linden	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Cass County / Cypress Basin WUG	**300**	**246**	**190**	**138**	**84**	**25**
Mims WSC	0	0	0	0	0	0
Queen City	0	0	0	0	0	0
Western Cass WSC	0	0	0	0	0	0
County-Other	285	235	182	133	82	25
Manufacturing	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Cass County / Sulphur Basin WUG	**76**	**56**	**34**	**15**	**0**	**0**
Atlanta	0	0	0	0	0	0
Eastern Cass WSC	0	0	0	0	0	0
Queen City	0	0	0	0	0	0
Western Cass WSC	0	0	0	0	0	0
County-Other	76	56	34	15	0	0
Manufacturing	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Delta County WUG Total	**20**	**22**	**23**	**25**	**25**	**24**
Delta County / Sulphur Basin WUG	**20**	**22**	**23**	**25**	**25**	**24**
Cooper	0	0	0	0	0	0
Delta County MUD*	0	0	0	0	0	0
North Hunt SUD*	20	22	23	25	25	24
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Franklin County WUG Total	**0**	**0**	**0**	**0**	**0**	**0**
Franklin County / Cypress Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Cornersville WSC	0	0	0	0	0	0
Cypress Springs SUD	0	0	0	0	0	0
Winnsboro	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Franklin County / Sabine Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Irrigation	0	0	0	0	0	0
Franklin County / Sulphur Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Cypress Springs SUD	0	0	0	0	0	0
Mount Vernon	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Gregg County WUG Total	**158**	**219**	**260**	**277**	**314**	**380**
Gregg County / Cypress Basin WUG	**52**	**52**	**52**	**51**	**51**	**50**
East Mountain Water System	52	52	52	51	50	49
Glenwood WSC	0	0	0	0	0	0
Tryon Road SUD	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Mining	0	0	0	0	1	1
Livestock	0	0	0	0	0	0
Gregg County / Sabine Basin WUG	**106**	**167**	**208**	**226**	**263**	**330**
Chalk Hill SUD*	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Gregg County / Sabine Basin WUG	**106**	**167**	**208**	**226**	**263**	**330**
Clarksville City	0	0	0	0	0	0
Cross Roads SUD*	0	0	0	0	0	0
East Mountain Water System	40	41	41	40	39	39
Elderville WSC*	0	0	0	0	0	0
Gladewater	0	0	0	0	0	0
Kilgore*	0	0	0	0	0	0
Liberty City WSC	0	0	0	0	0	0
Longview	0	0	0	0	0	0
Starrville-Friendship WSC	0	0	0	0	0	0
Tryon Road SUD	0	0	0	0	0	0
West Gregg SUD*	0	0	0	0	0	0
White Oak	66	88	69	26	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	38	98	160	224	291
Mining	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Harrison County WUG Total	**2,448**	**2,466**	**2,453**	**2,475**	**2,496**	**2,534**
Harrison County / Cypress Basin WUG	**747**	**750**	**744**	**748**	**752**	**766**
Blocker Crossroads WSC	0	0	0	0	0	0
Cypress Valley WSC	0	0	0	0	0	0
Diana SUD	0	0	0	0	0	0
Gum Springs WSC	0	0	0	0	0	0
Harleton WSC	0	0	0	0	4	8

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Harrison County / Cypress Basin WUG	**747**	**750**	**744**	**748**	**752**	**766**
Leigh WSC	0	0	0	0	0	0
Marshall	0	0	0	0	0	0
North Harrison WSC	0	0	0	0	0	0
Panola-Bethany WSC*	0	0	0	0	0	0
Scottsville	31	42	45	56	66	76
Talley WSC	0	0	0	0	0	0
Tryon Road SUD	0	0	0	0	0	0
Waskom	0	0	0	0	0	0
West Harrison WSC	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	433	425	416	409	399	399
Livestock	0	0	0	0	0	0
Irrigation	283	283	283	283	283	283
Harrison County / Sabine Basin WUG	**1,701**	**1,716**	**1,709**	**1,727**	**1,744**	**1,768**
Blocker Crossroads WSC	0	0	0	0	0	0
Elysian Fields WSC*	0	0	0	0	0	0
Gill WSC*	0	0	0	0	0	0
Gum Springs WSC	0	0	0	0	0	0
Hallsville	0	0	0	0	0	0
Longview	0	0	0	0	0	0
Marshall	0	0	0	0	0	0
Panola-Bethany WSC*	0	0	0	0	0	0
Scottsville	91	116	118	144	170	194
Talley WSC	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Harrison County / Sabine Basin WUG	**1,701**	**1,716**	**1,709**	**1,727**	**1,744**	**1,768**
West Harrison WSC	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	1,419	1,409	1,400	1,392	1,383	1,383
Steam Electric Power	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	191	191	191	191	191	191
Hopkins County WUG Total	**4,343**	**4,418**	**4,456**	**4,504**	**4,582**	**4,638**
Hopkins County / Cypress Basin WUG	**8**	**8**	**8**	**8**	**8**	**8**
Cornersville WSC	0	0	0	0	0	0
Cypress Springs SUD	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	8	8	8	8	8	8
Hopkins County / Sabine Basin WUG	**334**	**344**	**348**	**355**	**390**	**403**
Brashear WSC	0	0	0	0	0	0
Cash SUD*	0	0	0	0	28	35
Como	0	0	0	0	0	0
Cornersville WSC	0	0	0	0	0	0
Cumby	0	0	0	0	0	0
Jones WSC	0	0	0	0	0	0
Lake Fork WSC	0	0	0	0	0	0
Martin Springs WSC	0	0	0	0	0	0
Miller Grove WSC	30	40	44	51	58	64
Shady Grove No 2 WSC	0	0	0	0	0	0
Shirley WSC	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hopkins County / Sabine Basin WUG	**334**	**344**	**348**	**355**	**390**	**403**
County-Other	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Livestock	198	198	198	198	198	198
Irrigation	106	106	106	106	106	106
Hopkins County / Sulphur Basin WUG	**4,001**	**4,066**	**4,100**	**4,141**	**4,184**	**4,227**
Brashear WSC	0	0	0	0	0	0
Brinker WSC	97	122	130	143	157	171
Como	0	0	0	0	0	0
Cornersville WSC	0	0	0	0	0	0
Cumby	0	0	0	0	0	0
Cypress Springs SUD	0	0	0	0	0	0
Gafford Chapel WSC	0	0	0	0	0	0
Martin Springs WSC	0	0	0	0	0	0
North Hopkins WSC	231	271	297	325	354	383
Shady Grove No 2 WSC	0	0	0	0	0	0
Sulphur Springs	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	3,673	3,673	3,673	3,673	3,673	3,673
Hunt County WUG Total	**11,687**	**12,378**	**12,013**	**11,165**	**10,244**	**11,263**
Hunt County / Sabine Basin WUG	**11,036**	**11,697**	**11,294**	**10,402**	**9,428**	**10,381**
Ables Springs SUD*	3	8	15	19	23	26
B H P WSC	53	134	217	288	357	414
Caddo Basin SUD*	174	392	695	879	963	1,115

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hunt County / Sabine Basin WUG	**11,036**	**11,697**	**11,294**	**10,402**	**9,428**	**10,381**
Caddo Mills	0	0	0	0	0	0
Cash SUD*	0	0	0	0	272	579
Celeste	14	19	24	28	32	35
Combined Consumers SUD	0	0	0	0	0	0
Greenville	10,530	10,719	9,668	8,260	6,653	6,855
Hickory Creek SUD*	90	125	170	220	276	343
Josephine*	3	6	13	18	20	23
MacBee SUD*	0	0	0	0	8	15
Poetry WSC*	19	58	99	130	120	128
Quinlan	0	0	0	0	0	0
Royse City*	26	112	269	436	580	724
Shady Grove SUD	0	0	0	0	0	0
West Tawakoni	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	124	124	124	124	124	124
Hunt County / Sulphur Basin WUG	**592**	**605**	**623**	**645**	**672**	**708**
Commerce	0	0	0	0	0	0
Hickory Creek SUD*	75	101	129	164	204	249
North Hunt SUD*	172	160	150	137	124	115
Shady Grove SUD	0	0	0	0	0	0
Texas A&M University Commerce	276	275	275	275	275	275
Wolfe City*	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hunt County / Sulphur Basin WUG	**592**	**605**	**623**	**645**	**672**	**708**
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	69	69	69	69	69	69
Hunt County / Trinity Basin WUG	**59**	**76**	**96**	**118**	**144**	**174**
Frognot WSC*	0	0	0	0	0	0
Hickory Creek SUD*	59	76	96	118	144	174
West Leonard WSC*	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Lamar County WUG Total	**4,942**	**4,935**	**4,936**	**4,936**	**4,937**	**4,935**
Lamar County / Red Basin WUG	**3,959**	**3,959**	**3,959**	**3,959**	**3,959**	**3,959**
Bois D Arc MUD*	0	0	1	1	1	1
Lamar County WSD	0	0	0	0	0	0
Paris	0	0	0	0	0	0
Reno (Lamar)	0	0	0	0	0	0
County-Other	29	29	28	28	28	28
Manufacturing	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	47	47	47	47	47	47
Irrigation	3,883	3,883	3,883	3,883	3,883	3,883
Lamar County / Sulphur Basin WUG	**983**	**976**	**977**	**977**	**978**	**976**
Blossom	0	0	0	0	0	0
Lamar County WSD	0	0	0	0	0	0
Paris	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Lamar County / Sulphur Basin WUG	**983**	**976**	**977**	**977**	**978**	**976**
Reno (Lamar)	0	0	0	0	0	0
County-Other	92	85	86	86	87	85
Manufacturing	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	83	83	83	83	83	83
Irrigation	808	808	808	808	808	808
Marion County WUG Total	**0**	**0**	**0**	**0**	**0**	**0**
Marion County / Cypress Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Diana SUD	0	0	0	0	0	0
E M C WSC	0	0	0	0	0	0
Harleton WSC	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0
Kellyville-Berea WSC	0	0	0	0	0	0
Mims WSC	0	0	0	0	0	0
Ore City	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Morris County WUG Total	**36**	**30**	**23**	**19**	**15**	**15**
Morris County / Cypress Basin WUG	**26**	**20**	**13**	**9**	**5**	**5**
Bi County WSC	0	0	0	0	0	0
Daingerfield	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Morris County / Cypress Basin WUG	**26**	**20**	**13**	**9**	**5**	**5**
Holly Springs WSC	20	15	8	4	0	0
Lone Star	0	0	0	0	0	0
Naples	0	0	0	0	0	0
Omaha	0	0	0	0	0	0
Tri SUD	0	0	0	0	0	0
Western Cass WSC	6	5	5	5	5	5
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Morris County / Sulphur Basin WUG	**10**	**10**	**10**	**10**	**10**	**10**
Naples	0	0	0	0	0	0
Omaha	0	0	0	0	0	0
Western Cass WSC	10	10	10	10	10	10
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Rains County WUG Total	**9**	**23**	**41**	**63**	**220**	**274**
Rains County / Sabine Basin WUG	**9**	**23**	**41**	**63**	**220**	**274**
Bright Star Salem SUD	0	0	0	0	0	0
Cash SUD*	0	0	0	0	133	163
East Tawakoni	0	0	0	0	0	0
Emory	0	0	0	0	0	0
Golden WSC	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Rains County / Sabine Basin WUG	**9**	**23**	**41**	**63**	**220**	**274**
Miller Grove WSC	6	8	10	11	14	16
Point	0	0	0	0	0	0
Shirley WSC	0	0	0	0	0	0
South Rains SUD	0	12	28	49	70	92
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	3	3	3	3	3	3
Red River County WUG Total	**3,068**	**2,982**	**2,893**	**2,824**	**2,762**	**2,749**
Red River County / Red Basin WUG	**299**	**293**	**286**	**281**	**276**	**270**
410 WSC	87	81	74	69	64	58
Red River County WSC	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	212	212	212	212	212	212
Red River County / Sulphur Basin WUG	**2,769**	**2,689**	**2,607**	**2,543**	**2,486**	**2,479**
410 WSC	48	41	32	25	17	10
Bogata	0	0	0	0	0	0
Clarksville	252	179	106	49	0	0
Red River County WSC	0	0	0	0	0	0
Talco	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	2,469	2,469	2,469	2,469	2,469	2,469

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Smith County WUG Total	**11**	**158**	**425**	**659**	**960**	**1,362**
Smith County / Sabine Basin WUG	**11**	**158**	**425**	**659**	**960**	**1,362**
Carroll WSC*	0	0	0	0	0	0
Crystal Systems Texas*	0	0	0	0	0	0
East Texas MUD	0	9	161	302	444	586
Jackson WSC*	0	0	0	0	0	0
Liberty City WSC	0	0	0	0	0	0
Lindale Rural WSC*	0	119	214	294	375	456
Lindale*	0	0	0	0	0	0
Overton*	0	0	0	0	0	0
Pine Ridge WSC	0	0	0	0	0	11
Sand Flat WSC	0	0	0	0	0	0
Southern Utilities*	0	0	0	0	68	223
Star Mountain WSC	0	0	0	0	0	0
Starrville-Friendship WSC	0	0	0	0	0	0
Tyler*	0	0	0	0	0	0
West Gregg SUD*	0	0	0	0	0	0
Winona	11	30	43	55	66	77
County-Other*	0	0	0	0	0	0
Manufacturing*	0	0	7	8	7	9
Livestock*	0	0	0	0	0	0
Irrigation*	0	0	0	0	0	0
Titus County WUG Total	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**
Titus County / Cypress Basin WUG	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**
Bi County WSC	0	0	0	0	0	0
Cypress Springs SUD	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Titus County / Cypress Basin WUG	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**
Mount Pleasant	0	0	0	0	0	0
Tri SUD	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Steam Electric Power	0	1,198	2,458	3,143	4,433	5,693
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Titus County / Sulphur Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Cypress Springs SUD	0	0	0	0	0	0
Talco	0	0	0	0	0	0
Tri SUD	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Upshur County WUG Total	**273**	**279**	**281**	**276**	**270**	**266**
Upshur County / Cypress Basin WUG	**27**	**28**	**30**	**31**	**32**	**33**
Bi County WSC	0	0	0	0	0	0
Diana SUD	0	0	0	0	0	0
East Mountain Water System	0	0	0	0	0	0
Gilmer	0	0	0	0	0	0
Glenwood WSC	0	0	0	0	0	0
Ore City	0	0	0	0	0	0
Pritchett WSC	0	0	0	0	0	0
Sharon WSC	0	0	0	0	0	0
Union Grove WSC	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Upshur County / Cypress Basin WUG	**27**	**28**	**30**	**31**	**32**	**33**
County-Other	0	0	0	0	0	0
Manufacturing	27	28	30	31	32	33
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Upshur County / Sabine Basin WUG	**246**	**251**	**251**	**245**	**238**	**233**
Big Sandy	19	20	20	16	12	8
East Mountain Water System	175	177	176	172	167	163
Fouke WSC	0	0	0	0	0	0
Gladewater	0	0	0	0	0	0
Glenwood WSC	0	0	0	0	0	0
Pritchett WSC	0	0	0	0	0	0
Union Grove WSC	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	52	54	55	57	59	62
Mining	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Van Zandt County WUG Total	**763**	**915**	**1,062**	**1,243**	**2,046**	**2,961**
Van Zandt County / Neches Basin WUG	**155**	**205**	**259**	**315**	**368**	**409**
Ben Wheeler WSC*	0	36	83	134	186	230
Bethel Ash WSC*	0	0	0	0	0	0
Carroll WSC*	0	0	0	0	0	0
Edom WSC*	46	51	56	59	60	60
Little Hope Moore WSC	4	6	9	11	14	15
R P M WSC*	21	26	24	23	19	14
Van	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Van Zandt County / Neches Basin WUG	**155**	**205**	**259**	**315**	**368**	**409**
County-Other	0	0	0	0	0	0
Livestock	84	86	87	88	89	90
Irrigation	0	0	0	0	0	0
Van Zandt County / Sabine Basin WUG	**585**	**640**	**685**	**750**	**1,171**	**1,653**
Ables Springs SUD*	1	1	2	2	2	2
Canton	0	0	0	0	197	400
Carroll WSC*	0	0	0	0	0	0
Combined Consumers SUD	0	0	0	0	0	0
Edgewood	0	0	0	0	0	0
Fruitvale WSC	0	3	18	43	76	95
Golden WSC	0	0	0	0	0	0
Grand Saline	121	128	122	117	120	109
Little Hope Moore WSC	8	14	19	25	30	33
MacBee SUD*	0	0	0	0	121	338
Myrtle Springs WSC	7	25	42	62	82	102
Pine Ridge WSC	0	0	0	0	5	18
Pruitt Sandflat WSC	0	0	0	0	0	0
South Tawakoni WSC	0	0	0	0	0	0
Van	0	0	0	0	0	0
Wills Point	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	344	365	380	400	433	453
Mining	0	0	0	0	0	0
Livestock	104	104	102	101	105	103

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Van Zandt County / Trinity Basin WUG	**23**	**70**	**118**	**178**	**507**	**899**
Bethel Ash WSC*	0	0	0	0	0	0
Mabank*	6	9	14	19	26	32
MacBee SUD*	0	0	0	5	278	614
Myrtle Springs WSC	17	61	104	154	203	253
Wills Point	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Wood County WUG Total	**1,324**	**1,414**	**1,511**	**1,593**	**1,814**	**2,086**
Wood County / Cypress Basin WUG	**0**	**0**	**0**	**0**	**0**	**0**
Cypress Springs SUD	0	0	0	0	0	0
Sharon WSC	0	0	0	0	0	0
Winnsboro	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Wood County / Sabine Basin WUG	**1,324**	**1,414**	**1,511**	**1,593**	**1,814**	**2,086**
Bright Star Salem SUD	0	0	0	0	0	0
Cornersville WSC	0	0	0	0	0	0
Fouke WSC	0	0	0	0	0	0
Golden WSC	0	0	0	0	0	0
Hawkins	0	0	0	0	0	0
Jones WSC	0	0	0	0	0	0
Lake Fork WSC	0	0	0	0	0	0
Liberty Utilities Silverleaf Water*	0	0	0	0	28	59
Mineola	0	0	0	0	0	0

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG Second-Tier Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Wood County / Sabine Basin WUG	**1,324**	**1,414**	**1,511**	**1,593**	**1,814**	**2,086**
New Hope SUD	167	162	160	141	122	105
Pritchett WSC	0	0	0	0	0	0
Quitman	0	0	0	0	0	0
Ramey WSC	0	0	0	0	106	255
Sharon WSC	0	0	0	0	0	0
Shirley WSC	0	0	0	0	0	0
Winnsboro	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	1,119	1,216	1,317	1,421	1,529	1,642
Mining	38	36	34	31	29	25
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Region D Second-Tier Needs Total	**48,690**	**50,940**	**52,262**	**52,496**	**54,285**	**58,229**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

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Second-Tier Identified Water Needs						
WUG Type	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	17,043	17,043	17,043	17,043	17,043	17,043
Livestock	332	290	289	289	294	293
Manufacturing	6,566	8,093	9,667	11,302	13,056	14,876
Mining	1,890	1,870	1,850	1,832	1,811	1,807
Municipal	27,442	30,624	33,040	35,008	38,103	41,196
Steam Electric Power	1,076	2,496	3,816	4,584	5,473	6,293

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APPENDIX C5

IDENTIFICATION, EVALUATION, AND SELECTION OF WATER MANAGEMENT STRATEGIES BASED ON NEEDS

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APPENDIX C5

TABLE OF CONTENTS

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Potentially Feasible Water Management Strategies Considered

As required by statute and rules (TWC §16.053(e)(3), and 31 TAC §357.34(c)), the RWPGs shall consider, but not be limited to considering, the following types of WMSs for all identified water needs:

1. Conservation;
2. drought management;
3. reuse;
4. management of existing water supplies;
5. conjunctive use;
6. acquisition of available existing water supplies;
7. development of new water supplies;
8. developing regional water supply facilities or providing regional management of water supply facilities;
9. developing large-scale desalination facilities for seawater or brackish groundwater that serve local or regional brackish groundwater production zones identified and designated under TWC §16.060(b)(5)[1];
10. developing large-scale desalination facilities for marine seawater that serve local or regional entities;
11. voluntary transfer of water within the region using, but not limited to, contracts, water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements;
12. emergency transfer of water under TWC §11.139;
13. interbasin transfers of surface water;
14. system optimization;
15. reallocation of reservoir storage to new uses;
16. enhancements of yields;
17. improvements to water quality;
18. new surface water supply;
19. new groundwater supply;
20. brush control;
21. precipitation enhancement;
22. aquifer storage and recovery;
23. cancellation of water rights; and
24. rainwater harvesting.

As required by rule, the documented process used by the NETRWPG to identify potentially feasible WMS is presented with Chapter 5 of this Plan. The required list of all identified WMSs that were considered potentially feasible, including those listed above, for meeting a need in the region per 31 TAC §357.12(b) is presented below. This tabulation is based on the template provided by TWDB.

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[1] Note that local or regional brackish groundwater production zones are only relevant to brackish groundwater sources, not seawater.

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Texas Regional Water Planning Group

WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Bowie	Burns Redbank WSC	Riverbend Strategy	13.7%
Bowie	Central Bowie County WSC	Riverbend Strategy	85.2%
Bowie	De Kalb	Riverbend Strategy	65.1%
Bowie	Hooks	Riverbend Strategy	59.7%
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulp	13.7%
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Nacatoch, Red)	13.7%
Bowie	Macedonia Eylau MUD 1	Riverbend Strategy	13.7%
Bowie	Manufacturing, Bowie	Riverbend Strategy	13.7%
Bowie	Manufacturing, Bowie	Advanced Water Conservation (Manufacturing Bowie	0.0%
Bowie	Maud	Riverbend Strategy	13.7%
Bowie	Nash	Riverbend Strategy	100.0%
Bowie	New Boston	Riverbend Strategy	49.1%
Bowie	Redwater	Riverbend Strategy	75.0%
Bowie	Riverbend Water Resources District	Riverbend Strategy	13.7%
Bowie	Texarkana	Riverbend Strategy	13.7%
Bowie	Wake Village	Riverbend Strategy	13.7%
Camp	Livestock, Camp	Drill New Wells (Livestock, Camp, Queen City, Cypres	13.7%
Cass	Atlanta	Riverbend Strategy Cass County	48.0%
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Cypress)	13.7%
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Sulphur)	13.7%
Cass	County-Other, Cass	Riverbend Strategy Cass County	13.7%
Cass	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	0.0%
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Cypress)	13.7%
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Sulphur)	13.7%
Cass	Riverbend Water Resources District	New 2.5 MGD Package WTP and Transmission Line	13.7%
Delta	Livestock, Delta	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	13.7%
Delta	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sal	60.9%
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	13.7%
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	13.7%
Gregg	Kilgore	Sabine River Authority Strategy - Wood County GW	100.0%
Gregg	Longview	Sabine River Authority Strategy - Wood County GW	20.0%
Gregg	Mining, Gregg	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine	13.7%
Gregg	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	68.9%
Harrison	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	13.7%
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City, Cypre	13.7%
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City , Sabi	13.7%
Harrison	Leigh WSC	Drill New Wells (Leigh, Queen City, Cypress)	13.7%
Harrison	Longview	Sabine River Authority Strategy - Wood County GW	20.0%
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Cypres	13.7%
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Sabine)	13.7%
Harrison	North Harrison WSC	Drill New Wells (North Harrison, Queen City, Cypress)	13.7%
Harrison	Scottsville	Drill New Wells (Scottsville, Queen City, Cypress)	13.7%
Harrison	Waskom	Drill New Wells (Waskom, Queen City, Cypress)	52.5%
Hopkins	Brinker WSC	Increase Existing Contract (Brinker WSC, Sulphur)	13.7%

Texas Regional Water Planning Group
WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Hopkins	Cumby	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	57.0%
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sa	13.7%
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Su	13.7%
Hopkins	Livestock, Hopkins	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	13.7%
Hopkins	Martin Springs WSC	Increase Existing Contract (Martin Springs)	13.7%
Hopkins	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-V	13.7%
Hopkins	Mining, Hopkins	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Su	13.7%
Hunt	Caddo Basin SUD	Advanced Water Conservation (Caddo Basin SUD)	0.0%
Hunt	Cash SUD	Advanced Water Conservation (Cash SUD)	0.0%
Hunt	Cash SUD	Increase Existing Contract (Cash SUD)	13.7%
Hunt	Celeste	Drill New Wells (Celeste, Woodbine, Trinity)	13.7%
Hunt	Greenville	Advanced Water Conservation (Greenville)	100.0%
Hunt	Greenville	Greenville Water Loss Reduction	100.0%
Hunt	Greenville	New WTP Greenville	100.0%
Hunt	Greenville	Voluntary Reallocation of Hunt Manufacturing Surplu	100.0%
Hunt	Irrigation, Hunt	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	13.7%
Hunt	Livestock, Hunt	Drill New Well (Livestock, Hunt, Trinity, Sabine)	13.7%
Hunt	MacBee SUD	Increase Contract - MacBee SUD to SRA	13.7%
Hunt	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sal	60.9%
Hunt	Poetry WSC	Advanced Water Conservation (Poetry WSC)	13.7%
Hunt	Texas A&M University Commerce	Texas A&M University - Commerce - Drill New Wells (	13.7%
Lamar	County-Other, Lamar	Increase Existing Contract (County-Other Lamar)	13.7%
Lamar	Irrigation, Lamar	Pat Mayse Raw Water Pipeline (Irrigation Lamar)	13.7%
Lamar	Livestock, Lamar	Lamar Livestock Pipeline and Contract with Lamar Co	13.7%
Marion	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	13.7%
Marion	Mining, Marion	Drill New Wells (Mining Marion, Queen City, Cypress)	13.7%
Morris	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	0.0%
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Cypres	13.7%
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Sulphu	13.7%
Rains	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-V	13.7%
Red River	Clarksville	Drill New Wells with RO Treatment (Clarksville, Blossc	13.7%
Red River	Irrigation, Red River	Drill New Wells (Irrigation, Red River, Nacatoch, Sulpl	13.7%
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Blossom, Red)	13.7%
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Trinity Aquifer,	13.7%
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	13.7%
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	13.7%
Smith	East Texas MUD	Drill New Wells (Smith County MUD 1, Queen City, Sa	83.4%
Smith	Lindale	Drill New Wells (Lindale, Carrizo, Neches)	13.7%
Smith	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	13.7%
Smith	Star Mountain WSC	Drill New Wells (Star Mountain, Queen City, Sabine)	63.1%
Smith	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	68.9%
Smith	Winona	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	61.5%
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Cypress)	13.7%

Texas Regional Water Planning Group
WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)	13.7%
Titus	Manufacturing, Titus	Advanced Water Conservation (Manufacturing Titus,	0.0%
Titus	Manufacturing, Titus	Increase Existing Contract (Manufacturing Titus from	13.7%
Upshur	Big Sandy	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	13.7%
Upshur	Gilmer	Drill New Wells (Gilmer, Carrizo, Cypress)	65.2%
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Cypre	13.7%
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Sabin	13.7%
Upshur	Manufacturing, Upshur	Drill New Wells (Manufacturing Upshur, Queen City, (	13.7%
Van Zandt	Canton	Canton Reuse	13.7%
Van Zandt	Canton	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	13.7%
Van Zandt	Edom WSC	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Nech	13.7%
Van Zandt	Little Hope Moore WSC	Drill New Well (Little Hope Moore WSC, Van Zandt, Ca	13.7%
Van Zandt	Livestock, Van Zandt	Drill New Wells (Livestock Van Zandt, Queen City, Nec	13.7%
Van Zandt	MacBee SUD	Increase Contract - MacBee SUD to SRA	13.7%
Van Zandt	Manufacturing, Van Zandt	Advanced Water Conservation (Manufacturing Van Za	0.0%
Van Zandt	Manufacturing, Van Zandt	Drill New Wells (Manufacturing Van Zandt, Carrizo-W	13.7%
Van Zandt	Myrtle Springs WSC	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carr	13.7%
Van Zandt	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	13.7%
Wood	Livestock, Wood	Drill New Wells (Livestock, Wood, Queen City, Sabine	13.7%
Wood	Manufacturing, Wood	Advanced Conservation - Manufacturing Wood Co	0.0%
Wood	Manufacturing, Wood	Drill New Wells (Manufacturing, Wood, Queen City, S	13.7%
Wood	Mining, Wood	Drill New Wells (Mining, Wood, Queen City Sabine)	13.7%

General Information

Introduction

Water conservation includes those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. As the prospect of acquiring new water source supplies is diminishing, Texans are realizing that saving the water we currently have is an important strategy for ensuring sufficient water supply for future generations. Even in the North East Texas Region, which is dotted with surface reservoirs and subsurface aquifers, water conservation is a vital tactic in the effort to protect our water resources.

Having well-managed and adequate water supplies is not only important for current residents of the North East Texas Region, but it also aids residential and commercial growth of the area, and encourages industry to locate in our region. If we are to remain in competition with metropolitan areas for residential and industrial growth, we must protect and preserve our natural resources, one of the most important being our water supplies. With this in mind, NETRWPG supports water conservation as a water management strategy, and has developed this guidance to assist those in the region who are incorporating a water conservation plan into their policies.

The holder of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for municipal, industrial, and non-irrigation uses shall develop, submit, and implement a water conservation plan meeting the requirements of Subchapter A of this chapter (relating to Water Conservation Plans). The water conservation plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the next revision of the water conservation plan…must be submitted not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption. The revised plans must include implementation reports. The requirement for a water conservation plan under this section must not result in the need for an amendment to an existing permit, certified filing, or certificate of adjudication. [30 TAC Chapter 288, Subchapter C]

If you fall into one of the categories listed above, you are required to submit a plan to the TCEQ. Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.). If you do not fall into an above category, but are creating a plan for another reason, you are not required to submit your plan to TCEQ.

Each entity required to submit a Water Conservation Plan (WCP) to TCEQ must also submit a copy to TWDB no later than May 1, 2009. In addition, entities that are applying for or receiving financial assistance from the TWDB of more than $500,000, and/or retail public water suppliers providing water service to 3,300 or more connections must develop, submit and implement a WCP to TWDB. These plans should be sent to TWDB, 1700 North Congress Ave., PO Box 13231, Austin, Texas 78711-3231.

This guidance document was created using several reference materials, including Texas Administrative Code (TAC) Title 30 Chapter 288, TAC Chapter 363, the Texas Water Development Board's (TWDB) 'Water Conservation Plan Guidance Checklist,' and the TWDB and Texas Commission on Environmental Quality (TCEQ) websites. Example wording that you may want to use in your plan will be included throughout in bold italics. Water conservation forms are available in MSWord and PDF formats on the TCEQ website (www.tceq.state.tx.us), water conservation page.

The __________________(water system) recognizes that water conservation is a viable strategy to protecting its water supply. This Water Conservation Plan (Plan) has been developed to protect the system's water source and extend its useful life in order to ensure that a sufficient water supply is available for both present and future needs. The water conservation portion of the Plan looks at year-round methods for reducing water use. It will consider methods that should result in a continuous reduction of water use. However, because some of the methods take place primarily in summer months, these impacts may be more noticeable on a seasonal basis. The drought contingency portion of the Plan will look at measures designed to reduce water use on a temporary basis in the event of a period of drought or an emergency situation such as water source contamination. Methods considered here are not necessarily needed on a continual basis, but should be achievable in the short term.

Include a description of your service area so that users can become familiar with the service area. The following is a very general guideline.

The _________________ (water system) is located in ___________ County, along ______________ (give a general location using major highways or rivers). It is a rural community comprised of around ____ citizens. (Locate nearest bodies of water, important landmasses, etc.). ________'s (water system) water supply comes from ______________ (water rights, contract with…, etc. List contract amounts and lengths). __________ (water system) treats its own water, and also owns its own wastewater treatment facility.

It is also helpful to include in the introduction a detailed description of your water supply and your storage and distribution systems. You can summarize your systems here, but need to complete the TCEQ 'Utility Profile' form, which will provide specific system information. This form can be downloaded in MSWord or PDF from the Conservation Program page of the TCEQ website or by calling 512-239-4691.

All water conservation plans for municipal uses by public drinking water suppliers must include … a utility profile including, but not limited to, information regarding population and customer data, water use data, water supply system data, and wastewater system data. [30 TAC Chapter 288]

Coordination with the North East Texas Regional Water Planning Group

The NETRWPG's Regional Water Plan contains population and water use projections for the next 50 years for all water systems within the North East Texas Region. We request that you review the latest version of this plan and use our projections in your plan. If you are unable to use our projections, please document your reasons.

In order to ensure that the water conservation plan is in agreement with the policies of the NETRWPG, we request that you submit a copy of your plan, once approved, to: NETRWPG, c/o Mr. Walt Sears, Northeast Texas Municipal Water District, P.O. Box 955, Hughes Springs, Texas 75656.

> ***A copy of this plan was submitted to the NETRWPG on _________ (date).***

Coordination with Wholesale Water Provider

If you purchase all or a portion of your supply from a wholesaler, then please include this section. If you own your own water rights, or use groundwater, then disregard this section.

In order to create cohesive plans between water users, it is recommended that you review your wholesaler's water conservation plan before you create your own plan. You are not required to imitate the wholesaler's plan, but your plan should not contradict your wholesaler's plan.

> ***We have reviewed the _________________ (wholesale provider) water conservation plan and have created our plan to compliment that plan.***

Coordination with the Public

> ***The __________________________________(water supplier) gave the public an opportunity to provide input into this plan by ___________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included ________________.***

WATER CONSERVATION GOALS

> *All water conservation plans for municipal uses by public drinking water suppliers must include beginning May 1, 2005, specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita per day. The goals established by a public water supplier under this subparagraph are not enforceable. –30 TAC Chapter 288*

The _____________ (water system) average daily water use is _______gpcpd according to ________ (source). The _____________ (water system) utilized Regional Water Planning Group projections when setting water savings goals. The system's 5-year goal for municipal use is to reduce daily water use (by/to) ___ gpcpd. Our water loss goal is ______________. The system's 10-year goal is to reduce daily water use (by/to) ___ gpcpd, thus achieving the projected ____ gpcpd by _____ (year) as stated in the Regional Water Plan. Our water loss goal is ____________.

Note that there should be a goal for water loss and a goal for municipal water use; water use should be calculated in gpcd.

PLAN FOR MEETING GOALS

Required Programs

Master Meter

All water conservation plans for municipal uses by public drinking water suppliers must include…metering devices with an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the source of supply. –30 TAC Chapter 288

Discuss the type of master meter you currently have, and any plans for a new meter. If you cannot comply with the requirements, please explain.

Universal Metering

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for universal metering of both customer and public uses of water… –30 TAC Chapter 288

Discuss your existing and/or proposed universal metering program. If you do not comply with these requirements, please explain.

Meter Testing & Repair Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for meter testing and repair… –30 TAC Chapter 288

Discuss your existing and/or proposed meter testing and repair program. If you cannot comply with these requirements, please explain.

Meter Replacement Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for periodic meter replacement. –30 TAC Chapter 288

Discuss plans for meter replacement. List any replacement schedules you have in place. If you do not have a meter replacement program, please explain.

Unaccounted for Water

All water conservation plans for municipal uses by public drinking water suppliers must include…measures to determine and control unaccounted-for uses of water (for example, periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections; abandoned services, etc.). –30 TAC Chapter 288

Discuss your existing and/or proposed measures to find and control unaccounted-for water use. This should include discussion of leak detection and repair programs. The TWDB offers free assistance for water loss determination, including on-site water audit assistance and free water loss audit workshops. In addition, TWDB will loan out leak detection and flow meter testing equipment to aid in determining water loss. You may also find the Water Loss Audit Manual for Texas Utilities helpful in determining water loss. More information can be found on TWDB's website or by calling the Water Conservation Division.

In addition to the examples above, some systems have water-billing programs that note accounts with higher than normal activity, which could be a water leak. If you have this program, please discuss it here.

Public Education and Information Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program of continuing public education and information regarding water conservation. –30 TAC Chapter 288

There are numerous ways to inform and educate the public about water conservation. Some examples include:

- Provide conservation pamphlets, available at City Hall or your water office. The TWDB offers free and low cost pamphlets on its website, www.twdb.state.tx.us.

- Add water conservation slogans to your monthly water bill, e.g., "Every drop counts – Be water smart!"; "Conserve water – It makes cents!"; "Please use the month of May to check your toilets for leaks."

- Set up a water conservation booth at local fairs and festivals. Offer conservation oriented handouts.

- Sponsor a school project related to conservation in your local elementary school. TWDB offers the Major Rivers Water Education curriculum for 4th and 5th graders, and the Raising Your Water IQ curriculum for 6th graders. In addition, there is a TWDB kid's page which promotes conservation with interactive games, coloring pages, and water facts. These can be accessed on TWDB's website or by calling TWDB.

- Create a running banner on your website with water conservation tips that change periodically.

- Present a water conservation program at local service club meetings and industry group meetings. Free brochures from TWDB could be dispersed.

- Offer field trips of your water treatment facility to local schools, and use the opportunity to talk about conservation.

- Include "Keep Texas Beautiful" affiliate groups in conservation projects.

- Encourage your agricultural extension agency to present xeriscape programs to local high school horticulture classes, garden clubs, and other interested groups.

Discuss your program for public awareness.

Non-promotional Water Rates

All water conservation plans for municipal uses by public drinking water suppliers must include…a water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water. –30 TAC Chapter 288

Attach a copy of your water rates to the plan and summarize your rates here. If you need to impose a non-promotional water rate structure, or otherwise update your rates, discuss your plan here.

Reservoir Systems Operations Plan

All water conservation plans for municipal uses by public drinking water suppliers must include…a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin in order to optimize available water supplies. –30 TAC Chapter 288

If this section applies to you, discuss your plan here. If you do not comply, please explain.

Additional Programs

If necessary to meet the 5 and 10-year target goals, you can add any other water conservation strategies to your plan. They should be discussed in detail here, and can include, but are not limited to:

- Conservation-oriented rate structures.
- Requiring structures undergoing substantial modification or addition to install water conserving plumbing fixtures
- Creating a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures
- Reusing and/or recycling of wastewater and/or graywater
- Creating a program for pressure control and/or reduction in the distribution system and/or for customer connections
- Creating a program and/or ordinance(s) for landscape water management

Additional Requirements for Systems Serving over 5,000 Population

Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next ten years subsequent to the effective date of the plan must include the following elements: (A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water; (B) a record management system to record water pumped, water deliveries, water sales, and water losses which allows for the desegregation of water sales and uses into the following user classes: (i) residential; (ii) commercial; (iii) public and institutional; and (iv) industrial; and (C) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter. –30 TAC Chapter 288

If you are selling to a water provider who, in turn, intends to wholesale the water to a retail customer, your water supply contract, when renewed, must state that the subsequent wholesaler is required to have a water conservation plan in place. If this section applies, discuss the proposed contract changes here. If it does not apply, state why.

Schedule for Meeting Targets

In this section, please discuss your estimated timeline for implementing any programs noted in the "Required Program" section. For example, if you are proposing a meter replacement program, please discuss the schedule here.

Means of Implementation and Enforcement

All water conservation plans for municipal uses by public drinking water suppliers must include…a means of implementation and enforcement which shall be evidenced by: (i) a copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier; and (ii) a description of the authority by which the water supplier will implement and enforce the conservation plan. –30 TAC Chapter 288

The _________________ (Mayor, President, etc.), or his/her designee, is hereby authorized to implement and enforce the water conservation plan.

The water conservation plan has made this plan official policy by means of a __________ (resolution, tariff, ordinance), passed on ________________ (date). A copy of the ________________ has been included at the end of the plan.

Revision/Updates

Beginning May 1, 2005, a public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. – 30 TAC Chapter 288

The _______________ (authorized representative) shall be responsible for updating and revising this plan five years after its adoption, or May 1, 2014, whichever is earlier.

PLAN FOR EMERGENCIES (DROUGHT CONTINGENCY)

A drought contingency plan is required for all public water suppliers, in addition to this Water Conservation Plan. Please see the NETRWPG guidance documents for drought contingency plans in Chapter 7 herein, and use the one that is appropriate for you – either wholesale or retail.

1.2 MODEL WATER CONSERVATION PLAN – RETAIL WATER PROVIDERS

General Information

Introduction

Drought is a very real natural disaster that occurs in Texas, even in the verdant bottomlands, green pastures, and piney woods of northeast Texas. As recently as 2011, drought strained water systems in the northeast Texas region. In addition to natural drought, there are also water supply emergencies that occur from time to time in which water supply becomes contaminated. A good example of this is the Methyl Tertiary Butyl Ether (MTBE) spill into Lake Tawakoni in May 2000, which contaminated supply for several Hunt County water systems for multiple days.

In an effort to better respond to drought conditions, the North East Texas Regional Water Planning Group (NETRWPG) has prepared this document, with the idea that if water providers study their water supply system before a drought or emergency occurs, then they will be better prepared to respond. In preparing this document, several references were used, including Chapters 288 and 363 of the Texas Administrative Code, the Texas Commission on Environmental Quality's (TCEQ) 'Handbook for Drought Contingency Planning for Retail Public Water Suppliers,' Texas Water Code §11.1272, and the TCEQ and TWDB websites. All of these resources are available to you if you need further information or clarification. You may also contact the TCEQ at 512-239-4691 with questions or for information. Example wording for your plan will be found throughout in bold italics.

According to the requirements set forth in the amended Chapter 288, Subchapter C of the Texas Administrative Code, retail public water suppliers providing water service to 3,300 or more connections must submit revisions to existing drought contingency plans to the executive director not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption. If you are a retail supplier, but serve less than 3,300 connections, you are still required to develop and implement a plan, but you do not need to submit the plan unless specifically requested by TCEQ. If you provide wholesale supply in addition to retail supply, you will also need to develop a wholesale drought contingency plan. Please see the North East Texas Region's guidance document for wholesale drought contingency plans.

The __________________(water provider) understands that water conservation is a viable strategy for protecting water resources both now and in the future, and that adequate planning for times of drought or emergency is a necessary part of conservation. The purpose of this plan is to prepare for the possibility of a drought or emergency situation where water is in short supply. This plan will help to ensure that _______________________(water supplier) uses water wisely and efficiently during periods of drought.

Though not specifically required by rule, it is helpful to the reader if you summarize your water supply and distribution systems in the introduction. This will familiarize users of the Plan with your system, and help them to make sense of the actions that you intend to take. In addition, discussing your water system here will assist those who update the plan in five years, because they will know exactly what the system looked like when the plan was created.

The ______________(water supplier) utilizes groundwater /surface water from _______________(source). Supply is secured by a (water right, water supply contract, etc.) through the year _____. We currently have _____ connections, and our average daily use is ____. Our storage and distribution systems consist of ____.

Coordination with the North East Texas Regional Water Planning Group

The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans. – 30 TAC Chapter 288

A copy of this adopted plan will be submitted to the NETRWPG via its administrator, Mr. Walt Sears, Northeast Texas Municipal Water District, P. O. Box 955, Hughes Springs, Texas 75656.

Informing the Public/Requesting Input

Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting. – 30 TAC Chapter 288

The __________________________________(water supplier) gave the public an opportunity to provide input into this plan by ___________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included ________________.

Efforts to inform the public about each stage of the plan, and when stages are implemented or rescinded, will be through ___________________________ (newspaper articles, radio announcements, website announcements, etc.).

Authorization/Applicability

The ________________ (mayor, president, city administrator, etc.) is hereby authorized to monitor the weather as well as water supply and demand conditions and to implement the Drought Contingency Plan as appropriate.

The _______________________(City Council, Board of Directors, etc.) authorizes the Plan by a _______________(resolution, ordinance), which has been included in this Plan.

Coordination with the Texas Commission on Environmental Quality

According to 30 TAC Chapter 288, Subchapter C, "For retail public water suppliers providing water service to 3,300 or more connections, the drought contingency plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the retail public water suppliers providing service to 3,300 or more connections shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption."

This plan was submitted to the executive director of the Texas Commission on Environmental Quality on _______________________(date).

Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.).

If you serve less than 3,300 connections, the following rule applies:

For all the retail public water suppliers, the drought contingency plan must be prepared and adopted not later than May 1, 2005 and must be available for inspection by the executive director upon request. Thereafter, the retail public water suppliers shall prepare and adopt the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new retail public water supplier providing water service to less than 3,300 connections shall prepare and adopt a drought contingency plan within 180 days of commencement of *operation, and shall make the plan available for inspection by the executive director upon request. – 30 TAC Chapter 288*

In other words, if you serve less than 3,300 connections, you are still required to prepare and adopt a plan, but you do not have to turn it in unless TCEQ asks for it. Your section would read:

Submission of this plan to the TCEQ was not required; however, the plan will be made available to TCEQ if requested.

For questions to the TCEQ, you can check the website at www.tceq.state.tx.us, or call 512/239-4691.

Coordination with Wholesale Water Supplier

This section only applies if you purchase supply from a wholesale provider. If you have a contract or an agreement with a water provider, then complete this section. If you have water rights or otherwise own your supply, this section does not apply.

This plan has been created with consideration of our water provider, ________________'s drought contingency plan. We have included __________________'s (water provider) requirements within our plan and have created this plan to compliment _____________'s (water provider) plan. ______________(water provider) has been provided a copy of this plan.

Plan Definitions

For the purposes of this Plan, the following definitions, taken from TCEQ guidance, shall apply:

<u>Aesthetic water use</u>: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

<u>Commercial and institutional water use</u>: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

<u>Conservation</u>: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

<u>Customer</u>: any person, company, or organization using water supplied by _________________ (name of water supplier).

<u>Domestic water use</u>: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

<u>Even number address</u>: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

<u>Industrial water use</u>: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

<u>Landscape irrigation use</u>: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

<u>Non-essential water use</u>: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

- ***(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;***

- ***(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;***

- ***(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;***

- ***(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;***

- ***(e) flushing gutters or permitting water to run or accumulate in any gutter or street;***

- ***(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;***

- ***(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;***

- ***(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and***

- ***(i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.***

***Odd numbered address*: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.**

RESPONSE TO A DROUGHT EVENT

In this portion of the plan, it will need to be determined whether a water constraint will more likely be caused by a shortage in water supply or by constraints in your storage and distribution system. Associated goals and water management measures should correspond to the type of constraint expected. For example, if insufficient storage is determined to be the most likely cause of water shortage during a drought, then an emergency back-up supply source would not solve the problem; reduced use during peak hours (banning lawn watering, etc.) would more likely solve the problem by giving storage tanks a better opportunity to refill.

The drought contingency plan should be designed for a drought condition at least as severe as the drought of record according to TCEQ rules. Since the drought of record in Texas occurred in the 1950's, few systems will have water use records still available to plan by. Therefore, the NETRWPG suggests using the most recent drought for the State, which occurred in 2011. If your system does not have records for 2011, use the time period in your records when your system was the most strained by dry weather conditions.

During each stage, it will need to be determined what will trigger initiation, what the water use reduction target goal is, what water management strategies will be put into place, and, finally, what will terminate the stage. Keep in mind that a supplier which is also a customer of its wholesale provider must comply with its provider's Drought Contingency Plan (DCP). Do not develop stages or management strategies that are in conflict with your water provider's DCP.

Stage 1 – Mild Water Shortage

Initiation: The _______________________(water supplier) will consider that a mild water shortage exists when__________________________________ (i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a mild water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 1 shall be rescinded when ____________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below

___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage I is rescinded by*** ___________________________(entity's water provider) if applicable.

Water Management Strategies: During Stage 1, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Request voluntary water conservation from all customers
- Reduce operating procedures that use water (i.e. flushing of mains) as appropriate
- Cease providing potable water for dust control, road building and similar construction purposes
- Enhance water supply and demand monitoring, as well as leak detection and repair efforts
- Request that water customers voluntarily limit the irrigation of landscaped areas
- Request that non-essential water uses be eliminated, including:

    1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;
    2. Wash down of buildings or structures for purposes other than immediate fire protection;
    3. Use of water for dust control;
    4. Flushing gutters or permitting water to run or accumulate in any gutter or street; and,
    5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

Stage 2 – Moderate Water Shortage

Initiation: The _______________________(water supplier) will consider that a moderate water shortage exists when__________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a moderate water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 2 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage 2 is rescinded by*** __________________________(entity's water provider) if applicable. ***Upon termination of Stage 2, Stage 1 becomes operative.***

Water Management Strategies: During Stage 2, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Modify reservoir operations if applicable

- Cease providing potable water for dust control, road building and similar construction purposes

- Enhance water supply and demand monitoring, as well as leak detection and repair efforts

- Limit use of water from hydrants to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare

- Restrict irrigation of landscaped areas, for example, "Irrigation of landscape areas with hose-end sprinklers or automatic irrigation systems shall be prohibited except during the evening hours between 10:00 p.m. and 6:00 a.m. However, irrigation of landscaped areas is permitted at anytime if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or a drip irrigation system." Please consider your individual system when restricting landscape watering. Allow watering when other types of water use are low to prevent strain on your system. Only use even/odd water days if you know it will work for your system – this type of watering plan can sometimes encourage lawn watering that otherwise wouldn't take place.

- Prohibit use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station.

- Prohibit use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools.

- Prohibit operation of any ornamental fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life.

- Prohibit non-essential water uses such as:

    1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;

    2. Wash down of buildings or structures for purposes other than immediate fire protection;

    3. Use of water for dust control;

    4. Flushing gutters or permitting water to run or accumulate in any gutter or street;

    5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The _______________________(water supplier) will consider that a severe water shortage exists when__________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a severe water shortage exists, the ____________________(water supplier) ***will implement water management strategies in an attempt to reduce daily water use to*** _________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 3 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage 3 is rescinded by***

__________________________(entity's water provider) if applicable. ***Upon termination of Stage 3, Stage 2 becomes operative.***

Water Management Strategies: During Stage 3, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- All of the strategies in Stage 2 are appropriate in Stage 3, except that landscape watering may need to be prohibited

- Implement water rate surcharges (i.e. a set charge for any use above average monthly use)

- Implement price adjustments (i.e. increase the price per 1,000 gallons of water used above the average monthly use)

- Utilize alternate or emergency water sources

<u>Stage 4 – Emergency Water Shortage</u>

This stage could apply in the instance of a major water line break, a contamination of the water supply source, or other urgent water system conditions. Most likely, this stage would be initiated by decision of the authorized plan implementer (Mayor, President, Manager, etc.)

Initiation: The ______________________(water supplier) will consider that an emergency water shortage exists when _________________________________ (i.e. the water main at the water treatment plant bursts or is otherwise significantly damaged; the reservoir is contaminated by oil spill; etc.,), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When an emergency water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 4 shall be rescinded when ___________________________ (i.e. the main at the water treatment plant is restored and storage tanks have been allowed to refill; analysis of the source water indicates that supply is safe to use; etc.), ***or when Stage 4 is rescinded by*** __________________________(entity's water provider) if applicable.

Water Management Strategies: During Stage 4, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc. (This may require approval by the TCEQ Executive Director)

- Modify reservoir operations

- All strategies that are used in Stage 3 could be applicable in Stage 4

PLAN EXECUTION

Public Involvement

This section should discuss the ways in which the supplier will inform its customers about the initiation and termination of drought stages, as well as management strategies that customers are expected to follow. Public involvement can be in the form of special public hearings, articles and notices in the local newspaper, radio announcements, announcements on local television stations, notices in billing statements, etc.

The ______________________ (water provider) will keep its customers apprised of initiation of the drought contingency plan, and changes in stages, by means of ____________________________.

Enforcement

The _______________ (Mayor, City Manager, President, etc.), or his/her designee, is responsible for monitoring weather conditions and water supply and determining when to initiate and terminate the stages of the DCP.

The ________________ (governing body) ***has adopted this plan through*** ____________ (ordinance, resolution), ***and has made it an official*** __________ (city, Corporation, etc.) ***policy. The*** ________________ (ordinance, resolution, etc.) ***is attached hereto as Figure*** ___.

Provision for responding to wholesale provider restrictions

Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. – 30 TAC Chapter 288

If you have a wholesale provider, then add this section. If you own your own supply, please skip this section.

As stated in each water shortage stage, we intend to comply with all requirements of our wholesale provider's drought contingency plan. This plan is as stringent as our provider's plan, and in some cases may be more so.

Notification of TCEQ on mandatory provisions

A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. – 30 TAC Chapter 288

The Executive Director at TCEQ shall be notified with 5 business days if any mandatory provisions of this plan are implemented. *The Executive Director can be reached at 512-239-3900.*

Variance procedures

The drought contingency plan must include procedures for granting variances to the plan. – 30 TAC Chapter 288

The _____________ (authorized representative) may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the customer requesting such variance and if one or more of the following conditions are met:

a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.

b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Customers requesting an exemption from the provisions of this Plan shall file a petition for variance with the ______________ (water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _________ (authorized representative), and shall include the following:

a) Name and address of the petitioner(s).

b) Purpose of water use.

c) Specific provision(s) of the Plan from which the petitioner is requesting relief.

d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.

e) Description of the relief requested.

f) Period of time for which the variance is sought.

g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.

h) Other pertinent information.

Variances granted by the _______________ (water supplier) shall be subject to the following conditions, unless waived or modified:

a) Variances granted shall include a timetable for compliance.

b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

5-year updates

The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan. – 30 TAC Chapter 288

This plan shall be revaluated and updated every five years based on the most recent information; especially the latest adopted NETRWPG Regional Water Plan.

WUG Name	Maximum need 2030-2080 (af/yr)	conservation - water use reduction	conservation - water loss mitigation	drought management	reuse	management of existing supplies	development of large-scale marine seawater or brackish groundwater	conjunctive use	acquisition of available existing supplies	development of new supplies	development of regional water supply or regional management of water supply facilities	voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	emergency transfer of water under Section 11.139	system optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	new surface water supply	new groundwater supply	brush management; precipitation enhancement	interbasin transfers of surface water	aquifer storage and recovery	cancellation of water rights	rainwater harvesting	other
410 WSC	135	PF	PF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
B H P WSC	414	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Ben Wheeler WSC	230	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Bi County WSC	20	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Big Sandy	62	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Brashear WSC	171	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Bright Star Salem SUD	349	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Brinker WSC	2615	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Burns Redbank WSC	400	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Caddo Basin SUD	970	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Canton	35	nPF	nPF	nPF	PF	PF	nPF	PF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Carroll WSC	797	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Cash SUD	252	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Celeste	361	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Central Bowie County WSC	121	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Clarksville	266	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	PF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Cornersville WSC	270	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
County-Other, Cass	586	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
County-Other, Hunt	87	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	PF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
County-Other, Lamar	95	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
County-Other, Red River	128	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF

WUG Name	Maximum need 2030-2080 (af/yr)	conservation - water use reduction	conservation - water loss mitigation	drought management	reuse	management of existing supplies	development of large-scale marine seawater or brackish groundwater	conjunctive use	acquisition of available existing supplies	development of new supplies	development of regional water supply or regional management of water supply facilities	voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	emergency transfer of water under Section 11.139	system optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	new surface water supply	new groundwater supply	brush management; precipitation enhancement	interbasin transfers of surface water	aquifer storage and recovery	cancellation of water rights	rainwater harvesting	other
County-Other, Van Zandt	21296	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Crystal Systems Texas	8	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Cypress Springs SUD	827	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Cypress Valley WSC	35	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
De Kalb	317	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Delta County MUD	5216	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
East Mountain Water System	474	PF	PF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
East Texas MUD	3787	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Edom WSC	193	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Elysian Fields WSC	4691	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Fruitvale WSC	3	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Gladewater	2681	nPF	nPF	nPF	PF	PF	nPF	PF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Golden WSC	81	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Grand Saline	456	nPF	nPF	nPF	PF	PF	nPF	PF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Greenville	48	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Hallsville	198	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Harleton WSC	130	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Hickory Creek SUD	194	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Holly Springs WSC	996	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Hooks	710	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Bowie	2168	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF

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Irrigation, Camp	52	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Harrison	291	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Hopkins	95	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Hunt	453	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Lamar	1991	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Rains	164	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Irrigation, Red River	80	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Leigh WSC	1	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Liberty City WSC	1852	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Liberty Utilities Silverleaf Water	38	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Lindale	355	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Lindale Rural WSC	314	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Little Hope Moore WSC	1234	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Bowie	167	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Camp	383	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Cass	192	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Delta	29	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Franklin	777	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Gregg	26	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Hopkins	255	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Hunt	337	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF

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Livestock, Lamar	380	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Morris	270	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Red River	15	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Livestock, Titus	4	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
MacBee SUD	92	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Macedonia Eylau MUD 1	5693	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Bowie	6769	PF	PF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Camp	276	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Cass	580	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Gregg	649	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Lamar	16	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Marion	88	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Titus	77	PF	PF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Upshur	95	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Van Zandt	456	PF	PF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Manufacturing, Wood	1991	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Maud	164	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Miller Grove WSC	80	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Mining, Bowie	2272	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Mining, Gregg	1	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Mining, Harrison	1852	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF

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Mining, Wood	61	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Myrtle Springs WSC	449	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Nash	314	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
New Boston	1309	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
New Hope SUD	167	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
North Harrison WSC	23	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
North Hopkins WSC	383	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
North Hunt SUD	192	nPF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Ore City	37	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Pine Ridge WSC	106	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Pittsburg	439	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Poetry WSC	1147	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Pritchett WSC	49	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
R P M WSC	41	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Ramey WSC	564	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Redwater	337	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Riverbend Water Resources District	380	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Scottsville	270	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Shady Grove No 2 WSC	15	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Sharon WSC	58	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
South Rains SUD	92	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF

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Star Mountain WSC	69	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Steam-Electric Power, Titus	6293	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Texarkana	6769	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Texas A&M University Commerce	276	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Tri SUD	580	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Tryon Road SUD	461	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Van	118	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	PF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Wake Village	649	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF
West Gregg SUD	3	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Western Cass WSC	16	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	PF	nPF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
White Oak	88	PF	PF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF
Winona	77	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF

Texas Regional Water Planning Group
WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Bowie	Burns Redbank WSC	Riverbend Strategy	13.7%
Bowie	Central Bowie County WSC	Riverbend Strategy	85.2%
Bowie	De Kalb	Riverbend Strategy	65.1%
Bowie	Hooks	Riverbend Strategy	59.7%
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulp	13.7%
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Nacatoch, Red)	13.7%
Bowie	Macedonia Eylau MUD 1	Riverbend Strategy	13.7%
Bowie	Manufacturing, Bowie	Riverbend Strategy	13.7%
Bowie	Manufacturing, Bowie	Advanced Water Conservation (Manufacturing Bowie	0.0%
Bowie	Maud	Riverbend Strategy	13.7%
Bowie	Nash	Riverbend Strategy	100.0%
Bowie	New Boston	Riverbend Strategy	49.1%
Bowie	Redwater	Riverbend Strategy	75.0%
Bowie	Riverbend Water Resources District	Riverbend Strategy	13.7%
Bowie	Texarkana	Riverbend Strategy	13.7%
Bowie	Wake Village	Riverbend Strategy	13.7%
Camp	Livestock, Camp	Drill New Wells (Livestock, Camp, Queen City, Cypress	13.7%
Cass	Atlanta	Riverbend Strategy Cass County	48.0%
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Cypress)	13.7%
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Sulphur)	13.7%
Cass	County-Other, Cass	Riverbend Strategy Cass County	13.7%
Cass	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	0.0%
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Cypress)	13.7%
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Sulphur)	13.7%
Cass	Riverbend Water Resources District	New 2.5 MGD Package WTP and Transmission Line	13.7%
Delta	Livestock, Delta	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	13.7%
Delta	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sal	60.9%
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	13.7%
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	13.7%
Gregg	Kilgore	Sabine River Authority Strategy - Wood County GW	100.0%
Gregg	Longview	Sabine River Authority Strategy - Wood County GW	20.0%
Gregg	Mining, Gregg	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine	13.7%
Gregg	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	68.9%
Harrison	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	13.7%
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City, Cypre	13.7%
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City , Sabi	13.7%
Harrison	Leigh WSC	Drill New Wells (Leigh, Queen City, Cypress)	13.7%
Harrison	Longview	Sabine River Authority Strategy - Wood County GW	20.0%
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Cypress	13.7%
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Sabine)	13.7%
Harrison	North Harrison WSC	Drill New Wells (North Harrison, Queen City, Cypress)	13.7%
Harrison	Scottsville	Drill New Wells (Scottsville, Queen City, Cypress)	13.7%
Harrison	Waskom	Drill New Wells (Waskom, Queen City, Cypress)	52.5%
Hopkins	Brinker WSC	Increase Existing Contract (Brinker WSC, Sulphur)	13.7%

Texas Regional Water Planning Group
WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Hopkins	Cumby	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	57.0%
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sa	13.7%
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Su	13.7%
Hopkins	Livestock, Hopkins	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	13.7%
Hopkins	Martin Springs WSC	Increase Existing Contract (Martin Springs)	13.7%
Hopkins	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-V	13.7%
Hopkins	Mining, Hopkins	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Su	13.7%
Hunt	Caddo Basin SUD	Advanced Water Conservation (Caddo Basin SUD)	0.0%
Hunt	Cash SUD	Advanced Water Conservation (Cash SUD)	0.0%
Hunt	Cash SUD	Increase Existing Contract (Cash SUD)	13.7%
Hunt	Celeste	Drill New Wells (Celeste, Woodbine, Trinity)	13.7%
Hunt	Greenville	Advanced Water Conservation (Greenville)	100.0%
Hunt	Greenville	Greenville Water Loss Reduction	100.0%
Hunt	Greenville	New WTP Greenville	100.0%
Hunt	Greenville	Voluntary Reallocation of Hunt Manufacturing Surplu	100.0%
Hunt	Irrigation, Hunt	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	13.7%
Hunt	Livestock, Hunt	Drill New Well (Livestock, Hunt, Trinity, Sabine)	13.7%
Hunt	MacBee SUD	Increase Contract - MacBee SUD to SRA	13.7%
Hunt	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sal	60.9%
Hunt	Poetry WSC	Advanced Water Conservation (Poetry WSC)	13.7%
Hunt	Texas A&M University Commerce	Texas A&M University - Commerce - Drill New Wells (	13.7%
Lamar	County-Other, Lamar	Increase Existing Contract (County-Other Lamar)	13.7%
Lamar	Irrigation, Lamar	Pat Mayse Raw Water Pipeline (Irrigation Lamar)	13.7%
Lamar	Livestock, Lamar	Lamar Livestock Pipeline and Contract with Lamar Co	13.7%
Marion	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	13.7%
Marion	Mining, Marion	Drill New Wells (Mining Marion, Queen City, Cypress)	13.7%
Morris	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	0.0%
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Cypres	13.7%
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Sulphu	13.7%
Rains	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-V	13.7%
Red River	Clarksville	Drill New Wells with RO Treatment (Clarksville, Blossc	13.7%
Red River	Irrigation, Red River	Drill New Wells (Irrigation, Red River, Nacatoch, Sulph	13.7%
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Blossom, Red)	13.7%
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Trinity Aquifer, :	13.7%
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	13.7%
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	13.7%
Smith	East Texas MUD	Drill New Wells (Smith County MUD 1, Queen City, Sa	83.4%
Smith	Lindale	Drill New Wells (Lindale, Carrizo, Neches)	13.7%
Smith	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	13.7%
Smith	Star Mountain WSC	Drill New Wells (Star Mountain, Queen City, Sabine)	63.1%
Smith	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	68.9%
Smith	Winona	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	61.5%
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Cypress)	13.7%

Texas Regional Water Planning Group

WATER LOSS ESTIMATE OF RECOMMENDED STRATEGIES

County	Entity	Strategy	Estimated % Loss
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)	13.7%
Titus	Manufacturing, Titus	Advanced Water Conservation (Manufacturing Titus,	0.0%
Titus	Manufacturing, Titus	Increase Existing Contract (Manufacturing Titus from	13.7%
Upshur	Big Sandy	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	13.7%
Upshur	Gilmer	Drill New Wells (Gilmer, Carrizo, Cypress)	65.2%
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Cypre	13.7%
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Sabin	13.7%
Upshur	Manufacturing, Upshur	Drill New Wells (Manufacturing Upshur, Queen City, (	13.7%
Van Zandt	Canton	Canton Reuse	13.7%
Van Zandt	Canton	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	13.7%
Van Zandt	Edom WSC	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Nech	13.7%
Van Zandt	Little Hope Moore WSC	Drill New Well (Little Hope Moore WSC, Van Zandt, Ca	13.7%
Van Zandt	Livestock, Van Zandt	Drill New Wells (Livestock Van Zandt, Queen City, Nec	13.7%
Van Zandt	MacBee SUD	Increase Contract - MacBee SUD to SRA	13.7%
Van Zandt	Manufacturing, Van Zandt	Advanced Water Conservation (Manufacturing Van Za	0.0%
Van Zandt	Manufacturing, Van Zandt	Drill New Wells (Manufacturing Van Zandt, Carrizo-W	13.7%
Van Zandt	Myrtle Springs WSC	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carr	13.7%
Van Zandt	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	13.7%
Wood	Livestock, Wood	Drill New Wells (Livestock, Wood, Queen City, Sabine	13.7%
Wood	Manufacturing, Wood	Advanced Conservation - Manufacturing Wood Co	0.0%
Wood	Manufacturing, Wood	Drill New Wells (Manufacturing, Wood, Queen City, S	13.7%
Wood	Mining, Wood	Drill New Wells (Mining, Wood, Queen City Sabine)	13.7%

General Information

Introduction

Water conservation includes those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. As the prospect of acquiring new water source supplies is diminishing, Texans are realizing that saving the water we currently have is an important strategy for ensuring sufficient water supply for future generations. Even in the North East Texas Region, which is dotted with surface reservoirs and subsurface aquifers, water conservation is a vital tactic in the effort to protect our water resources.

Having well-managed and adequate water supplies is not only important for current residents of the North East Texas Region, but it also aids residential and commercial growth of the area, and encourages industry to locate in our region. If we are to remain in competition with metropolitan areas for residential and industrial growth, we must protect and preserve our natural resources, one of the most important being our water supplies. With this in mind, NETRWPG supports water conservation as a water management strategy, and has developed this guidance to assist those in the region who are incorporating a water conservation plan into their policies.

The holder of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for municipal, industrial, and non-irrigation uses shall develop, submit, and implement a water conservation plan meeting the requirements of Subchapter A of this chapter (relating to Water Conservation Plans). The water conservation plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the next revision of the water conservation plan…must be submitted not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption. The revised plans must include implementation reports. The requirement for a water conservation plan under this section must not result in the need for an amendment to an existing permit, certified filing, or certificate of adjudication. [30 TAC Chapter 288, Subchapter C]

If you fall into one of the categories listed above, you are required to submit a plan to the TCEQ. Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.). If you do not fall into an above category, but are creating a plan for another reason, you are not required to submit your plan to TCEQ.

Each entity required to submit a Water Conservation Plan (WCP) to TCEQ must also submit a copy to TWDB no later than May 1, 2009. In addition, entities that are applying for or receiving financial assistance from the TWDB of more than $500,000, and/or retail public water suppliers providing water service to 3,300 or more connections must develop, submit and implement a WCP to TWDB. These plans should be sent to TWDB, 1700 North Congress Ave., PO Box 13231, Austin, Texas 78711-3231.

This guidance document was created using several reference materials, including Texas Administrative Code (TAC) Title 30 Chapter 288, TAC Chapter 363, the Texas Water Development Board's (TWDB) 'Water Conservation Plan Guidance Checklist,' and the TWDB and Texas Commission on Environmental Quality (TCEQ) websites. Example wording that you may want to use in your plan will be included throughout in bold italics. Water conservation forms are available in MSWord and PDF formats on the TCEQ website (www.tceq.state.tx.us), water conservation page.

The __________________(water system) recognizes that water conservation is a viable strategy to protecting its water supply. This Water Conservation Plan (Plan) has been developed to protect the system's water source and extend its useful life in order to ensure that a sufficient water supply is available for both present and future needs. The water conservation portion of the Plan looks at year-round methods for reducing water use. It will consider methods that should result in a continuous reduction of water use. However, because some of the methods take place primarily in summer months, these impacts may be more noticeable on a seasonal basis. The drought contingency portion of the Plan will look at measures designed to reduce water use on a temporary basis in the event of a period of drought or an emergency situation such as water source contamination. Methods considered here are not necessarily needed on a continual basis, but should be achievable in the short term.

Include a description of your service area so that users can become familiar with the service area. The following is a very general guideline.

The _________________ (water system) is located in ___________ County, along ______________ (give a general location using major highways or rivers). It is a rural community comprised of around ____ citizens. (Locate nearest bodies of water, important landmasses, etc.). ________'s (water system) water supply comes from ______________ (water rights, contract with…, etc. List contract amounts and lengths). __________ (water system) treats its own water, and also owns its own wastewater treatment facility.

It is also helpful to include in the introduction a detailed description of your water supply and your storage and distribution systems. You can summarize your systems here, but need to complete the TCEQ 'Utility Profile' form, which will provide specific system information. This form can be downloaded in MSWord or PDF from the Conservation Program page of the TCEQ website or by calling 512-239-4691.

All water conservation plans for municipal uses by public drinking water suppliers must include … a utility profile including, but not limited to, information regarding population and customer data, water use data, water supply system data, and wastewater system data. [30 TAC Chapter 288]

Coordination with the North East Texas Regional Water Planning Group

The NETRWPG's Regional Water Plan contains population and water use projections for the next 50 years for all water systems within the North East Texas Region. We request that you review the latest version of this plan and use our projections in your plan. If you are unable to use our projections, please document your reasons.

In order to ensure that the water conservation plan is in agreement with the policies of the NETRWPG, we request that you submit a copy of your plan, once approved, to: NETRWPG, c/o Mr. Walt Sears, Northeast Texas Municipal Water District, P.O. Box 955, Hughes Springs, Texas 75656.

> ***A copy of this plan was submitted to the NETRWPG on _________ (date).***

Coordination with Wholesale Water Provider

If you purchase all or a portion of your supply from a wholesaler, then please include this section. If you own your own water rights, or use groundwater, then disregard this section.

In order to create cohesive plans between water users, it is recommended that you review your wholesaler's water conservation plan before you create your own plan. You are not required to imitate the wholesaler's plan, but your plan should not contradict your wholesaler's plan.

> ***We have reviewed the _________________ (wholesale provider) water conservation plan and have created our plan to compliment that plan.***

Coordination with the Public

> ***The _________________________________(water supplier) gave the public an opportunity to provide input into this plan by ___________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included ________________.***

WATER CONSERVATION GOALS

All water conservation plans for municipal uses by public drinking water suppliers must include beginning May 1, 2005, specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita per day. The goals established by a public water supplier under this subparagraph are not enforceable. –30 TAC Chapter 288

The _____________ (water system) average daily water use is _______gpcpd according to ________ (source). The _____________ (water system) utilized Regional Water Planning Group projections when setting water savings goals. The system's 5-year goal for municipal use is to reduce daily water use (by/to) ___ gpcpd. Our water loss goal is ______________. The system's 10-year goal is to reduce daily water use (by/to) ___ gpcpd, thus achieving the projected ____ gpcpd by _____ (year) as stated in the Regional Water Plan. Our water loss goal is ____________.

Note that there should be a goal for water loss and a goal for municipal water use; water use should be calculated in gpcd.

PLAN FOR MEETING GOALS

Required Programs

Master Meter

All water conservation plans for municipal uses by public drinking water suppliers must include…metering devices with an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the source of supply. –30 TAC Chapter 288

Discuss the type of master meter you currently have, and any plans for a new meter. If you cannot comply with the requirements, please explain.

Universal Metering

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for universal metering of both customer and public uses of water… –30 TAC Chapter 288

Discuss your existing and/or proposed universal metering program. If you do not comply with these requirements, please explain.

Meter Testing & Repair Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for meter testing and repair… –30 TAC Chapter 288

Discuss your existing and/or proposed meter testing and repair program. If you cannot comply with these requirements, please explain.

Meter Replacement Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program for periodic meter replacement. –30 TAC Chapter 288

Discuss plans for meter replacement. List any replacement schedules you have in place. If you do not have a meter replacement program, please explain.

Unaccounted for Water

All water conservation plans for municipal uses by public drinking water suppliers must include…measures to determine and control unaccounted-for uses of water (for example, periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections; abandoned services, etc.). –30 TAC Chapter 288

Discuss your existing and/or proposed measures to find and control unaccounted-for water use. This should include discussion of leak detection and repair programs. The TWDB offers free assistance for water loss determination, including on-site water audit assistance and free water loss audit workshops. In addition, TWDB will loan out leak detection and flow meter testing equipment to aid in determining water loss. You may also find the Water Loss Audit Manual for Texas Utilities helpful in determining water loss. More information can be found on TWDB's website or by calling the Water Conservation Division.

In addition to the examples above, some systems have water-billing programs that note accounts with higher than normal activity, which could be a water leak. If you have this program, please discuss it here.

Public Education and Information Program

All water conservation plans for municipal uses by public drinking water suppliers must include…a program of continuing public education and information regarding water conservation. –30 TAC Chapter 288

There are numerous ways to inform and educate the public about water conservation. Some examples include:

- Provide conservation pamphlets, available at City Hall or your water office. The TWDB offers free and low cost pamphlets on its website, www.twdb.state.tx.us.
- Add water conservation slogans to your monthly water bill, e.g., "Every drop counts – Be water smart!"; "Conserve water – It makes cents!"; "Please use the month of May to check your toilets for leaks."
- Set up a water conservation booth at local fairs and festivals. Offer conservation oriented handouts.
- Sponsor a school project related to conservation in your local elementary school. TWDB offers the Major Rivers Water Education curriculum for 4th and 5th graders, and the Raising Your Water IQ curriculum for 6th graders. In addition, there is a TWDB kid's page which promotes conservation with interactive games, coloring pages, and water facts. These can be accessed on TWDB's website or by calling TWDB.
- Create a running banner on your website with water conservation tips that change periodically.
- Present a water conservation program at local service club meetings and industry group meetings. Free brochures from TWDB could be dispersed.
- Offer field trips of your water treatment facility to local schools, and use the opportunity to talk about conservation.
- Include "Keep Texas Beautiful" affiliate groups in conservation projects.

- Encourage your agricultural extension agency to present xeriscape programs to local high school horticulture classes, garden clubs, and other interested groups.

Discuss your program for public awareness.

Non-promotional Water Rates

All water conservation plans for municipal uses by public drinking water suppliers must include…a water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water. –30 TAC Chapter 288

Attach a copy of your water rates to the plan and summarize your rates here. If you need to impose a non-promotional water rate structure, or otherwise update your rates, discuss your plan here.

Reservoir Systems Operations Plan

All water conservation plans for municipal uses by public drinking water suppliers must include…a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin in order to optimize available water supplies. –30 TAC Chapter 288

If this section applies to you, discuss your plan here. If you do not comply, please explain.

Additional Programs

If necessary to meet the 5 and 10-year target goals, you can add any other water conservation strategies to your plan. They should be discussed in detail here, and can include, but are not limited to:

- Conservation-oriented rate structures.
- Requiring structures undergoing substantial modification or addition to install water conserving plumbing fixtures
- Creating a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures
- Reusing and/or recycling of wastewater and/or graywater
- Creating a program for pressure control and/or reduction in the distribution system and/or for customer connections
- Creating a program and/or ordinance(s) for landscape water management

Additional Requirements for Systems Serving over 5,000 Population

Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next ten years subsequent to the effective date of the plan must include the following elements: (A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water; (B) a record management system to record water pumped, water deliveries, water sales, and water losses which allows for the desegregation of water sales and uses into the following user classes: (i) residential; (ii) commercial; (iii) public and institutional; and (iv) industrial; and (C) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter. –30 TAC Chapter 288

If you are selling to a water provider who, in turn, intends to wholesale the water to a retail customer, your water supply contract, when renewed, must state that the subsequent wholesaler is required to have a water conservation plan in place. If this section applies, discuss the proposed contract changes here. If it does not apply, state why.

Schedule for Meeting Targets

In this section, please discuss your estimated timeline for implementing any programs noted in the "Required Program" section. For example, if you are proposing a meter replacement program, please discuss the schedule here.

Means of Implementation and Enforcement

All water conservation plans for municipal uses by public drinking water suppliers must include…a means of implementation and enforcement which shall be evidenced by: (i) a copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier; and (ii) a description of the authority by which the water supplier will implement and enforce the conservation plan. –30 TAC Chapter 288

The ________________ (Mayor, President, etc.), or his/her designee, is hereby authorized to implement and enforce the water conservation plan.

The water conservation plan has made this plan official policy by means of a __________ (resolution, tariff, ordinance), passed on _______________ (date). A copy of the _______________ has been included at the end of the plan.

Revision/Updates

Beginning May 1, 2005, a public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. – 30 TAC Chapter 288

The _______________ (authorized representative) shall be responsible for updating and revising this plan five years after its adoption, or May 1, 2014, whichever is earlier.

PLAN FOR EMERGENCIES (DROUGHT CONTINGENCY)

A drought contingency plan is required for all public water suppliers, in addition to this Water Conservation Plan. Please see the NETRWPG guidance documents for drought contingency plans in Chapter 7 herein, and use the one that is appropriate for you – either wholesale or retail.

1.2 MODEL WATER CONSERVATION PLAN – RETAIL WATER PROVIDERS

General Information

Introduction

Drought is a very real natural disaster that occurs in Texas, even in the verdant bottomlands, green pastures, and piney woods of northeast Texas. As recently as 2011, drought strained water systems in the northeast Texas region. In addition to natural drought, there are also water supply emergencies that occur from time to time in which water supply becomes contaminated. A good example of this is the Methyl Tertiary Butyl Ether (MTBE) spill into Lake Tawakoni in May 2000, which contaminated supply for several Hunt County water systems for multiple days.

In an effort to better respond to drought conditions, the North East Texas Regional Water Planning Group (NETRWPG) has prepared this document, with the idea that if water providers study their water supply system before a drought or emergency occurs, then they will be better prepared to respond. In preparing this document, several references were used, including Chapters 288 and 363 of the Texas Administrative Code, the Texas Commission on Environmental Quality's (TCEQ) 'Handbook for Drought Contingency Planning for Retail Public Water Suppliers,' Texas Water Code §11.1272, and the TCEQ and TWDB websites. All of these resources are available to you if you need further information or clarification. You may also contact the TCEQ at 512-239-4691 with questions or for information. Example wording for your plan will be found throughout in bold italics.

According to the requirements set forth in the amended Chapter 288, Subchapter C of the Texas Administrative Code, retail public water suppliers providing water service to 3,300 or more connections must submit revisions to existing drought contingency plans to the executive director not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption. If you are a retail supplier, but serve less than 3,300 connections, you are still required to develop and implement a plan, but you do not need to submit the plan unless specifically requested by TCEQ. If you provide wholesale supply in addition to retail supply, you will also need to develop a wholesale drought contingency plan. Please see the North East Texas Region's guidance document for wholesale drought contingency plans.

The __________________(water provider) understands that water conservation is a viable strategy for protecting water resources both now and in the future, and that adequate planning for times of drought or emergency is a necessary part of conservation. The purpose of this plan is to prepare for the possibility of a drought or emergency situation where water is in short supply. This plan will help to ensure that _______________________(water supplier) uses water wisely and efficiently during periods of drought.

Though not specifically required by rule, it is helpful to the reader if you summarize your water supply and distribution systems in the introduction. This will familiarize users of the Plan with your system, and help them to make sense of the actions that you intend to take. In addition, discussing your water system here will assist those who update the plan in five years, because they will know exactly what the system looked like when the plan was created.

The ______________(water supplier) utilizes groundwater /surface water from _______________(source). Supply is secured by a (water right, water supply contract, etc.) through the year _____. We currently have _____ connections, and our average daily use is ____. Our storage and distribution systems consist of ____.

Coordination with the North East Texas Regional Water Planning Group

The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans. – 30 TAC Chapter 288

A copy of this adopted plan will be submitted to the NETRWPG via its administrator, Mr. Walt Sears, Northeast Texas Municipal Water District, P. O. Box 955, Hughes Springs, Texas 75656.

Informing the Public/Requesting Input

Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting. – 30 TAC Chapter 288

The __________________________________(water supplier) gave the public an opportunity to provide input into this plan by ___________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included ________________.

Efforts to inform the public about each stage of the plan, and when stages are implemented or rescinded, will be through ___________________________ (newspaper articles, radio announcements, website announcements, etc.).

Authorization/Applicability

The ________________ (mayor, president, city administrator, etc.) is hereby authorized to monitor the weather as well as water supply and demand conditions and to implement the Drought Contingency Plan as appropriate.

The ________________________(City Council, Board of Directors, etc.) authorizes the Plan by a _______________(resolution, ordinance), which has been included in this Plan.

Coordination with the Texas Commission on Environmental Quality

According to 30 TAC Chapter 288, Subchapter C, "For retail public water suppliers providing water service to 3,300 or more connections, the drought contingency plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the retail public water suppliers providing service to 3,300 or more connections shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption."

This plan was submitted to the executive director of the Texas Commission on Environmental Quality on ________________________(date).

Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.).

If you serve less than 3,300 connections, the following rule applies:

For all the retail public water suppliers, the drought contingency plan must be prepared and adopted not later than May 1, 2005 and must be available for inspection by the executive director upon request. Thereafter, the retail public water suppliers shall prepare and adopt the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new retail public water supplier providing water service to less than 3,300 connections shall prepare and adopt a drought contingency plan within 180 days of commencement of *operation, and shall make the plan available for inspection by the executive director upon request. – 30 TAC Chapter 288*

In other words, if you serve less than 3,300 connections, you are still required to prepare and adopt a plan, but you do not have to turn it in unless TCEQ asks for it. Your section would read:

Submission of this plan to the TCEQ was not required; however, the plan will be made available to TCEQ if requested.

For questions to the TCEQ, you can check the website at www.tceq.state.tx.us, or call 512/239-4691.

Coordination with Wholesale Water Supplier

This section only applies if you purchase supply from a wholesale provider. If you have a contract or an agreement with a water provider, then complete this section. If you have water rights or otherwise own your supply, this section does not apply.

This plan has been created with consideration of our water provider, ________________'s drought contingency plan. We have included __________________'s (water provider) requirements within our plan and have created this plan to compliment _____________'s (water provider) plan. ______________(water provider) has been provided a copy of this plan.

Plan Definitions

For the purposes of this Plan, the following definitions, taken from TCEQ guidance, shall apply:

<u>Aesthetic water use</u>: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

<u>Commercial and institutional water use</u>: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

<u>Conservation</u>: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

<u>Customer</u>: any person, company, or organization using water supplied by _________________ (name of water supplier).

<u>Domestic water use</u>: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

<u>Even number address</u>: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

<u>Industrial water use</u>: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

<u>Landscape irrigation use</u>: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

<u>Non-essential water use</u>: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;

(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;

(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;

(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;

(e) flushing gutters or permitting water to run or accumulate in any gutter or street;

(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;

(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;

(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and

(i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

***Odd numbered address**: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.*

RESPONSE TO A DROUGHT EVENT

In this portion of the plan, it will need to be determined whether a water constraint will more likely be caused by a shortage in water supply or by constraints in your storage and distribution system. Associated goals and water management measures should correspond to the type of constraint expected. For example, if insufficient storage is determined to be the most likely cause of water shortage during a drought, then an emergency back-up supply source would not solve the problem; reduced use during peak hours (banning lawn watering, etc.) would more likely solve the problem by giving storage tanks a better opportunity to refill.

The drought contingency plan should be designed for a drought condition at least as severe as the drought of record according to TCEQ rules. Since the drought of record in Texas occurred in the 1950's, few systems will have water use records still available to plan by. Therefore, the NETRWPG suggests using the most recent drought for the State, which occurred in 2011. If your system does not have records for 2011, use the time period in your records when your system was the most strained by dry weather conditions.

During each stage, it will need to be determined what will trigger initiation, what the water use reduction target goal is, what water management strategies will be put into place, and, finally, what will terminate the stage. Keep in mind that a supplier which is also a customer of its wholesale provider must comply with its provider's Drought Contingency Plan (DCP). Do not develop stages or management strategies that are in conflict with your water provider's DCP.

Stage 1 – Mild Water Shortage

Initiation: The _______________________(water supplier) will consider that a mild water shortage exists when__________________________________ (i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a mild water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 1 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below

___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage I is rescinded by*** ___________________________(entity's water provider) if applicable.

Water Management Strategies: During Stage 1, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Request voluntary water conservation from all customers
- Reduce operating procedures that use water (i.e. flushing of mains) as appropriate
- Cease providing potable water for dust control, road building and similar construction purposes
- Enhance water supply and demand monitoring, as well as leak detection and repair efforts
- Request that water customers voluntarily limit the irrigation of landscaped areas
- Request that non-essential water uses be eliminated, including:

    1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;
    2. Wash down of buildings or structures for purposes other than immediate fire protection;
    3. Use of water for dust control;
    4. Flushing gutters or permitting water to run or accumulate in any gutter or street; and,
    5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

<u>**Stage 2 – Moderate Water Shortage**</u>

Initiation: The _______________________(water supplier) will consider that a moderate water shortage exists when__________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a moderate water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 2 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage 2 is rescinded by*** __________________________(entity's water provider) if applicable. ***Upon termination of Stage 2, Stage 1 becomes operative.***

Water Management Strategies: During Stage 2, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Modify reservoir operations if applicable

- Cease providing potable water for dust control, road building and similar construction purposes

- Enhance water supply and demand monitoring, as well as leak detection and repair efforts

- Limit use of water from hydrants to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare

- Restrict irrigation of landscaped areas, for example, "Irrigation of landscape areas with hose-end sprinklers or automatic irrigation systems shall be prohibited except during the evening hours between 10:00 p.m. and 6:00 a.m. However, irrigation of landscaped areas is permitted at anytime if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or a drip irrigation system." Please consider your individual system when restricting landscape watering. Allow watering when other types of water use are low to prevent strain on your system. Only use even/odd water days if you know it will work for your system – this type of watering plan can sometimes encourage lawn watering that otherwise wouldn't take place.

- Prohibit use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station.

- Prohibit use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools.

- Prohibit operation of any ornamental fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life.

- Prohibit non-essential water uses such as:

    1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;

    2. Wash down of buildings or structures for purposes other than immediate fire protection;

    3. Use of water for dust control;

    4. Flushing gutters or permitting water to run or accumulate in any gutter or street;

    5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The ______________________(water supplier) will consider that a severe water shortage exists when_________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When a severe water shortage exists, the ____________________(water supplier) ***will implement water management strategies in an attempt to reduce daily water use to*** _________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 3 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), ***or when Stage 3 is rescinded by***

__________________________(entity's water provider) if applicable. ***Upon termination of Stage 3, Stage 2 becomes operative.***

Water Management Strategies: During Stage 3, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- All of the strategies in Stage 2 are appropriate in Stage 3, except that landscape watering may need to be prohibited

- Implement water rate surcharges (i.e. a set charge for any use above average monthly use)

- Implement price adjustments (i.e. increase the price per 1,000 gallons of water used above the average monthly use)

- Utilize alternate or emergency water sources

Stage 4 – Emergency Water Shortage

This stage could apply in the instance of a major water line break, a contamination of the water supply source, or other urgent water system conditions. Most likely, this stage would be initiated by decision of the authorized plan implementer (Mayor, President, Manager, etc.)

Initiation: The ______________________(water supplier) will consider that an emergency water shortage exists when_________________________________ (i.e. the water main at the water treatment plant bursts or is otherwise significantly damaged; the reservoir is contaminated by oil spill; etc.,), ***or when requested by*** __________ (entity's water provider) if applicable.

Target Goal: When an emergency water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________(i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 4 shall be rescinded when ___________________________ (i.e. the main at the water treatment plant is restored and storage tanks have been allowed to refill; analysis of the source water indicates that supply is safe to use; etc.), ***or when Stage 4 is rescinded by*** __________________________(entity's water provider) if applicable.

Water Management Strategies: During Stage 4, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc. (This may require approval by the TCEQ Executive Director)

- Modify reservoir operations

- All strategies that are used in Stage 3 could be applicable in Stage 4

PLAN EXECUTION

Public Involvement

This section should discuss the ways in which the supplier will inform its customers about the initiation and termination of drought stages, as well as management strategies that customers are expected to follow. Public involvement can be in the form of special public hearings, articles and notices in the local newspaper, radio announcements, announcements on local television stations, notices in billing statements, etc.

The _____________________ (water provider) will keep its customers apprised of initiation of the drought contingency plan, and changes in stages, by means of ___________________________.

Enforcement

The ______________ (Mayor, City Manager, President, etc.), or his/her designee, is responsible for monitoring weather conditions and water supply and determining when to initiate and terminate the stages of the DCP.

The _______________ (governing body) ***has adopted this plan through*** ___________ (ordinance, resolution), ***and has made it an official*** _________ (city, Corporation, etc.) ***policy. The*** _______________ (ordinance, resolution, etc.) ***is attached hereto as Figure*** ___.

Provision for responding to wholesale provider restrictions

Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. – 30 TAC Chapter 288

If you have a wholesale provider, then add this section. If you own your own supply, please skip this section.

As stated in each water shortage stage, we intend to comply with all requirements of our wholesale provider's drought contingency plan. This plan is as stringent as our provider's plan, and in some cases may be more so.

Notification of TCEQ on mandatory provisions

A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. – 30 TAC Chapter 288

The Executive Director at TCEQ shall be notified with 5 business days if any mandatory provisions of this plan are implemented. *The Executive Director can be reached at 512-239-3900.*

Variance procedures

The drought contingency plan must include procedures for granting variances to the plan. – 30 TAC Chapter 288

The _____________ (authorized representative) may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the customer requesting such variance and if one or more of the following conditions are met:

a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.

b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Customers requesting an exemption from the provisions of this Plan shall file a petition for variance with the ______________ (water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _________ (authorized representative), and shall include the following:

a) Name and address of the petitioner(s).

b) Purpose of water use.

c) Specific provision(s) of the Plan from which the petitioner is requesting relief.

d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.

e) Description of the relief requested.

f) Period of time for which the variance is sought.

g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.

h) Other pertinent information.

Variances granted by the _______________ (water supplier) shall be subject to the following conditions, unless waived or modified:

a) Variances granted shall include a timetable for compliance.

b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

5-year updates

The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan. – 30 TAC Chapter 288

This plan shall be revaluated and updated every five years based on the most recent information; especially the latest adopted NETRWPG Regional Water Plan.

County	Entity	Strategy Supply (ac-ft/yr) by Decade						Strategy	Source	Source Type	Sponsor/Seller	Source Reliability	Total Capital Cost
		2030	2040	2050	2060	2070	2080						
Bowie	Burns Redbank WSC	3,120	3,288	3,492	3,720	3,948	4,188	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Hooks	High	$417,615,000
Bowie	Central Bowie County WSC	9,228	9,228	9,312	9,396	9,480	9,564	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	De Kalb	3,192	3,156	3,132	3,084	3,048	3,000	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	Hooks	3,804	3,756	3,720	3,660	3,612	3,552	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Bowie	Irrigation, Bowie	4,134	4,134	4,134	4,134	4,134	4,134	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Irrigation, Bowie	High	$34,902,000
Bowie	Irrigation, Bowie	1,882	1,882	1,882	1,882	1,882	1,882	Drill New Wells (Irrigation Bowie, Nacatoch, Red)	Nacatoch Aquifer	Groundwater	Irrigation, Bowie	High	$10,120,000
Bowie	Macedonia Eylau MUD 1	8,520	8,460	8,376	8,256	8,124	7,992	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Bowie	Manufacturing, Bowie	402,540	718,404	797,352	896,028	994,716	1,015,992	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	Maud	1,968	1,944	1,932	1,896	1,872	1,836	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Bowie	Nash	3,768	3,708	3,672	3,624	3,564	3,504	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Bowie	New Boston	16,680	15,564	15,420	15,180	14,940	14,700	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	Redwater	4,044	3,996	3,948	3,876	3,804	3,732	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Bowie	Riverbend Water Resources District	4,560	4,500	4,452	4,380	4,308	4,236	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	Texarkana	81,228	80,424	79,788	78,648	77,508	76,344	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$835,230,000
Bowie	Wake Village	7,788	7,692	7,620	7,500	7,380	7,260	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000
Camp	Livestock, Camp	594	594	594	594	594	594	Drill New Wells (Livestock, Camp, Queen City, Cypress)	Queen City Aquifer	Groundwater	Livestock, Camp	High	$4,401,500
Cass	Atlanta	1,075	1,135	1,209	1,206	1,206	1,206	Riverbend Strategy Cass County	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$45,614,000
Cass	County-Other, Cass	323	323	323	323	323	323	Drill New Wells (County Other, Cass, Carrizo, Cypress)	Carrizo-Wilcox Aquifer	Groundwater	County-Other, Cass	High	$1,973,000
Cass	County-Other, Cass	216	216	216	216	216	216	Drill New Wells (County Other, Cass, Carrizo, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	County-Other, Cass	High	$1,324,000
Cass	County-Other, Cass	44	44	44	44	44	44	Riverbend Strategy Cass County	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$22,807,000
Cass	Holly Springs WSC	50	50	50	50	50	50	Increase Existing Contract (Holly Springs, Cypress)	O' the Pines Lake/Reservoir	Surface Water	Hughes Springs	High	$130,000
Cass	Livestock, Cass	968	968	968	968	968	968	Drill New Wells (Livestock, Cass, Queen City, Cypress)	Queen City Aquifer	Groundwater	Livestock, Cass	High	$1,037,000
Cass	Livestock, Cass	280	267	254	243	230	217	Drill New Wells (Livestock, Cass, Queen City, Sulphur)	Queen City Aquifer	Groundwater	Livestock, Cass	High	$1,037,000
Cass	Queen City	251	244	243	243	243	243	Alt Riverbend Strategy Cass	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$45,614,000
Delta	Livestock, Delta	250	243	238	238	226	226	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	Nacatoch Aquifer	Groundwater	Livestock, Delta	High	$1,929,000
Delta	North Hunt SUD	20	22	25	25	25	25	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	Nacatoch Aquifer	Groundwater	North Hunt SUD	High	$2,870,000
Fannin	North Hunt SUD	0	8	8	8	8	8	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	Nacatoch Aquifer	Groundwater	North Hunt SUD	High	$2,870,000
Franklin	Livestock, Franklin	805	805	805	805	805	805	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	Carrizo-Wilcox Aquifer	Groundwater	Livestock, Franklin	High	$865,000
Franklin	Livestock, Franklin	37	27	27	27	27	27	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Livestock, Franklin	High	$1,211,000
Gregg	Kilgore	4,595	4,641	4,690	4,738	4,788	4,842	Alternative Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Gregg	Kilgore	360	364	367	371	375	379	Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Gregg	Longview	5,963	5,944	5,938	5,907	5,876	5,852	Alternative Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Gregg	Longview	467	466	465	463	460	458	Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Gregg	Mining, Gregg	27	27	27	27	17	10	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Mining, Gregg	High	$117,000

County	Entity	Strategy Supply (ac-ft/yr) by Decade 2030	2040	2050	2060	2070	2080	Strategy	Source	Source Type	Sponsor/Seller	Source Reliability	Total Capital Cost
Gregg	Starrville-Friendship WSC	0	0	0	31	19	12	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Starrville-Friendship WSC	High	$761,000
Harrison	Harleton WSC	56	69	96	131	174	174	Increase Existing Contract (Harleton, Cypress)	O' the Pines Lake/Reservoir	Surface Water	Northeast Texas MWD	High	$4,928
Harrison	Irrigation, Harrison	41	35	30	19	13	7	Drill New Wells (Irrigation Harrison, Queen City , Sabine)	Queen City Aquifer	Groundwater	Irrigation, Harrison	High	$193,000
Harrison	Irrigation, Harrison	484	484	484	484	484	484	Drill New Wells (Irrigation Harrison, Queen City, Cypress)	Queen City Aquifer	Groundwater	Irrigation, Harrison	High	$577,000
Harrison	Leigh WSC	0	44	89	89	133	133	Drill New Wells (Leigh, Queen City, Cypress)	Queen City Aquifer	Groundwater	Leigh WSC	High	$1,973,000
Harrison	Longview	203	222	228	259	290	314	Alternative Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Harrison	Longview	16	17	18	20	23	25	Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Harrison	Mining, Harrison	332	332	332	332	332	332	Drill New Wells (Mining Harrison, Queen City, Cypress)	Queen City Aquifer	Groundwater	Mining, Harrison	High	$768,000
Harrison	Mining, Harrison	369	319	268	167	117	67	Drill New Wells (Mining Harrison, Queen City, Sabine)	Queen City Aquifer	Groundwater	Mining, Harrison	High	$1,555,000
Harrison	North Harrison WSC	0	0	0	54	54	54	Drill New Wells (North Harrison, Queen City, Cypress)	Queen City Aquifer	Groundwater	North Harrison WSC	High	$612,000
Harrison	Scottsville	54	108	108	162	162	162	Drill New Wells (Scottsville, Queen City, Cypress)	Queen City Aquifer	Groundwater	Scottsville	High	$2,858,000
Harrison	Waskom	162	162	216	270	324	324	Drill New Wells (Waskom, Queen City, Cypress)	Queen City Aquifer	Groundwater	Waskom	High	$2,399,000
Henderson	Edom WSC	27	27	27	27	27	27	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	Carrizo-Wilcox Aquifer	Groundwater	Edom WSC	High	$2,325,000
Henderson	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	Carrizo-Wilcox Aquifer	Groundwater	R P M WSC	High	$3,576,000
Hopkins	Cumby	58	88	116	154	176	176	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	Nacatoch Aquifer	Groundwater	Cumby	High	$1,920,000
Hopkins	Irrigation, Hopkins	0	222	774	840	846	846	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Irrigation, Hopkins	High	$2,832,000
Hopkins	Irrigation, Hopkins	43	42	41	41	39	39	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Irrigation, Hopkins	High	$10,927,000
Hopkins	Livestock, Hopkins	20	22	22	24	26	26	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Livestock, Hopkins	High	$5,885,000
Hopkins	Miller Grove WSC	67	66	66	65	65	64	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Miller Grove WSC	High	$1,547
Hopkins	Mining, Hopkins	3	3	3	6	6	6	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Mining, Hopkins	High	$2,880,000
Hunt	Celeste	35	35	35	35	35	35	Drill New Wells (Celeste, Woodbine, Trinity)	Woodbine Aquifer	Groundwater	Celeste	High	$1,965,000
Hunt	Celeste	0	0	0	0	87	87	New Contract with Greenville and Pipeline to Celeste	Tawakoni Lake/Reservoir	Surface Water	Greenville	High	$15,328,000
Hunt	Greenville	12,571	12,571	12,571	12,571	12,571	12,571	New WTP Greenville	Tawakoni Lake/Reservoir	Surface Water	Greenville	High	$368,374,000
Hunt	Irrigation, Hunt	230	230	230	230	230	230	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	Nacatoch Aquifer	Groundwater	Irrigation, Hunt	High	$2,498,000
Hunt	Livestock, Hunt	0	0	0	0	0	0	Drill New Well (Livestock, Hunt, Trinity, Sabine)	Trinity Aquifer	Groundwater	Livestock, Hunt	High	$407,000
Hunt	North Hunt SUD	172	162	159	159	159	159	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	Nacatoch Aquifer	Groundwater	North Hunt SUD	High	$2,870,000
Hunt	Texas A&M University Commerce	276	275	275	275	275	275	Texas A&M University - Commerce - Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	Nacatoch Aquifer	Groundwater	Texas A&M University Commerce	High	$3,642,000
Lamar	Irrigation, Lamar	1,468	1,468	1,468	1,468	1,468	1,468	Pat Mayse Raw Water Pipeline (Irrigation Lamar)	Pat Mayse Lake/Reservoir	Surface Water	Paris	High	$24,042,000
Lamar	Livestock, Lamar	617	617	617	617	617	617	Lamar Livestock Pipeline and Contract with Lamar Co WSD	Pat Mayse Lake/Reservoir	Surface Water	Lamar County WSD	High	$14,574,000
Marion	Harleton WSC	18	22	31	42	56	56	Increase Existing Contract (Harleton, Cypress)	O' the Pines Lake/Reservoir	Surface Water	Northeast Texas MWD	High	$4,928
Marion	Mining, Marion	645	645	645	645	645	645	Drill New Wells (Mining Marion, Queen City, Cypress)	Queen City Aquifer	Groundwater	Mining, Marion	High	$767,000
Morris	Holly Springs WSC	30	30	30	30	30	30	Increase Existing Contract (Holly Springs, Cypress)	O' the Pines Lake/Reservoir	Surface Water	Hughes Springs	High	$130,000
Morris	Livestock, Morris	3	3	3	3	3	3	Drill New Wells (Livestock, Morris, Queen City, Cypress)	Queen City Aquifer	Groundwater	Livestock, Morris	High	$767,000
Morris	Livestock, Morris	2	2	2	2	2	2	Drill New Wells (Livestock, Morris, Queen City, Sulphur)	Queen City Aquifer	Groundwater	Livestock, Morris	High	$539,000
Rains	Miller Grove WSC	13	14	14	15	15	16	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Miller Grove WSC	High	$1,547
Red River	Clarksville	388	388	388	388	388	388	Drill New Wells with RO Treatment (Clarksville, Blossom)	Blossom Aquifer	Groundwater	Clarksville	High	$10,537,000
Red River	Clarksville	3,636	3,636	3,636	3,636	3,636	3,636	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$417,615,000

County	Entity	Strategy Supply (ac-ft/yr) by Decade 2030	2040	2050	2060	2070	2080	Strategy	Source	Source Type	Sponsor/Seller	Source Reliability	Total Capital Cost
Red River	Irrigation, Red River	1,450	1,450	1,451	1,451	1,451	1,451	Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur) Existing Availability	Nacatoch Aquifer	Groundwater	Irrigation, Red River	High	$6,551,000
Red River	Livestock, Red River	11	10	11	10	11	11	Drill New Wells (Livestock, Red River, Blossom, Red)	Blossom Aquifer	Groundwater	Livestock, Red River	High	$425,000
Red River	Livestock, Red River	65	65	65	65	65	65	Drill New Wells (Livestock, Red River, Trinity Aquifer, Sulphur) Existing Availability	Trinity Aquifer	Groundwater	Livestock, Red River	High	$1,436,000
Rusk	Kilgore	1,571	1,525	1,476	1,428	1,378	1,324	Alternative Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Rusk	Kilgore	123	119	116	112	108	104	Sabine River Authority Strategy - Wood County GW	Carrizo-Wilcox Aquifer	Groundwater	Sabine River Authority	High	$94,255,000
Smith	Crystal Systems Texas	0	0	0	0	0	0	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	Carrizo-Wilcox Aquifer	Groundwater	Crystal Systems Texas	High	$2,531,000
Smith	Crystal Systems Texas	0	31	0	0	0	0	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Crystal Systems Texas	High	$2,531,000
Smith	East Texas MUD	0	108	216	432	648	648	Drill New Wells (Smith County MUD 1, Queen City, Sabine)	Queen City Aquifer	Groundwater	East Texas MUD	High	$3,948,000
Smith	Lindale	0	0	0	0	0	0	Drill New Wells (Lindale, Carrizo, Neches)	Carrizo-Wilcox Aquifer	Groundwater	Lindale	High	$15,184,000
Smith	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	Carrizo-Wilcox Aquifer	Groundwater	R P M WSC	High	$3,576,000
Smith	Star Mountain WSC	108	108	108	216	216	216	Drill New Wells (Star Mountain, Queen City, Sabine)	Queen City Aquifer	Groundwater	Star Mountain WSC	High	$1,521,000
Smith	Starrville-Friendship WSC	0	0	0	77	48	30	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Starrville-Friendship WSC	High	$761,000
Smith	Winona	0	0	0	0	0	0	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Winona	High	$761,000
Titus	Livestock, Titus	668	758	850	1,034	1,120	1,120	Drill New Wells (Livestock, Titus, Carrizo, Cypress)	Carrizo-Wilcox Aquifer	Groundwater	Livestock, Titus	High	$1,451,000
Titus	Livestock, Titus	1,252	1,230	1,207	1,184	1,184	1,184	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)	Carrizo-Wilcox Aquifer	Groundwater	Livestock, Titus	High	$10,430,000
Upshur	Big Sandy	85	85	85	85	85	85	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	Carrizo-Wilcox Aquifer	Groundwater	Big Sandy	High	$0
Upshur	Gilmer	0	42	41	59	84	110	Drill New Wells (Gilmer, Carrizo, Cypress)	Carrizo-Wilcox Aquifer	Groundwater	Gilmer	High	$801,000
Upshur	Livestock, Upshur	161	161	161	161	161	161	Drill New Wells (Livestock, Upshur, Queen City, Cypress)	Queen City Aquifer	Groundwater	Livestock, Upshur	High	$172,000
Upshur	Livestock, Upshur	161	161	161	161	161	161	Drill New Wells (Livestock, Upshur, Queen City, Sabine)	Queen City Aquifer	Groundwater	Livestock, Upshur	High	$172,000
Upshur	Manufacturing, Upshur	161	161	161	161	161	161	Drill New Wells (Manufacturing Upshur, Queen City, Cypress)	Queen City Aquifer	Groundwater	Manufacturing, Upshur	High	$172,000
Van Zandt	Canton	255	255	255	255	255	255	Canton Reuse	Indirect Reuse	Reuse	Canton	High	$20,194,000
Van Zandt	Canton	0	0	0	0	0	145	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	Carrizo-Wilcox Aquifer	Groundwater	Canton	High	$1,118,000
Van Zandt	Edom WSC	60	60	60	60	60	60	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	Carrizo-Wilcox Aquifer	Groundwater	Edom WSC	High	$2,325,000
Van Zandt	Little Hope Moore WSC	0	0	0	0	0	0	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches)	Carrizo-Wilcox Aquifer	Groundwater	Little Hope Moore WSC	High	$742,000
Van Zandt	Livestock, Van Zandt	194	194	194	194	194	194	Drill New Wells (Livestock Van Zandt, Queen City, Neches)	Queen City Aquifer	Groundwater	Livestock, Van Zandt	High	$3,366,000
Van Zandt	Manufacturing, Van Zandt	386	386	386	386	386	386	Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity)	Carrizo-Wilcox Aquifer	Groundwater	Manufacturing, Van Zandt	High	$4,857,000
Van Zandt	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	Carrizo-Wilcox Aquifer	Groundwater	R P M WSC	High	$3,576,000
Wood	Livestock, Wood	1,129	1,129	1,129	1,129	1,129	1,129	Drill New Wells (Livestock, Wood, Queen City, Sabine)	Queen City Aquifer	Groundwater	Livestock, Wood	High	$1,210,000
Wood	Manufacturing, Wood	1,991	1,991	1,991	1,991	1,991	1,991	Drill New Wells (Manufacturing, Wood, Queen City, Sabine)	Queen City Aquifer	Groundwater	Manufacturing, Wood	High	$1,210,000

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DRAFT Region D Recommended Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Canton	No	2030	Canton Indirect Reuse	Transmission pipeline; Pump station	$20,194,000
Big Sandy	No	2030	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	New conventional well	$0
Edom WSC	No	2030	Drill New Well (Edom WSC, Van Zandt, Carrizo, Neches, 2030)	New conventional well; New conventional WTP	$2,325,000
Little Hope Moore WSC	No	2050	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches		$371,000
Livestock, Hunt	No	2020	Drill New Well (Livestock Hunt, Trinity, Sabine)		$407,000
Livestock, Wood	No	2020	Drill New Well (Livestock, Wood, Queen City, Sabine)		$1,210,000
Irrigation, Bowie	No	2030	Drill New Wells (Bowie Irrigation, Carrizo-Wilcox, Sulphur)	New conventional well	$17,451,000
Canton	No	2080	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	New conventional well; New conventional WTP	$1,118,000
Celeste	No	2030	Drill New Wells (Celeste, Woodbine, Trinity, 2030)	New conventional well; New conventional WTP	$1,965,000
Clarksville	No	2020	Drill New Wells (Clarksville, Nacatoch, Sulphur)		$10,537,000
County-Other, Cass	No	2020	Drill New Wells (County Other, Cass, Carrizo, Cypress)		$1,973,000
County-Other, Cass	No	2020	Drill New Wells (County Other, Cass, Carrizo, Sulphur)		$1,324,000
Crystal Systems Texas	No	2040	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)		$2,531,000
Crystal Systems Texas	No	2040	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)		$2,531,000
Cumby	No	2020	Drill New Wells (Cumby, Hopkins, Nacatoch, Sabine, 2020)		$480,000
Cumby	No	2070	Drill New Wells (Cumby, Hopkins, Nacatoch, Sabine, 2070)		$480,000
Gilmer	No	2040	Drill New Wells (Gilmer, Carrizo, Cypress)		$801,000
Irrigation, Bowie	No	2030	Drill New Wells (Irrigation Bowie , Nacatoch, Red)	New conventional well	$10,120,000
Irrigation, Harrison	No	2020	Drill New Wells (Irrigation Harrison, Queen City, Cypress)		$577,000
Irrigation, Harrison	No	2020	Drill New Wells (Irrigation Harrison, Queen City, Sabine)		$193,000
Irrigation, Hopkins	No	2040	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine, 2040)		$1,030,000
Irrigation, Hopkins	No	2060	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine, 2060)		$1,802,000

DRAFT Region D Recommended Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Irrigation, Hopkins	No	2020	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)		$10,927,000
Irrigation, Hunt	No	2020	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)		$1,249,000
Irrigation, Van Zandt	No	2020	Drill New Wells (Irrigation Van Zandt, Queen, Neches)		$1,683,000
Irrigation, Red River	No	2020	Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur)		$6,551,000
Leigh WSC	No	2040	Drill New Wells (Leigh, Queen City, Cypress)		$1,973,000
Lindale	No	2020	Drill New Wells (Lindale, Carrizo, Neches)		$7,592,000
Livestock, Hopkins	No	2020	Drill New Wells (Livestock Hopkins, Hopkins, Carrizo, Sulphur, 2020)		$4,961,000
Livestock, Hopkins	No	2060	Drill New Wells (Livestock Hopkins, Hopkins, Carrizo, Sulphur, 2060)		$924,000
Livestock, Red River	No	2020	Drill New Wells (Livestock Red River, Blossom, Red)		$425,000
Livestock, Red River	No	2020	Drill New Wells (Livestock Red River, Trinity Aquifer, Sulphur)		$1,436,000
Livestock, Titus	No	2020	Drill New Wells (Livestock Titus, Carrizo, Cypress, 2020)		$767,000
Livestock, Titus	No	2030	Drill New Wells (Livestock Titus, Carrizo, Cypress, 2030)		$684,000
Livestock, Titus	No	2020	Drill New Wells (Livestock Titus, Carrizo, Sulphur)		$5,215,000
Livestock, Camp	No	2020	Drill New Wells (Livestock, Camp, Queen, Cypress)		$4,401,500
Livestock, Cass	No	2020	Drill New Wells (Livestock, Cass, Queen City, Cypress)		$1,037,000
Livestock, Cass	No	2020	Drill New Wells (Livestock, Cass, Queen City, Sulphur)		$1,037,000
Livestock, Delta	No	2020	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)		$1,929,000
Livestock, Franklin	No	2020	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)		$865,000
Livestock, Franklin	No	2020	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)		$1,211,000
Livestock, Morris	No	2020	Drill New Wells (Livestock, Morris, Queen City, Cypress)		$767,000
Livestock, Morris	No	2020	Drill New Wells (Livestock, Morris, Queen City, Sulphur)		$539,000
Livestock, Upshur	No	2020	Drill New Wells (Livestock, Upshur, Queen City, Cypress)		$172,000

DRAFT Region D Recommended Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Livestock, Upshur	No	2020	Drill New Wells (Livestock, Upshur, Queen City, Sabine)		$172,000
Manufacturing, Upshur	No	2020	Drill New Wells (Manufacturing Upshur, Queen City, Cypress)		$172,000
Manufacturing, Van Zandt	No	2030	Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity, 2030)	New conventional well	$4,857,000
Manufacturing, Wood	No	2020	Drill New Wells (Manufacturing, Wood, Queen City, Sabine)		$1,210,000
Miller Grove WSC	No	2030	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur, 2030)	New conventional well; New conventional WTP	$1,547
Mining, Gregg	No	2020	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)		$117,000
Mining, Harrison	No	2020	Drill New Wells (Mining Harrison, Queen City, Cypress)		$384,000
Mining, Harrison	No	2020	Drill New Wells (Mining Harrison, Queen City, Sabine)		$1,555,000
Mining, Hopkins	No	2020	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2020)		$1,528,000
Mining, Hopkins	No	2050	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2050)		$428,000
Mining, Hopkins	No	2060	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2060)		$924,000
Mining, Marion	No	2020	Drill New Wells (Mining Marion, Queen City, Cypress)		$767,000
North Harrison WSC	No	2060	Drill New Wells (North Harrison, Queen City, Cypress)		$612,000
North Hunt SUD	No	2030	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2030)	New conventional well; Expand WTP capacity	$2,870,000
Panola-Bethany WSC	No	2030	Drill New Wells (Panola Bethany, Queen City, Sabine)		$2,399,000
R P M WSC	No	2030	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2030)		$895,000
R P M WSC	No	2040	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2040)		$370,000
R P M WSC	No	2050	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2050)		$753,000
R P M WSC	No	2060	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2060)		$784,000
R P M WSC	No	2070	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2070)		$774,000
Scottsville	No	2020	Drill New Wells (Scottsville, Queen City, Cypress)		$1,429,000
East Texas MUD	No	2040	Drill New Wells (Smith County MUD 1, Queen City, Sabine)		$3,948,000

DRAFT Region D Recommended Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Star Mountain WSC	No	2020	Drill New Wells (Star Mountain, Queen City, Sabine)		$1,521,000
Starrville-Friendship WSC	No	2060	Drill New Wells (Starrville Friendship, Carrizo, Sabine)		$761,000
Waskom	No	2020	Drill New Wells (Waskom, Queen City, Cypress)		$2,399,000
Winona	No	2050	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)		$761,000
Harleton WSC	No	2020	Increase Existing Contract (Harleton, Cypress)		$4,928
Holly Springs WSC	No	2020	Increase Existing Contract (Holly Springs, Cypress)		$130,000
Livestock, Lamar	No	2020	New Contract and Pipeline to Lamar Co WSD for Lamar Livestock		$14,574,000
East Mountain Water System	No	2030	New Contract East Mountain from Longview		$1,000,000
Celeste	No	2070	New Contract With Greenville and Pipeline to Celeste	In state supply contract/agreement; Transmission pipeline	$15,328,000
Greenville	Yes	2030	New WTP Greenville	Surface water intake modification; Transmission pipeline; Pump station; New conventional WTP	$368,374,000
Irrigation, Lamar	No	2020	Pat Mayse Raw Water Pipeline (Irrigation Lamar, Red)		$12,021,000
Riverbend Water Resources District	Yes	2030	Riverbend Strategy Cass New WTP and Transmission Line		$22,807,000
Riverbend Water Resources District	Yes	2030	Riverbend WMS Interim to Ultimate Storage Conversion	Raise conservation pool	$24,932,000
Riverbend Water Resources District	Yes	2030	Riverbend WMS New Raw Water Intake 120 MGD 2030	New surface water intake	$30,868,000
Riverbend Water Resources District	Yes	2050	Riverbend WMS New Raw Water Pipeline 32 MGD 2050		$61,647,000
Riverbend Water Resources District	Yes	2030	Riverbend WMS New WTP 25 MGD 2030		$127,811,000
Riverbend Water Resources District	Yes	2050	Riverbend WMS Pump Station Expansion 18 MGD 2050		$11,603,000

DRAFT Region D Recommended Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Riverbend Water Resources District	Yes	2060	Riverbend WMS Pump Station Expansion 30 MGD 2060		$22,130,000
Riverbend Water Resources District	Yes	2040	Riverbend WMS Pump Station Expansion 6 MGD 2040		$4,326,000
Riverbend Water Resources District	Yes	2030	Riverbend WMS Raw Water Pipeline 72 MGD 2030		$36,061,000
Riverbend Water Resources District	Yes	2030	Riverbend WMS Raw Water Pump Station 66 MGD 2030		$45,041,000
Riverbend Water Resources District	Yes	2020	Riverbend WMS Water Right Amendment		$103,000
Riverbend Water Resources District	Yes	2050	Riverbend WMS WTP Expansion 10 MGD 2050		$33,348,000
Riverbend Water Resources District	Yes	2040	Riverbend WMS WTP Expansion 5 MGD 2040		$19,745,000
Sabine River Authority	Yes	2040	Sabine River Authority Wood County Well Field and Pipeline	New conventional well; New or amended bed and banks permit; Transmission pipeline; Pump station; Storage tank/balancing reservoir	$94,255,000
Texas A&M University Commerce	No	2030	Texas A&M University - Commerce - Drill New Wells	New conventional well	$3,642,000
Tri SUD	Yes	2030	Upper Cypress Basin Supply		$40,000,000
				Region D Recommended Capital Cost Total	**$1,157,907,975**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Ables Springs SUD*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Conservation - Ables Springs WSC	C	Demand Reduction	N/A	$416	0	1	1	1	1	1
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending (new)	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
Ables Springs SUD* Total					**0**	**1**	**1**	**1**	**1**	**1**

WUG Name: Atlanta					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy Cass County	D	D | Wright Patman Lake/Reservoir	$242	$242	1,075	1,135	1,209	1,206	1,206	1,206
Atlanta Total					**1,075**	**1,135**	**1,209**	**1,206**	**1,206**	**1,206**

WUG Name: B H P WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	$707	0	0	68	107	125	125

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	$834	0	0	5	17	29	29
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	$248	$75	56	71	54	84	99	99
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	$0	$749	4	10	11	19	28	28
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending	C	C | North Texas MWD Lake/Reservoir System	N/A	$430	0	22	39	61	85	85
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	$834	0	0	0	0	42	42
B H P WSC Total					**60**	**103**	**177**	**288**	**408**	**408**

WUG Name: Bethel Ash WSC*					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Municipal Conservation, Water Loss Mitigation - Bethel Ash WSC	I	Demand Reduction	$4654	$300	1	1	1	1	1	1
Bethel Ash WSC* Total					**1**	**1**	**1**	**1**	**1**	**1**

WUG Name: Big Sandy					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	D	D | Carrizo-Wilcox Aquifer | Upshur County	$0	$0	85	85	85	85	85	85
Big Sandy Total					**85**	**85**	**85**	**85**	**85**	**85**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Brinker WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Brinker WSC, Sulphur)	D	D | Chapman/Cooper Lake/Reservoir Non-System Portion	$1152	$1152	97	122	130	143	157	171
Brinker WSC Total					**97**	**122**	**130**	**143**	**157**	**171**

WUG Name: Burns Redbank WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$483	$483	260	274	291	310	329	349
Burns Redbank WSC Total					**260**	**274**	**291**	**310**	**329**	**349**

WUG Name: Caddo Basin SUD*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (Caddo Basin SUD)	D	Demand Reduction	$770	$770	1	2	3	5	9	15
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	$707	0	0	217	349	421	421
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	$835	0	0	15	54	98	98
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	$248	$75	15	21	14	22	24	24
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	$1640	$749	11	30	32	66	93	93
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending	C	C | North Texas MWD Lake/Reservoir System	N/A	$430	0	65	124	199	285	285

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	$834	0	0	0	0	142	142
Caddo Basin SUD* Total					**27**	**118**	**405**	**695**	**1,072**	**1,078**

WUG Name: Canton					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Canton Reuse	D	D | Sabine Indirect Reuse	$8125	$2553	255	255	255	255	255	255
Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	N/A	$1400	0	0	0	0	0	145
Canton Total					**255**	**255**	**255**	**255**	**255**	**400**

WUG Name: Cash SUD*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Advanced Water Conservation (Cash SUD)	D	Demand Reduction	N/A	N/A	0	1	1	0	0	0
Increase Existing Contract (Cash SUD)	D	C | North Texas MWD Lake/Reservoir System	$2198	$1762	416	568	642	471	337	337
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	$707	0	0	255	303	262	262
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	$835	0	0	19	47	61	61
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	$248	$75	235	293	201	235	163	163
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	$1640	$749	16	41	37	57	60	60
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

NTMWD - Texoma Blending	C	C | North Texas MWD Lake/Reservoir System	N/A	$430	0	94	152	180	179	179
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	$834	0	0	0	0	89	89
Cash SUD* Total					**667**	**997**	**1,307**	**1,293**	**1,151**	**1,151**

WUG Name: Celeste					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Celeste, Woodbine, Trinity)	D	D | Woodbine Aquifer | Hunt County	$2288	$1276	35	35	35	35	35	35
Celeste Total					**35**	**35**	**35**	**35**	**35**	**35**

WUG Name: Central Bowie County WSC					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$482	$482	769	769	776	783	790	797
Central Bowie County WSC Total					**769**	**769**	**776**	**783**	**790**	**797**

WUG Name: Clarksville					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells with RO Treatment (Clarksville, Blossom)	D	D | Blossom Aquifer | Red River County	$4312	$2402	388	388	388	388	388	388
Clarksville Total					**388**	**388**	**388**	**388**	**388**	**388**

WUG Name: County-Other, Cass					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (County Other, Cass, Carrizo, Cypress)	D	D | Carrizo-Wilcox Aquifer | Cass County	$514	$84	323	323	323	323	323	323
Drill New Wells (County Other, Cass, Carrizo, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Cass County	$528	$97	216	216	216	216	216	216
Riverbend Strategy Cass County	D	D | Wright Patman Lake/Reservoir	$483	$483	44	44	44	44	44	44
County-Other, Cass Total					**583**	**583**	**583**	**583**	**583**	**583**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: County-Other, Lamar					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (County-Other Lamar)	D	D | Pat Mayse Lake/Reservoir	$1629	$1629	204	212	224	234	244	244
County-Other, Lamar Total					**204**	**212**	**224**	**234**	**244**	**244**

WUG Name: Crystal Systems Texas*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	D	D | Carrizo-Wilcox Aquifer | Smith County	N/A	N/A	0	31	0	0	0	0
Tyler-Lake Palestine	I	I | Palestine Lake/Reservoir	$896	$896	71	145	232	331	418	418
Crystal Systems Texas* Total					**71**	**176**	**232**	**331**	**418**	**418**

WUG Name: Cumby					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	D	D | Nacatoch Aquifer | Hopkins County	$2690	$1387	29	44	58	77	88	88
Cumby Total					**29**	**44**	**58**	**77**	**88**	**88**

WUG Name: De Kalb					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$242	$242	266	263	261	257	254	250
De Kalb Total					**266**	**263**	**261**	**257**	**254**	**250**

WUG Name: East Texas MUD					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Smith County MUD 1, Queen City, Sabine)	D	D | Queen City Aquifer | Smith County	N/A	$108	0	108	216	432	648	648
East Texas MUD Total					**0**	**108**	**216**	**432**	**648**	**648**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Edom WSC*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	$2931	$1046	60	60	60	60	60	60
Edom WSC* Total					**60**	**60**	**60**	**60**	**60**	**60**

WUG Name: Gilmer					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Gilmer, Carrizo, Cypress)	D	D | Carrizo-Wilcox Aquifer | Upshur County	N/A	$60	0	42	41	59	84	110
Gilmer Total					**0**	**42**	**41**	**59**	**84**	**110**

WUG Name: Greenville					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Greenville Conservation and WTP	D	D | Tawakoni Lake/Reservoir	$2794	$807	13,026	13,026	13,026	13,026	13,026	13,026
Greenville Conservation and WTP	D	Demand Reduction	$496	$642	2,299	4,749	7,470	10,309	13,393	14,441
Greenville Total					**15,325**	**17,775**	**20,496**	**23,335**	**26,419**	**27,467**

WUG Name: Harleton WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Harleton, Cypress)	D	D | O' the Pines Lake/Reservoir	$652	$652	74	91	127	173	230	230
Harleton WSC Total					**74**	**91**	**127**	**173**	**230**	**230**

WUG Name: Holly Springs WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Holly Springs, Cypress)	D	D | O' the Pines Lake/Reservoir	$0	$0	80	80	80	80	80	80
Holly Springs WSC Total					**80**	**80**	**80**	**80**	**80**	**80**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Hooks					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$242	$242	317	313	310	305	301	296
Hooks Total					**317**	**313**	**310**	**305**	**301**	**296**

WUG Name: Irrigation, Bowie					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Bowie County	$902	$605	4,134	4,134	4,134	4,134	4,134	4,134
Drill New Wells (Irrigation Bowie, Nacatoch, Red)	D	D | Nacatoch Aquifer | Bowie County	$1296	$640	1,882	1,882	1,882	1,882	1,882	1,882
Irrigation, Bowie Total					**6,016**	**6,016**	**6,016**	**6,016**	**6,016**	**6,016**

WUG Name: Irrigation, Harrison					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Irrigation Harrison, Queen City , Sabine)	D	D | Queen City Aquifer | Harrison County	$118	$31	41	35	30	19	13	7
Drill New Wells (Irrigation Harrison, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	$120	$35	484	484	484	484	484	484
Irrigation, Harrison Total					**525**	**519**	**514**	**503**	**497**	**491**

WUG Name: Irrigation, Hopkins					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	N/A	$728	0	111	387	420	423	423
Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	$759	$593	43	42	41	41	39	39
Irrigation, Hopkins Total					**43**	**153**	**428**	**461**	**462**	**462**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Irrigation, Hunt					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	D	D | Nacatoch Aquifer | Hunt County	$1396	$639	230	230	230	230	230	230
Irrigation, Hunt Total					**230**	**230**	**230**	**230**	**230**	**230**

WUG Name: Irrigation, Lamar					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Pat Mayse Raw Water Pipeline (Irrigation Lamar)	D	D | Pat Mayse Lake/Reservoir	$897	$321	1,468	1,468	1,468	1,468	1,468	1,468
Irrigation, Lamar Total					**1,468**	**1,468**	**1,468**	**1,468**	**1,468**	**1,468**

WUG Name: Irrigation, Red River					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Irrigation, Red River)	D	D | Nacatoch Aquifer | Red River County	$831	$607	1,450	1,450	1,451	1,451	1,451	1,451
Irrigation, Red River Total					**1,450**	**1,450**	**1,451**	**1,451**	**1,451**	**1,451**

WUG Name: Josephine*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Conservation - Josephine	C	Demand Reduction	N/A	$137	0	1	1	1	3	4
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending (new)	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
Residual Savings from Conservation Measures Implemented Since Baseline Year	C	Demand Reduction	N/A	N/A	0	0	0	0	0	0
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
Josephine* Total					**0**	**1**	**1**	**1**	**3**	**4**

WUG Name: Kilgore*					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sabine River Authority Strategy - Wood County GW	D	D | Carrizo-Wilcox Aquifer | Wood County	$12492	$7921	360	364	367	371	375	379
Kilgore* Total					**360**	**364**	**367**	**371**	**375**	**379**

WUG Name: Leigh WSC					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Leigh, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	N/A	$123	0	44	89	89	133	133
Leigh WSC Total					**0**	**44**	**89**	**89**	**133**	**133**

WUG Name: Lindale*					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Lindale, Carrizo, Neches)	D	I | Carrizo-Wilcox Aquifer | Smith County	N/A	N/A	0	0	0	0	0	0
Tyler-Lake Palestine	I	I | Palestine Lake/Reservoir	$896	$896	116	206	313	426	538	538
Lindale* Total					**116**	**206**	**313**	**426**	**538**	**538**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Little Hope Moore WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	N/A	N/A	0	0	0	0	0	0
Little Hope Moore WSC Total					**0**	**0**	**0**	**0**	**0**	**0**

WUG Name: Livestock, Camp					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Livestock, Camp, Queen City, Cypress)	D	D | Queen City Aquifer | Camp County	$123	$46	594	594	594	594	594	594
Livestock, Camp Total					**594**	**594**	**594**	**594**	**594**	**594**

WUG Name: Livestock, Cass					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Livestock, Cass, Queen City, Cypress)	D	D | Queen City Aquifer | Cass County	$111	$35	968	968	968	968	968	968
Drill New Wells (Livestock, Cass, Queen City, Sulphur)	D	D | Queen City Aquifer | Cass County	$111	$35	280	267	254	243	230	217
Livestock, Cass Total					**1,248**	**1,235**	**1,222**	**1,211**	**1,198**	**1,185**

WUG Name: Livestock, Delta					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	D	D | Nacatoch Aquifer | Delta County	$1134	$615	250	243	238	238	226	226
Livestock, Delta Total					**250**	**243**	**238**	**238**	**226**	**226**

WUG Name: Livestock, Franklin					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	D	D | Carrizo-Wilcox Aquifer | Franklin County	$111	$35	805	805	805	805	805	805

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Franklin County	$111	$35	37	27	27	27	27	27
Livestock, Franklin Total					**842**	**832**	**832**	**832**	**832**	**832**

WUG Name: Livestock, Hopkins					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	$995	$704	10	11	11	12	13	13
Livestock, Hopkins Total					**10**	**11**	**11**	**12**	**13**	**13**

WUG Name: Livestock, Hunt					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Well (Livestock, Hunt, Trinity, Sabine)	D	D | Trinity Aquifer | Hunt County	N/A	N/A	0	0	0	0	0	0
Livestock, Hunt Total					**0**	**0**	**0**	**0**	**0**	**0**

WUG Name: Livestock, Lamar					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Lamar Livestock Pipeline and Contract with Lamar Co WSD	D	D | Pat Mayse Lake/Reservoir	$3626	$1964	617	617	617	617	617	617
Livestock, Lamar Total					**617**	**617**	**617**	**617**	**617**	**617**

WUG Name: Livestock, Morris					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Morris, Queen City, Cypress)	D	D | Queen City Aquifer | Morris County	$121	$37	3	3	3	3	3	3
Drill New Wells (Livestock, Morris, Queen City, Sulphur)	D	D | Queen City Aquifer | Morris County	$97	$19	2	2	2	2	2	2
Livestock, Morris Total					**5**	**5**	**5**	**5**	**5**	**5**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Livestock, Red River					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Red River)	D	D | Blossom Aquifer | Red River County	$3636	$909	11	10	11	10	11	11
Drill New Wells (Livestock, Red River)	D	D | Trinity Aquifer | Red River County	$1207	$626	65	65	65	65	65	65
Livestock, Red River Total					**76**	**75**	**76**	**75**	**76**	**76**

WUG Name: Livestock, Titus					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Titus)	D	D | Carrizo-Wilcox Aquifer | Titus County	$930	$523	1,586	1,609	1,632	1,701	1,744	1,744
Livestock, Titus Total					**1,586**	**1,609**	**1,632**	**1,701**	**1,744**	**1,744**

WUG Name: Livestock, Upshur					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Upshur, Queen City, Cypress)	D	D | Queen City Aquifer | Upshur County	$106	$31	161	161	161	161	161	161
Drill New Wells (Livestock, Upshur, Queen City, Sabine)	D	D | Queen City Aquifer | Upshur County	$106	$31	161	161	161	161	161	161
Livestock, Upshur Total					**322**	**322**	**322**	**322**	**322**	**322**

WUG Name: Livestock, Van Zandt					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock Van Zandt, Queen City, Neches)	D	D | Queen City Aquifer | Van Zandt County	$1479	$670	194	194	194	194	194	194
Livestock, Van Zandt Total					**194**	**194**	**194**	**194**	**194**	**194**

WUG Name: Livestock, Wood					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Livestock, Wood, Queen City, Sabine)	D	D | Queen City Aquifer | Wood County	$111	$111	1,129	1,129	1,129	1,129	1,129	1,129
Livestock, Wood Total					**1,129**	**1,129**	**1,129**	**1,129**	**1,129**	**1,129**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Longview					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Sabine River Authority Strategy - Wood County GW	D	D | Carrizo-Wilcox Aquifer | Wood County	$12492	$7921	483	483	483	483	483	483
Longview Total					**483**	**483**	**483**	**483**	**483**	**483**

WUG Name: Mabank*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Conservation - Mabank	C	Demand Reduction	$717	$361	2	3	3	4	4	5
Conservation, Water Loss Control - Mabank	C	Demand Reduction	$937	$300	1	5	7	8	9	9
Integrated Pipeline	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
TRWD - Aquifer Storage and Recovery Pilot	C	C | Trinity Aquifer ASR | Tarrant County	N/A	N/A	0	0	0	0	0	0
TRWD - Carrizo-Wilcox Groundwater	C	C | Carrizo-Wilcox Aquifer | Freestone County	N/A	N/A	0	0	0	0	0	0
TRWD - Carrizo-Wilcox Groundwater	C	I | Carrizo-Wilcox Aquifer | Anderson County	N/A	N/A	0	0	0	0	0	0
TRWD - Carrizo-Wilcox Groundwater	C	I | Queen City Aquifer | Anderson County	N/A	N/A	0	0	0	0	0	0
TRWD - Reuse from Mary's Creek WRF	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
TRWD - Reuse from TRA Central WWTP	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
TRWD - Tehuacana	C	C | Tehuacana Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
Mabank* Total					**3**	**8**	**10**	**12**	**13**	**14**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: MacBee SUD*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Contract - MacBee SUD to SRA	D	D | Fork Lake/Reservoir	N/A	$1500	0	0	0	0	967	968
MacBee SUD* Total					**0**	**0**	**0**	**0**	**967**	**968**

WUG Name: Macedonia Eylau MUD 1					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$483	$483	710	705	698	688	677	666
Macedonia Eylau MUD 1 Total					**710**	**705**	**698**	**688**	**677**	**666**

WUG Name: Manufacturing, Bowie					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (Manufacturing Bowie)	D	Demand Reduction	$0	$0	161	204	204	204	204	204
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$205	$85	33,545	59,867	66,446	74,669	82,893	84,666
Manufacturing, Bowie Total					**33,706**	**60,071**	**66,650**	**74,873**	**83,097**	**84,870**

WUG Name: Manufacturing, Titus					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (Manufacturing Titus, Cypress)	D	Demand Reduction	N/A	$0	0	415	415	415	415	415
Increase Existing Contract (Manufacturing Titus from Mt Pleasant Surplus)	D	D | Bob Sandlin Lake/Reservoir	$782	$782	1,003	880	890	1,149	1,279	1,279
Manufacturing, Titus Total					**1,003**	**1,295**	**1,305**	**1,564**	**1,694**	**1,694**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Manufacturing, Upshur					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Manufacturing Upshur, Queen City, Cypress)	D	D | Queen City Aquifer | Upshur County	$106	$31	161	161	161	161	161	161
Manufacturing, Upshur Total					**161**	**161**	**161**	**161**	**161**	**161**

WUG Name: Manufacturing, Van Zandt					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (Manufacturing Van Zandt)	D	Demand Reduction	$0	$0	50	75	75	75	75	75
Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	$1549	$663	386	386	386	386	386	386
Manufacturing, Van Zandt Total					**436**	**461**	**461**	**461**	**461**	**461**

WUG Name: Manufacturing, Wood					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Conservation - Manufacturing Wood Co	D	Demand Reduction	$0	$0	291	302	313	325	337	349
Drill New Wells (Manufacturing, Wood, Queen City, Sabine)	D	D | Queen City Aquifer | Wood County	$78	$25	1,991	1,991	1,991	1,991	1,991	1,991
Manufacturing, Wood Total					**2,282**	**2,293**	**2,304**	**2,316**	**2,328**	**2,340**

WUG Name: Martin Springs WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Martin Springs)	D	D | Chapman/Cooper Lake/Reservoir Non-System Portion	N/A	$1176	0	0	0	0	29	29
Martin Springs WSC Total					**0**	**0**	**0**	**0**	**29**	**29**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Maud					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$242	$242	164	162	161	158	156	153
Maud Total					**164**	**162**	**161**	**158**	**156**	**153**

WUG Name: Miller Grove WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	$2363	$1000	80	80	80	80	80	80
Miller Grove WSC Total					**80**	**80**	**80**	**80**	**80**	**80**

WUG Name: Mining, Gregg					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)	D	D | Carrizo-Wilcox Aquifer | Gregg County	$370	$74	27	27	27	27	17	10
Mining, Gregg Total					**27**	**27**	**27**	**27**	**17**	**10**

WUG Name: Mining, Harrison					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Mining Harrison, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	$117	$36	332	332	332	332	332	332
Drill New Wells (Mining Harrison, Queen City, Sabine)	D	D | Queen City Aquifer | Harrison County	$126	$51	369	319	268	167	117	67
Mining, Harrison Total					**701**	**651**	**600**	**499**	**449**	**399**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Mining, Hopkins					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	$901	$718	1	1	1	2	2	2
Mining, Hopkins Total					**1**	**1**	**1**	**2**	**2**	**2**

WUG Name: Mining, Marion					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Mining Marion, Queen City, Cypress)	D	D | Queen City Aquifer | Marion County	$121	$37	645	645	645	645	645	645
Mining, Marion Total					**645**	**645**	**645**	**645**	**645**	**645**

WUG Name: Mining, Wood					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Mining, Wood, Queen City Sabine)	D	D | Queen City Aquifer | Wood County	$0	$0	38	38	38	38	38	38
Mining, Wood Total					**38**	**38**	**38**	**38**	**38**	**38**

WUG Name: Myrtle Springs WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Sabine Basin)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	$1524	$808	355	355	355	355	355	355
Myrtle Springs WSC Total					**355**	**355**	**355**	**355**	**355**	**355**

WUG Name: Nash					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$242	$242	314	309	306	302	297	292
Nash Total					**314**	**309**	**306**	**302**	**297**	**292**

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DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: New Boston					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$243	$243	1,390	1,297	1,285	1,265	1,245	1,225
New Boston Total					**1,390**	**1,297**	**1,285**	**1,265**	**1,245**	**1,225**

WUG Name: North Harrison WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (North Harrison, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	N/A	$130	0	0	0	54	54	54
North Harrison WSC Total					**0**	**0**	**0**	**54**	**54**	**54**

WUG Name: North Hunt SUD*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	D	D | Nacatoch Aquifer | Hunt County	$1927	$875	192	184	184	184	184	184
North Hunt SUD* Total					**192**	**184**	**184**	**184**	**184**	**184**

WUG Name: Panola-Bethany WSC*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Panola Bethany, Queen City, Sabine)	D	D | Queen City Aquifer | Harrison County	N/A	$77	0	52	112	210	276	335
Panola-Bethany WSC* Total					**0**	**52**	**112**	**210**	**276**	**335**

WUG Name: Poetry WSC*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (Poetry WSC)	D	Demand Reduction	$770	$770	1	2	1	3	4	7
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	$707	0	0	55	87	102	102
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	$835	0	0	4	14	24	24

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	$248	$75	4	5	4	6	6	6
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	$1640	$749	3	8	8	16	23	23
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending	C	C | North Texas MWD Lake/Reservoir System	N/A	$430	0	18	32	50	68	68
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	$834	0	0	0	0	34	34
Poetry WSC* Total					**8**	**33**	**104**	**176**	**261**	**264**

WUG Name: R P M WSC*					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	N/A	N/A	0	0	0	0	0	0
R P M WSC* Total					**0**	**0**	**0**	**0**	**0**	**0**

WUG Name: Redwater					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$243	$243	337	333	329	323	317	311
Redwater Total					**337**	**333**	**329**	**323**	**317**	**311**

WUG Name: Riverbend Water Resources District					**Water Management Strategy Supply (acre-feet per year)**					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$1390	$537	380	375	371	365	359	353
Riverbend Water Resources District Total					**380**	**375**	**371**	**365**	**359**	**353**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Royse City*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Conservation - Royse City	C	Demand Reduction	$237	$125	28	81	101	110	128	137
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	C	D | Marvin Nichols Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Lavon Watershed Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Additional Measures to Access Full Lavon Yield	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
NTMWD - Expanded Wetland Reuse	C	C | Trinity Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Fork Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Interim Upper Sabine Basin	C	D | Tawakoni Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Lake of The Pines	C	D | O' the Pines Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
NTMWD - Sabine Creek Reuse	C	D | Sabine Indirect Reuse	N/A	N/A	0	0	0	0	0	0
NTMWD - Texoma Blending (new)	C	C | North Texas MWD Lake/Reservoir System	N/A	N/A	0	0	0	0	0	0
Wright Patman Reallocation for NTMWD AND TRWD	C	D | Wright Patman Lake/Reservoir	N/A	N/A	0	0	0	0	0	0
Royse City* Total					**28**	**81**	**101**	**110**	**128**	**137**

WUG Name: Scottsville					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Scottsville, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	$716	$93	54	108	108	162	162	162
Scottsville Total					**54**	**108**	**108**	**162**	**162**	**162**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Star Mountain WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Star Mountain, Queen City, Sabine)	D	D | Queen City Aquifer | Smith County	$611	$116	108	108	108	216	216	216
Star Mountain WSC Total					**108**	**108**	**108**	**216**	**216**	**216**

WUG Name: Starrville-Friendship WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Drill New Wells (Starrville Friendship, Carrizo, Sabine)	D	D | Carrizo-Wilcox Aquifer | Gregg County	N/A	$574	0	0	0	108	67	42
Starrville-Friendship WSC Total					**0**	**0**	**0**	**108**	**67**	**42**

WUG Name: Texarkana					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$243	$243	6,769	6,702	6,649	6,554	6,459	6,362
Texarkana Total					**6,769**	**6,702**	**6,649**	**6,554**	**6,459**	**6,362**

WUG Name: Texas A&M University Commerce					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Texas A&M University - Commerce - Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	D	D | Nacatoch Aquifer | Hunt County	$1771	$840	276	275	275	275	275	275
Texas A&M University Commerce Total					**276**	**275**	**275**	**275**	**275**	**275**

WUG Name: Wake Village					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$242	$242	649	641	635	625	615	605
Wake Village Total					**649**	**641**	**635**	**625**	**615**	**605**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Waskom					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Waskom, Queen City, Cypress)	D	D | Queen City Aquifer | Harrison County	$602	$80	162	162	216	270	324	324
Waskom Total					**162**	**162**	**216**	**270**	**324**	**324**

WUG Name: Winona					Water Management Strategy Supply (acre-feet per year)					
WMS Name	**WMS Sponsor Region**	**Source Name**	**Unit Cost 2030**	**Unit Cost 2080**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	D	D | Carrizo-Wilcox Aquifer | Smith County	N/A	N/A	0	0	0	0	0	0
Winona Total					**0**	**0**	**0**	**0**	**0**	**0**

Region D Recommended WMS Supply Total	**89,271**	**119,443**	**130,259**	**142,916**	**156,301**	**159,162**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

BOWIE COUNTY

WUGs:

Burns Redbank WSC
Central Bowie County WSC
The City of DeKalb
The City of Hooks
Bowie County Irrigation
Macedonia-Eylau MUD #1
Bowie County Manufacturing
The City of Maud
The City of Nash
The City of New Boston
The City of Redwater
Riverbend Water Resources District
The City of Texarkana, Texas
The City of Wake Village

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BURNS REDBANK WSC

Description of Water User Group:

Burns Redbank Water Supply Corporation (WSC) provides water service in Bowie County. The system population is projected to be 2,344 in 2030 and 3,171 in the year 2080. The WSC has a contract for water supply with the City of Hooks from Lake Wright Patman. The WSC is projected to have a shortage in 2030 due to aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	2,344	2,490	2,644	2,810	2,985	3,171
Projected Water Demand	260	274	291	310	329	349
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-260**	**-274**	**-291**	**-310**	**-329**	**-349**

Evaluation of Potentially Feasible Water Management Strategies:

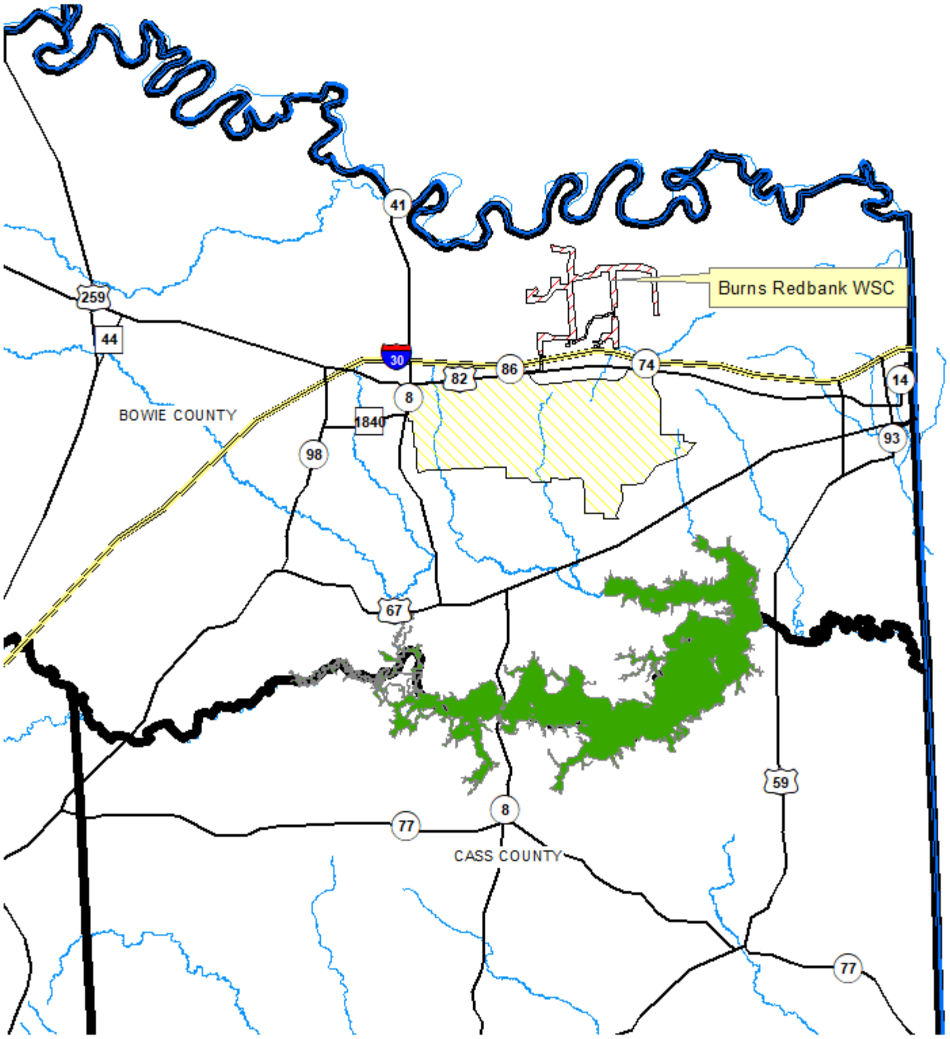
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not considered because the WSC's supply is not projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Hooks. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Renew Existing Contract	**349**		**$168,000**	**$483**	**1**

Recommendations:

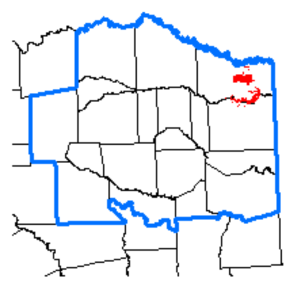
	2030	2040	2050	2060	2070	2080
Renew Existing Contract (ac-ft/yr)	260	274	291	310	329	349

It is recommended that the Burns Redbank WSC continue its surface water purchase from the City of Hooks contingent upon Riverbend WRD's strategies.



Relation
Buyer
Seller
Source
Region D Boundary
Counties
Reservoirs
Streams

0 15,000 30,000 60,000
Feet
1 inch = 30,000 feet



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Attachment A

Burns Redbank WSC
Recommended Strategy
Renew Existing Contract (Hooks)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Burns Redbank - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	*Estimated Costs for Facilities*
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (349 acft/yr @ 482.23 $/acft)	$168,000
TOTAL ANNUAL COST	**$168,000**
Available Project Yield (acft/yr)	349
Annual Cost of Water ($ per acft), based on PF=0	$481
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$481
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$1.48
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.48

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CENTRAL BOWIE COUNTY WSC

Description of Water User Group:

The Central Bowie County Water Supply Corporation (WSC) provides water service in Bowie County. The system population is projected to be 9,911 in 2030 and 10,350 in the year 2080. The WSC has a contract for 110 ac-ft/yr of water supply from Lake Wright Patman with the City of Texarkana/Riverbend Water Resources District (WRD). The WSC is projected to have a shortage in 2030 due to aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	9,911	9,996	10,084	10,172	10,262	10,35 0
Projected Water Demand	769	769	776	783	790	797
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-769**	**-769**	**-776**	**-783**	**-790**	**-797**

Evaluation of Potentially Feasible Water Management Strategies:

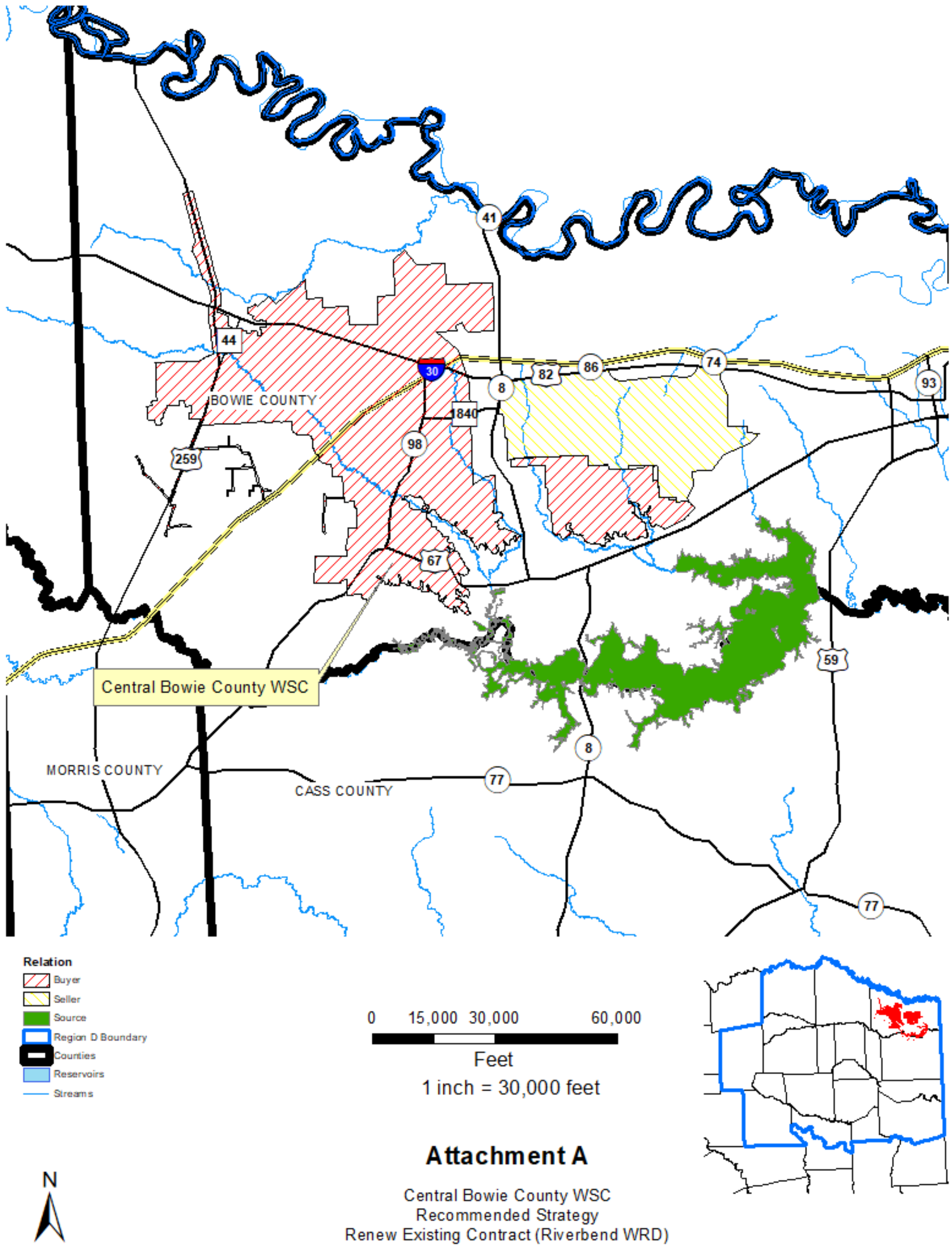
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not considered because the WSC's supply would not be projected to meet TCEQ regulatory minimums. A water loss reduction strategy is recommended based on reported total water loss percentage of 25.3%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Texarkana and/or Riverbend WRD. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Water Loss Reduction	**83**				**1**
Renew Existing Contract	**797**		**$384,000**	**$482**	**1**

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Water Loss Reduction	79	79	80	80	81	83
Renew Existing Contract (ac-ft/yr)	769	769	776	783	790	797

It is recommended that the Central Bowie County WSC continue its surface water purchase from the City of Texarkana and/or Riverbend WRD contingent upon Riverbend WRD's recommended strategies.



Attachment A

Central Bowie County WSC
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Central Bowie WSC - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (797 acft/yr @ 482.23 $/acft)	$384,000
TOTAL ANNUAL COST	**$384,000**
Available Project Yield (acft/yr)	797
Annual Cost of Water ($ per acft), based on PF=0	$482
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$482
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$1.48
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.48

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF DE KALB

Description of Water User Group:

The City of De Kalb provides water service in Bowie County. The City population is projected to be 1,398 in 2030 and 1,319 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2030 due to aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,398	1,389	1,378	1,358	1,338	1,319
Projected Water Demand	266	263	261	257	254	250
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-266**	**-263**	**-261**	**-257**	**-254**	**-250**

Evaluation of Potentially Feasible Water Management Strategies:

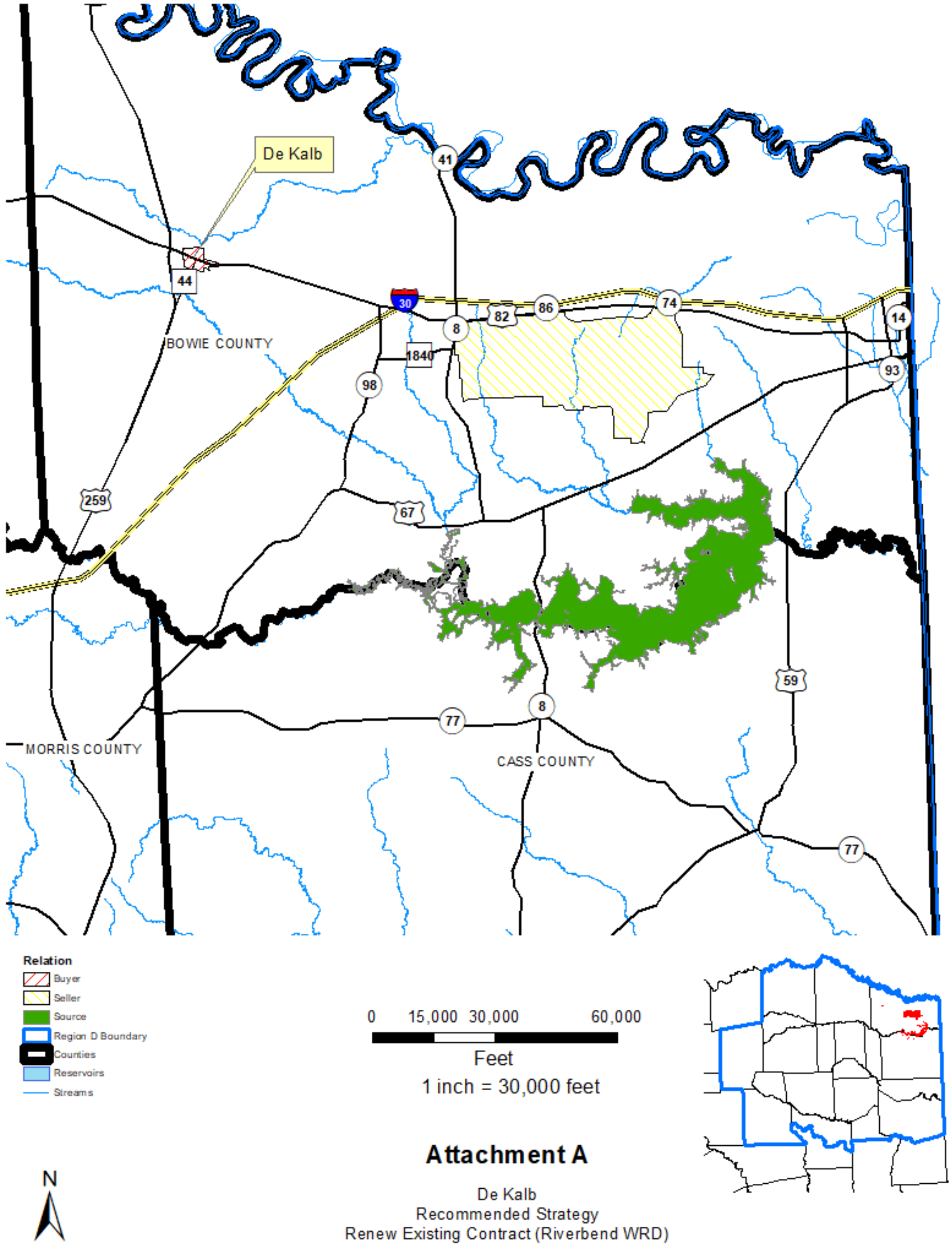
There were four alternative strategies considered to meet the City's water supply shortages as summarized in the Table below. Advanced conservation was not considered because De Kalb's supply is not projected to meet TCEQ regulatory minimums. A water loss reduction strategy is recommended based on reported total water loss percentage of 32.1%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**45**				**1**
Renew Existing Contract	**266**		**$65,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	45	45	45	44	44	43
Renew Existing Contract (ac-ft/yr)	266	263	261	257	254	250

It is recommended that the City of DeKalb continue its surface water purchase from Texarkana contingent upon Texarkana/Riverbend strategies.



Attachment A

De Kalb
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

De Kalb - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023

Item	*Estimated Costs for Facilities*
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (266 acft/yr @ 242.68 $/acft)	$65,000
TOTAL ANNUAL COST	**$65,000**
Available Project Yield (acft/yr)	266
Annual Cost of Water ($ per acft), based on PF=0	$244
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$244
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.75

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF HOOKS

Description of Water User Group:

The City of Hooks provides water service in Bowie County. The City population is projected to be 2,637 in 2030 and 2,475 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2030 due to the aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	2,637	2,620	2,595	2,556	2,515	2,475
Projected Water Demand	317	313	310	305	301	296
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-317**	**-313**	**-310**	**-305**	**-301**	**-296**

Evaluation of Potentially Feasible Water Management Strategies:

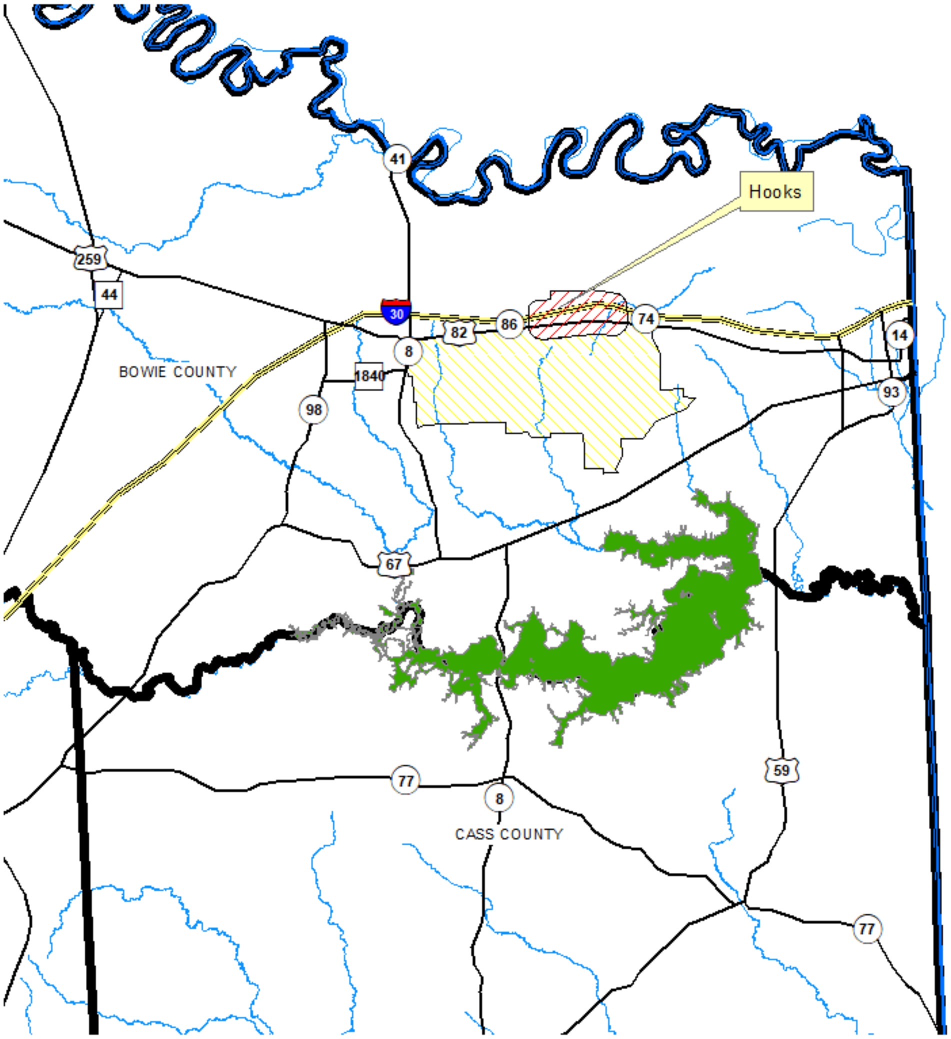
There were four alternative strategies considered to meet the City's water supply shortages as summarized in the Table below. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. A water loss reduction strategy is recommended based on reported total water loss percentage of 35.8%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**66**				**1**
Renew Existing Contract	**317**		**$77,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	**66**	**65**	**65**	**64**	**63**	**62**
Renew Existing Contract (ac-ft/yr)	**317**	**313**	**310**	**305**	**301**	**296**

It is recommended that the City of Hooks continue its surface water purchase from Texarkana contingent upon Texarkana/Riverbend strategies.

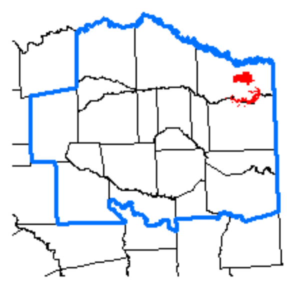


Relation
Buyer
Seller
Source
Region D Boundary
Counties
Reservoirs
Streams

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet



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Attachment A

Hooks
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Hooks - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (317 acft/yr @ 242.68 $/acft)	$77,000
TOTAL ANNUAL COST	**$77,000**
Available Project Yield (acft/yr)	317
Annual Cost of Water ($ per acft), based on PF=0	$243
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$243
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.75

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN BOWIE COUNTY

Description of Water User Group:

The Irrigation WUG in Bowie County has a demand that is projected to be 10,067 ac-ft/yr in 2030 through 2080. The Irrigation WUG in Bowie County is projected to be supplied by surface water supplies from run-of-river diversions from the Red and Sulphur Rivers. The current round of planning has identified a deficit of 3,032 ac-ft/yr in the Sulphur basin and a deficit of 2,184 ac-ft/yr in the Red River basin, projected to occur in 2030 through 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	10,067	10,067	10,067	10,067	10,067	10,067
Current Water Supply	4,851	4,851	4,851	4,851	4,851	4,851
Projected Supply Surplus (+)/Deficit(-)	**-5,216**	**-5,216**	**-5,216**	**-5,216**	**-5,216**	**-5,216**

Projected Supply Surplus (+)/Deficit(-) by Basin	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Red River Basin	-2,184	-2,184	-2,184	-2,184	-2,184	-2,184
Sulphur Basin	-3,032	-3,032	-3,032	-3,032	-3,032	-3,032
Total	**-5,216**	**-5,216**	**-5,216**	**-5,216**	**-5,216**	**-5,216**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Bowie County Irrigation WUG's projected water supply shortages. Advanced water conservation for irrigation practices were not considered in this planning effort, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to rural farm irrigation systems. Groundwater from the Carrizo-Wilcox aquifer has been identified as a potential source of water for irrigation in Bowie County. Surface water was not considered as a viable alternative to meet projected demands due to this option would be considered cost prohibitive.

Strategy	**Strategy Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Drill New Wells (Carrizo-Wilcox, Sulphur River Basin)	**4,134**	**$17,451,000**	**$3,730,000**	**$902**	**1**
Drill New Wells (Nacatoch, Red River Basin)	**1,085**	**$10,120,000**	**$1,406,000**	**$1,296**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Sulphur River Basin; ac-ft/yr)	**4,134**	**4,134**	**4,134**	**4,134**	**4,134**	**4,134**
Drill New Wells (Nacatoch, Red River Basin; ac-ft/yr)	**1,085**	**1,085**	**1,085**	**1,085**	**1,085**	**1,085**

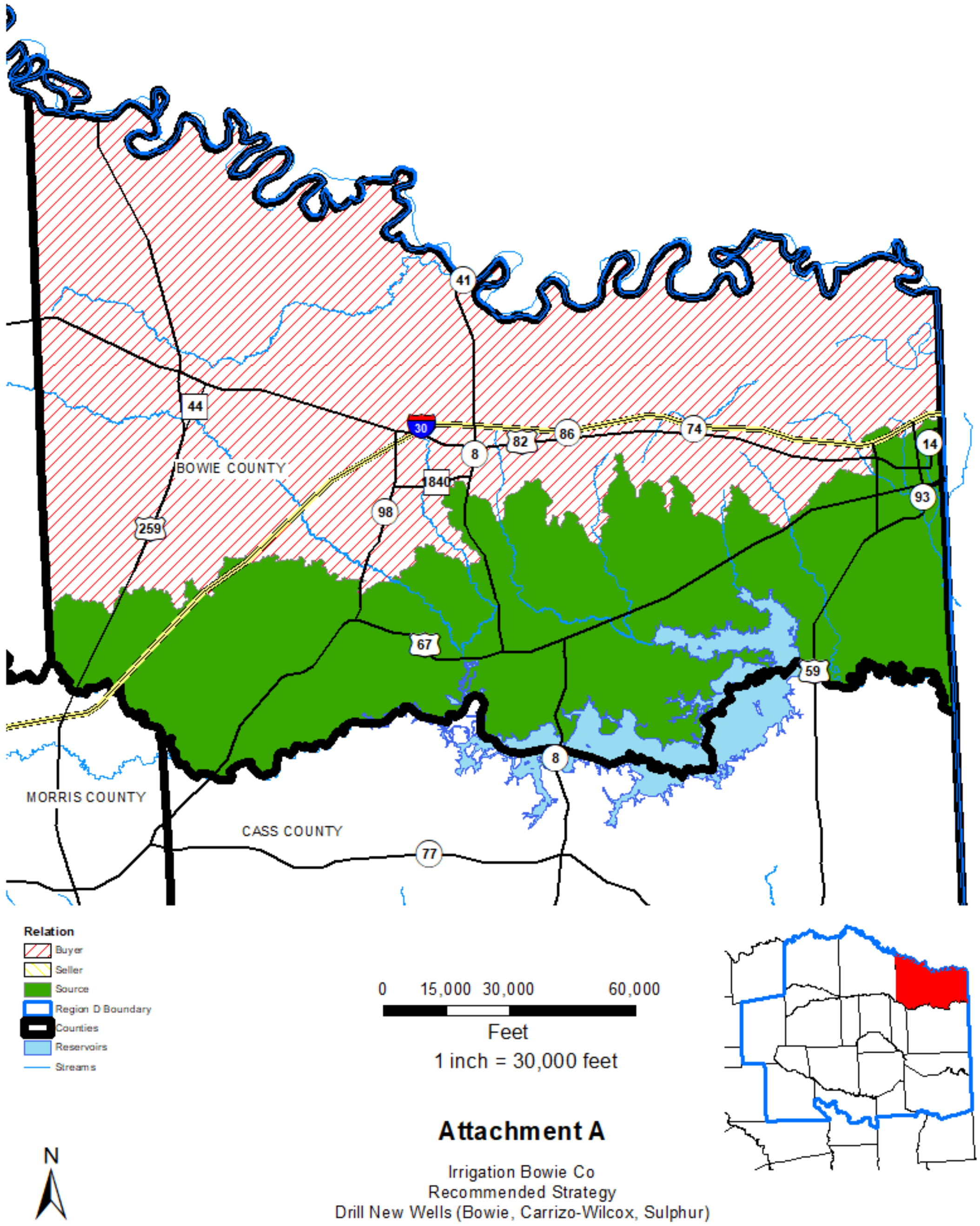
The recommended strategy for the Bowie County Irrigation WUG to meet projected demands during the planning period is to drill 13 new ground water wells with average production capacity of 250 gpm in the Carrizo-Wilcox Aquifer in Bowie County and 11 new wells with average production capacity of 75 gpm in the Nacatoch Aquifer in Bowie County. A well operating at an average of 250 gpm is capable of delivering 403 ac-ft per year per well while a well operating at an average of 75 gpm is capable of producing 121 ac-ft per year.

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Bowie Irrigation - Drill New Wells (Bowie, Carrizo-Wilcox Aquifer, Sulphur Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$12,270,000
TOTAL COST OF FACILITIES	**$12,270,000**
- Planning (3%)	$368,000
- Design (7%)	$859,000
- Construction Engineering (1%)	$123,000
Legal Assistance (2%)	$245,000
Fiscal Services (2%)	$245,000
All Other Facilities Contingency (20%)	$2,454,000
Environmental & Archaeology Studies and Mitigation	$226,000
Land Acquisition and Surveying (17 acres)	$111,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$550,000
TOTAL COST OF PROJECT	**$17,451,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$1,228,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$123,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (3464520 kW-hr @ 0.09 $/kW-hr)	$312,000
Purchase of Water (4134 acft/yr @ 500 $/acft)	$2,067,000
TOTAL ANNUAL COST	**$3,730,000**
Available Project Yield (acft/yr)	4,134
Annual Cost of Water ($ per acft), based on PF=0	$902
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$605
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$2.77
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.86



Attachment A

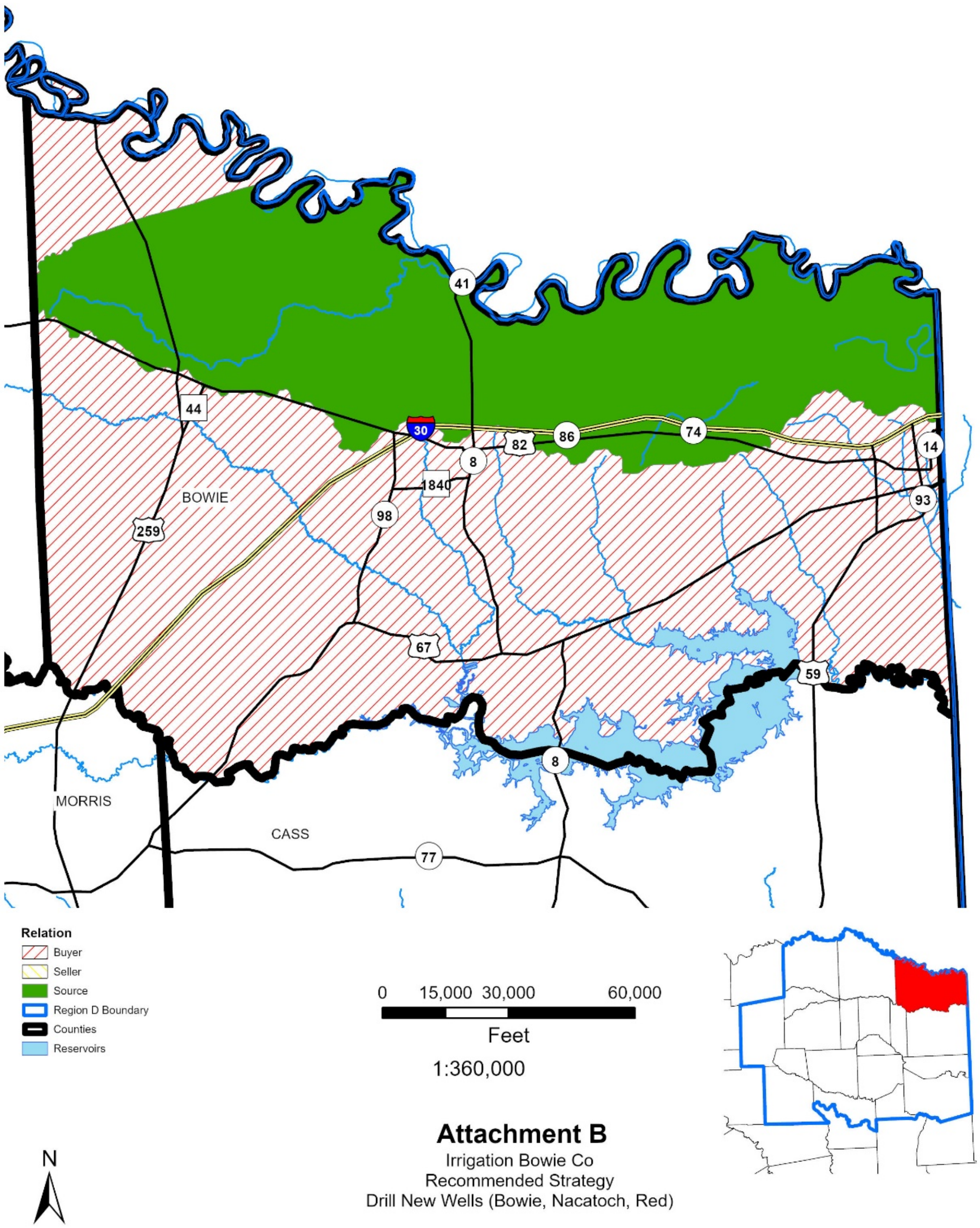
Irrigation Bowie Co
Recommended Strategy
Drill New Wells (Bowie, Carrizo-Wilcox, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Bowie Irrigation - Drill New Wells (Bowie, Nacatoch Aquifer, Red Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$7,046,000
TOTAL COST OF FACILITIES	**$7,046,000**
- Planning (3%)	$211,000
- Design (7%)	$493,000
- Construction Engineering (1%)	$70,000
Legal Assistance (2%)	$141,000
Fiscal Services (2%)	$141,000
All Other Facilities Contingency (20%)	$1,409,000
Environmental & Archaeology Studies and Mitigation	$195,000
Land Acquisition and Surveying (14 acres)	$95,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$319,000
TOTAL COST OF PROJECT	**$10,120,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$712,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$70,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (896348 kW-hr @ 0.09 $/kW-hr)	$81,000
Purchase of Water (1085 acft/yr @ 500 $/acft)	$543,000
TOTAL ANNUAL COST	**$1,406,000**
Available Project Yield (acft/yr)	1,085
Annual Cost of Water ($ per acft), based on PF=0	$1,296
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$640
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$3.98
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.96



Attachment B

Irrigation Bowie Co

Recommended Strategy

Drill New Wells (Bowie, Nacatoch, Red)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MACEDONIA-EYLAU MUD#1

Description of Water User Group:

Macedonia-Eylau MUD #1 provides water service in Bowie County. The MUD's population is projected to be 8,447 in 2030 and 7,925 in the year 2080. The MUD has a contract for water supply with the City of Texarkana for 552 ac-ft/yr. The MUD is projected to have a deficit of 710 ac-ft in 2030 and decreasing to a deficit of 666 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	8,447	8,392	8,310	8,184	8,055	7,925
Projected Water Demand	710	705	698	688	677	666
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-710**	**-705**	**-698**	**-688**	**-677**	**-666**

Evaluation of Potentially Feasible Water Management Strategies:

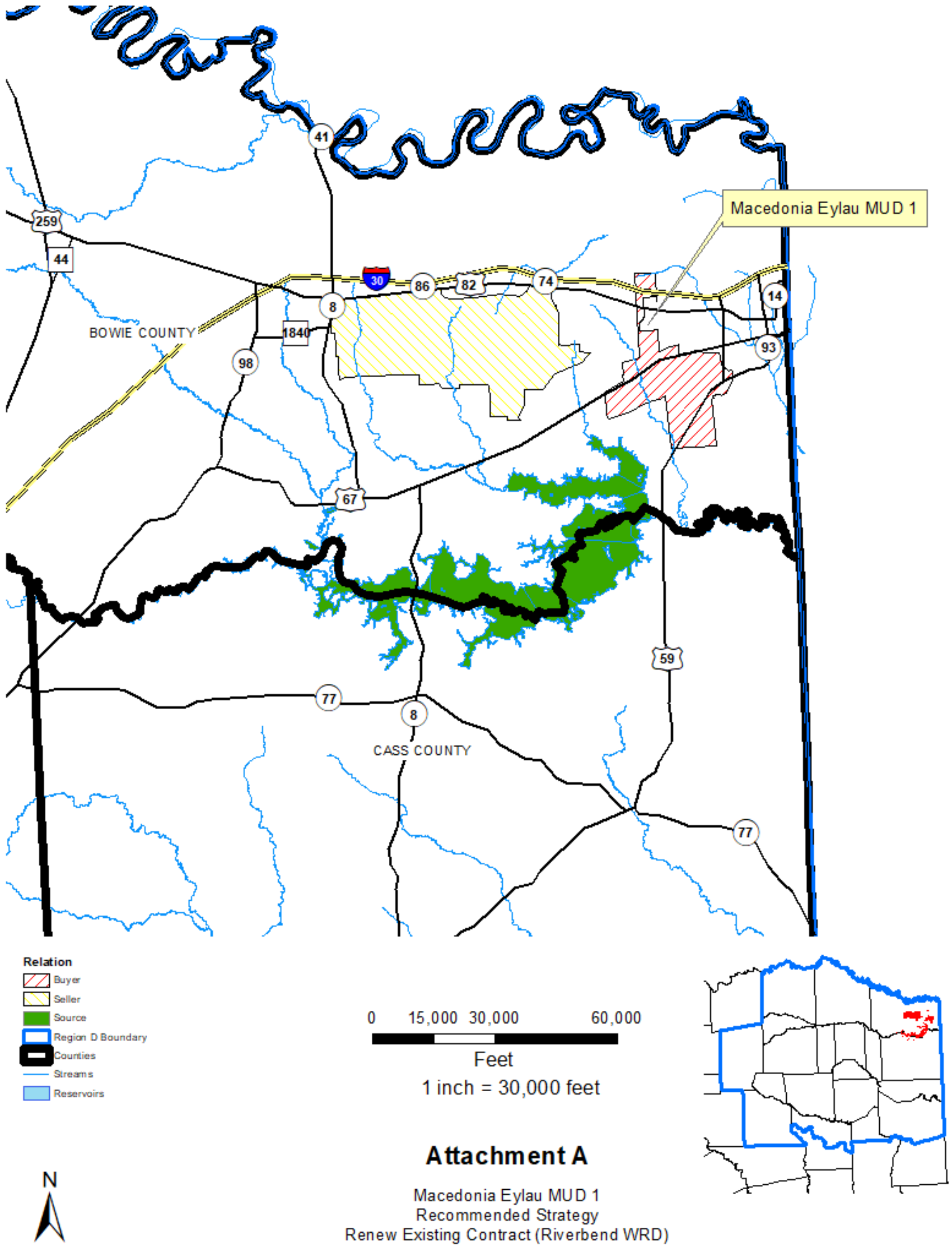
There were four alternative strategies considered to meet the MUD's water supply shortages as summarized in the table below. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold established by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the MUD is planning on continuing to purchase surface water from the City of Texarkana.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Renew Existing Contract	**710**		**$342,000**	**$483**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Renew Existing Contract (ac-ft/yr)	**710**	**705**	**698**	**688**	**677**	**666**

Renewal of the existing surface water purchase from City of Texarkana is the recommended strategy to meet the Macedonia-Eylau MUD No. 1's needs contingent on Riverbend WRD's recommended strategies.



Attachment A

Macedonia Eylau MUD 1
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Macedonia Eylau MUD - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (710 acft/yr @ 482.23 $/acft)	$342,000
TOTAL ANNUAL COST	**$342,000**
Available Project Yield (acft/yr)	710
Annual Cost of Water ($ per acft), based on PF=0	$482
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$482
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$1.48
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.48

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MANUFACTURING IN BOWIE COUNTY

Description of Water User Group:

The Manufacturing WUG in Bowie County has a demand that is projected to be 1,835 ac-ft/yr in 2030 increasing to 2,202 ac-ft/yr in 2080. Manufacturing demands identified via contract between the Riverbend WRD and TexAmericas Center range from 33,604 ac-ft/yr in 2030 to 100,813 ac-ft/yr in 2080. The Manufacturing WUG in Bowie County is projected to be supplied by existing groundwater supplies from the Carrizo-Wilcox Aquifer, surface water from existing run-of-river rights in the Red River Basin, and contracted water supplies from Wright Patman Lake from the Riverbend WRD. The current round of planning has identified a projected 2030 deficit of 1,512 ac-ft/yr in the Sulphur River Basin and a need of 289 ac-ft/yr in the Red River Basin. This deficit in the Sulphur River Basin is projected to increase to 1,820 ac-ft/yr by 2080, whereas the projected need in the Red River Basin increases to 348 ac-ft/yr by 2080. Contractual need in the Sulphur River Basin is established by the aforementioned contract between Riverbend WRD and TexAmericas Center, and the need established by Riverbend WRD to replace aging infrastructure by 2030. This contractual need ranges from 33,604 ac-ft/yr in 2030 to 100,813 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	1,835	1,903	1,974	2,047	2,123	2,202
Current Water Supply	34	34	34	34	34	34
Projected Supply Surplus (+)/Deficit(-)	**-1,801**	**-1,869**	**-1,940**	**-2,013**	**-2,089**	**-2,168**

Projected Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Red River Basin	-289	-300	-311	-323	-335	-348
Sulphur Basin	-1,512	-1,569	-1,629	-1,690	-1,754	-1,820
Total	**-1,801**	**-1,869**	**-1,940**	**-2,013**	**-2,089**	**-2,168**

Contracted Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Sulphur Basin	-33,604	-59,928	-66,509	-74,735	-82,961	-100,813
Total	**-33,604**	**-59,928**	**-66,509**	**-74,735**	**-82,961**	**-100,813**

Evaluation of Potentially Feasible Water Management Strategies:

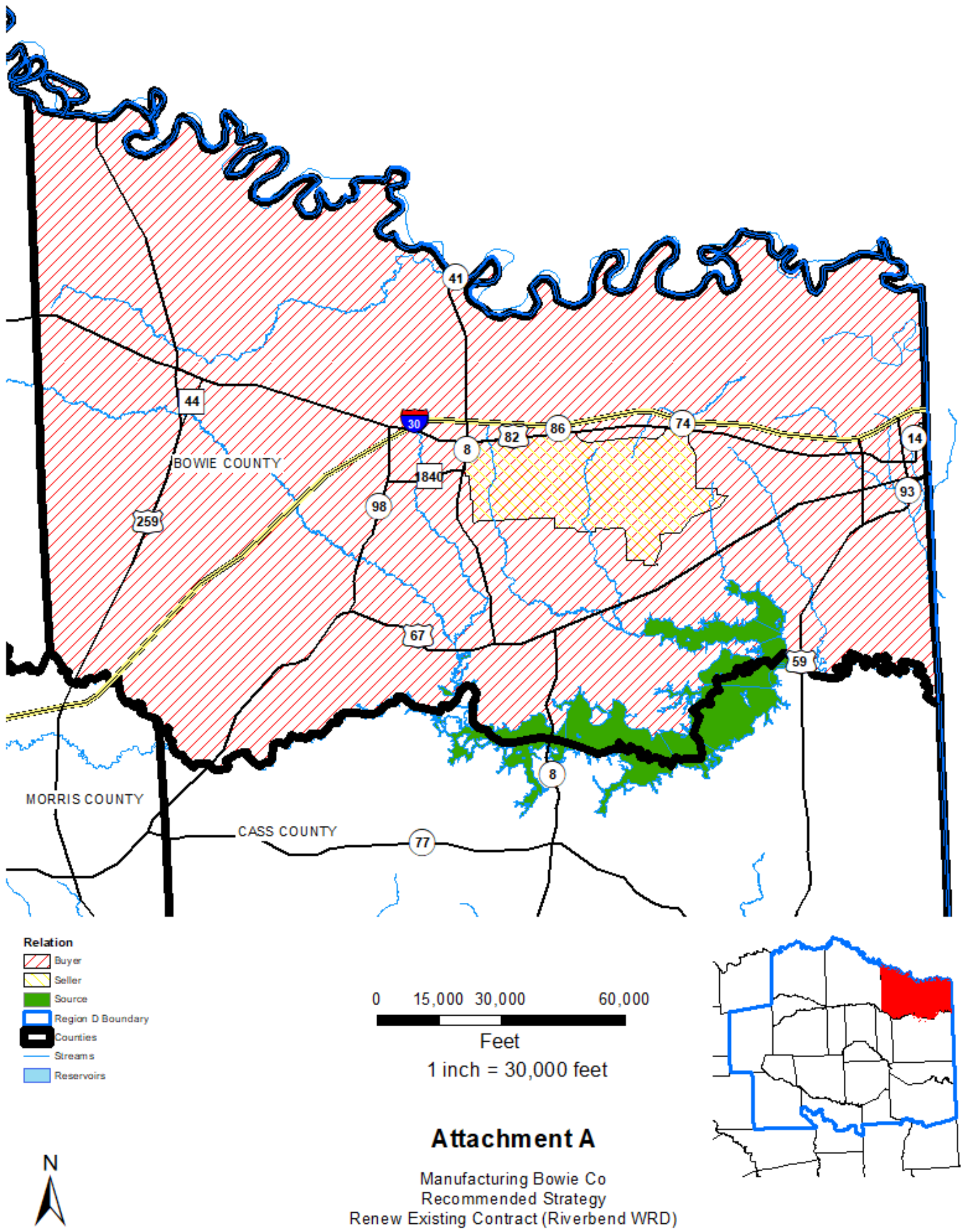
Five alternative strategies were considered to meet the Bowie County Manufacturing WUG's projected water supply shortages. Advanced water conservation for manufacturing practices were considered feasible, whereby industrial water auditing BMPs could extend water supplies through an assumed 10% demand reduction. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to this WUG. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers was considered insufficient to meet the full contractual needs identified for manufacturing in Bowie County. Riverbend WRD requested consideration of the Riverbend WRD WMSPs to meet the identified need.

Strategy	Strategy Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**71**	**$0**	**$0**	**$0**	**1**
Renew Existing Contract contingent upon Riverbend Strategy	**100,742**		**$48,517,000**	**$482**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation	**59**	**61**	**63**	**66**	**68**	**71**
Renew Existing Contract contingent upon Riverbend Strategy	**33,604**	**59,867**	**66,446**	**74,669**	**82,893**	**100,609**

The recommended strategy for the Bowie County Manufacturing WUG to meet projected demands during the planning period is advanced conservation and renewal of the existing contract with Riverbend WRD contingent upon implementation of the Riverbend WRD's recommended WMS and WMSPs.



Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

Bowie County Manufacturing - Renew Existing Contract

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018

Item	***Estimated Costs for Facilities***
ANNUAL COST	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (100609 acft/yr @ 482.23 $/acft)	$48,517,000
TOTAL ANNUAL COST	**$48,517,000**
Available Project Yield (acft/yr)	100,609
Annual Cost of Water ($ per acft), based on PF=1	$482
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$482
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$1.48
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$1.48

JMP *10/2/2019*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MAUD

Description of Water User Group:

The City of Maud provides water service in Bowie County. The City population is projected to be 787 in 2030 and 738 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2030 due to aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	787	782	774	761	750	738
Projected Water Demand	164	162	161	158	156	153
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-164**	**-162**	**-161**	**-158**	**-156**	**-153**

Evaluation of Potentially Feasible Water Management Strategies:

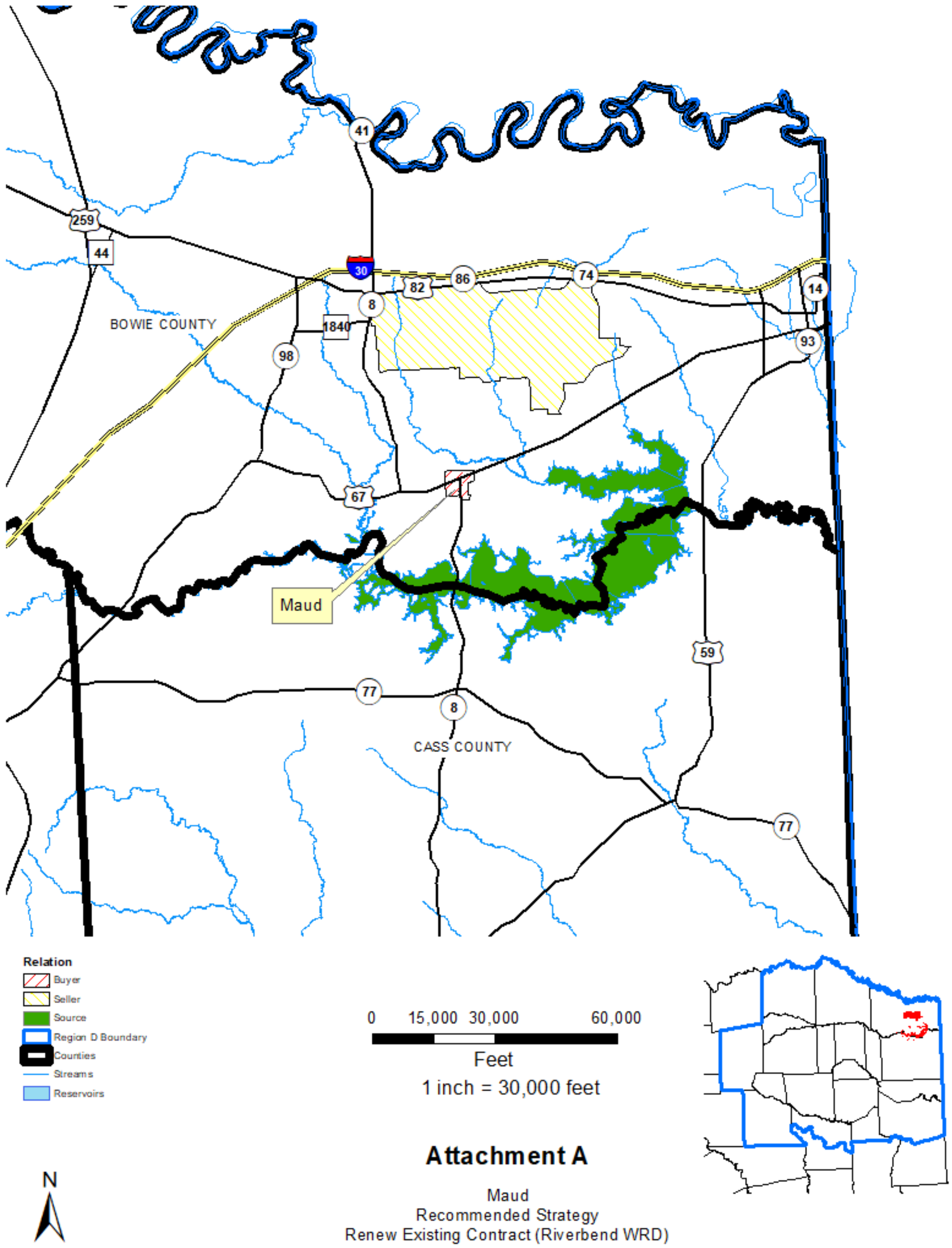
There were four alternative strategies considered to meet the City's water supply shortages as summarized in the Table below. Advanced conservation was not considered because Maud's supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Renew Existing Contract (ac-ft/yr)	**164**		**$40,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Renew Existing Contract (ac-ft/yr)	164	162	161	158	156	153

It is recommended that the City of Maud renew its existing contract with Texarkana contingent upon Riverbend WRD recommended strategies.



Attachment A

Maud
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Maud - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (164 acft/yr @ 242.68 $/acft)	$40,000
TOTAL ANNUAL COST	**$40,000**
Available Project Yield (acft/yr)	164
Annual Cost of Water ($ per acft), based on PF=0	$244
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$244
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.75

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF NASH

Description of Water User Group:

The City of Nash provides water service in Bowie County. The City population is projected to be 4,160 in 2030 and 3,905 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2030 due to constraints in supply availability and aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	4,160	4,133	4,093	4,031	3,968	3,905
Projected Water Demand	314	309	306	302	297	292
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-314**	**-309**	**-306**	**-302**	**-297**	**-292**

Evaluation of Potentially Feasible Water Management Strategies:

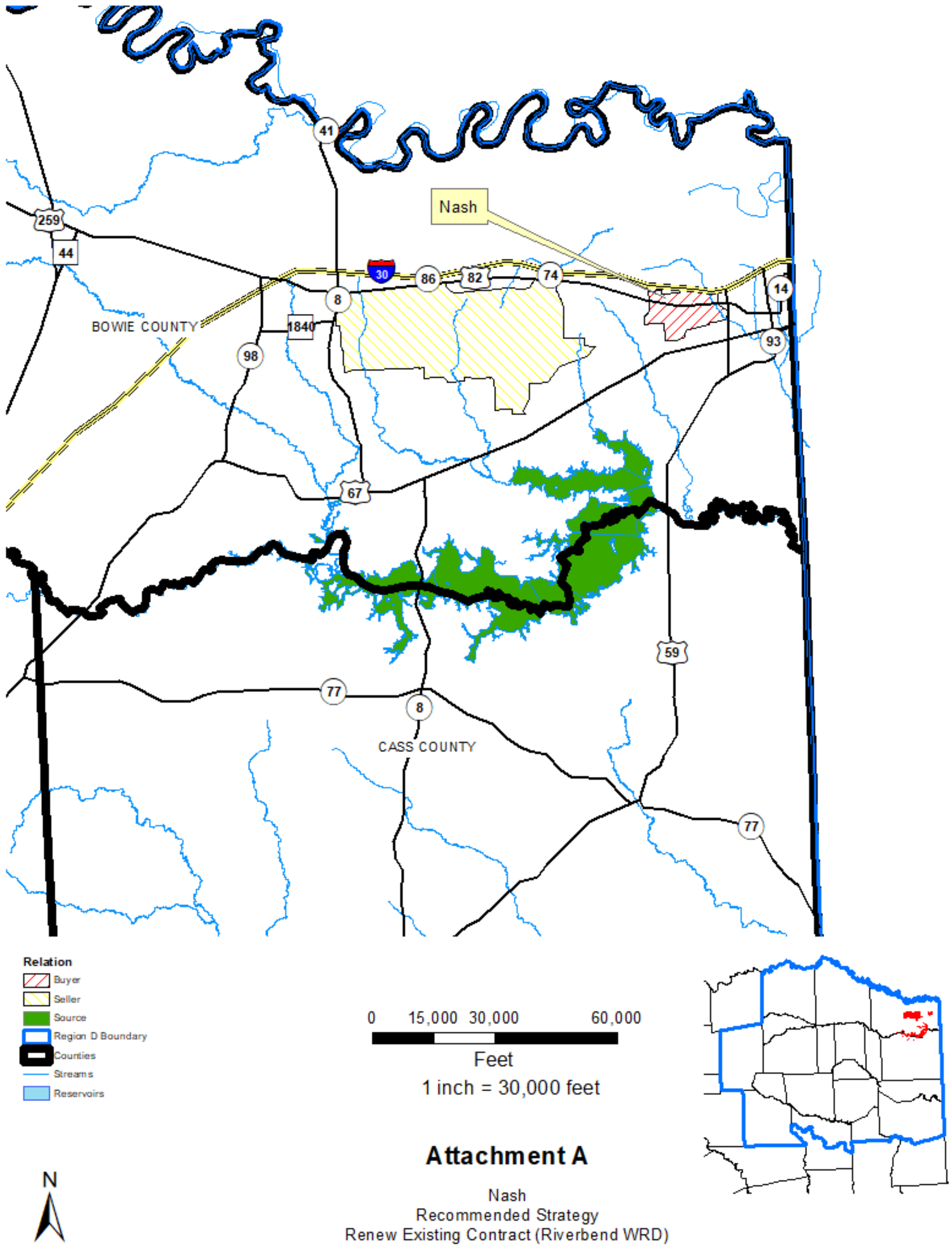
There were four alternative strategies considered to meet the City's water supply shortages as summarized in the Table below. Advanced conservation was not considered because Nash's supply would not be projected to meet TCEQ regulatory minimums. A water loss reduction strategy is recommended based on reported total water loss percentage of 19.5%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Water Loss Reduction	**14**				**1**
Renew Existing Contract (ac-ft/yr)	**314**		**$76,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	14	14	14	14	13	13
Renew Existing Contract (ac-ft/yr)	314	309	306	302	297	292

It is recommended that the City of Nash continue its surface water purchase from Texarkana contingent upon Riverbend WRD's recommended strategies.



Attachment A

Nash
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Nash - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (314 acft/yr @ 242.68 $/acft)	$76,000
TOTAL ANNUAL COST	**$76,000**
Available Project Yield (acft/yr)	314
Annual Cost of Water ($ per acft), based on PF=0	$242
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$242
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.74
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.74

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF NEW BOSTON IN BOWIE COUNTY

Description of Water User Group:

The City of New Boston provides water service in Bowie County. The WUG population is projected to be 5,383 in 2030 and 5,050 in the year 2080. The city has a contract for water supply with the City of Texarkana for 1,680 ac-ft/yr. New Boston also has a water right permit for run-of-river diversions from the Sulphur River, but no infrastructure to utilize it. The City is projected to have a shortage in 2030 due to constraints in supply availability and aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	5,383	5,347	5,297	5,215	5,133	5,050
Projected Water Demand	1,309	1,297	1,285	1,265	1,245	1,225
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-1,309**	**-1,297**	**-1,285**	**-1,265**	**-1,245**	**-1,225**

Evaluation of Potentially Feasible Water Management Strategies:

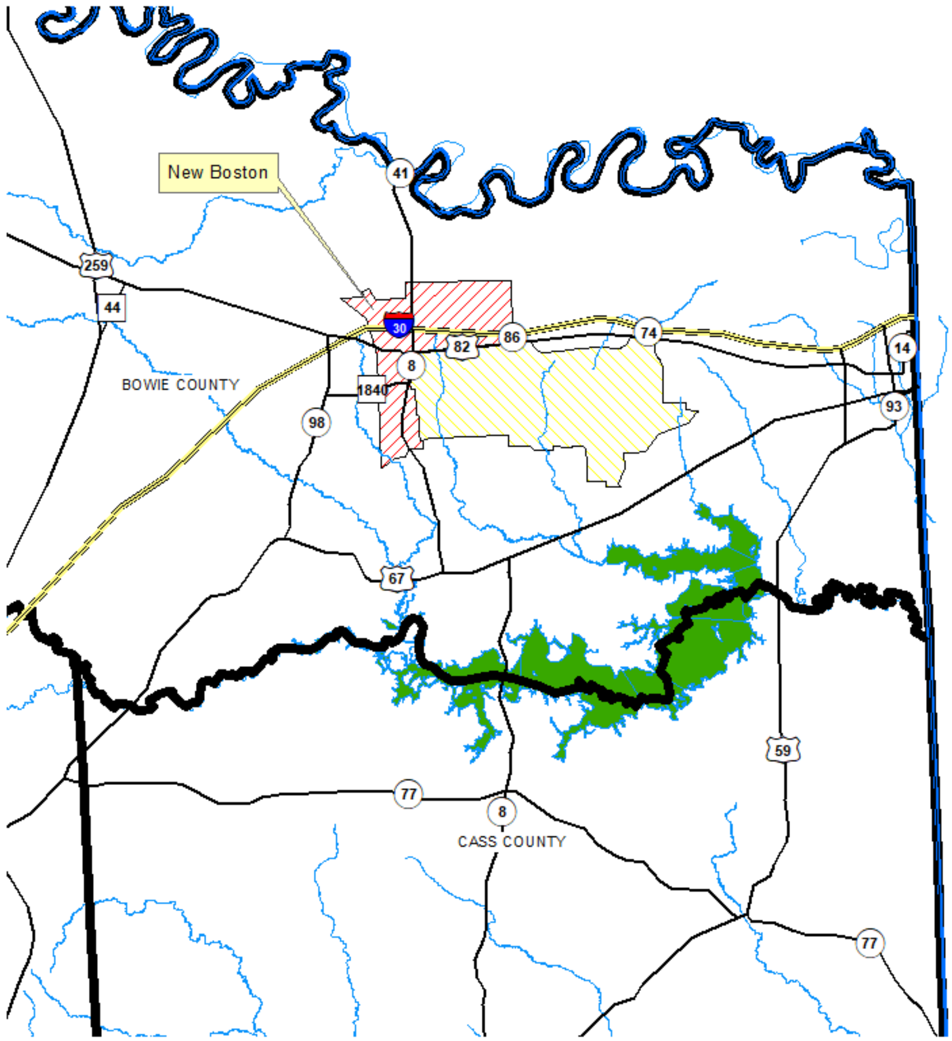
There were four alternative strategies considered to meet New Boston's water supply shortages as summarized in the Table below. Advanced conservation was not considered because New Boston's supply would not be projected to meet TCEQ regulatory minimums. A water loss reduction strategy is recommended based on reported total water loss percentage of 51.1%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the city has historically utilized surface water supplies and, at present, is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**473**				**1**
Renew Existing Contract	**1,309**		**$318,000**	**$243**	**1**

Recommendations:

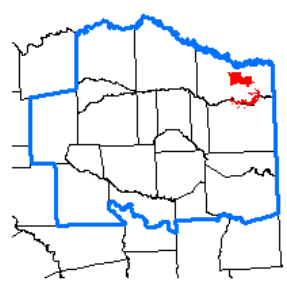
	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	473	469	464	458	450	442
Renew Existing Contract (ac-ft/yr)	1,390	1,297	1,285	1,265	1,245	1,225

It is recommended that the City of New Boston continue its surface water purchase from Texarkana contingent upon Riverbend WRD's recommended strategies.



Relation
Buyer
Seller
Source
Region D Boundary
Counties
Streams
Reservoirs

0 15,000 30,000 60,000
Feet
1 inch = 30,000 feet



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Attachment A

New Boston
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary ***Water Supply Project Option*** ***September 2023 Prices*** ***New Boston - Renew Existing Contract***	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (1309 acft/yr @ 242.68 $/acft)	$318,000
TOTAL ANNUAL COST	**$318,000**
Available Project Yield (acft/yr)	1,309
Annual Cost of Water ($ per acft), based on PF=0	$243
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$243
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.75
JMP	*2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF REDWATER

Description of Water User Group:

The City of Redwater provides water service in Bowie County. The City population is projected to be 2,964 in 2030 and 2,780 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman, and groundwater supply from the Carrizo-Wilcox Aquifer. The City is projected to have a shortage in 2030 due to constraints in water supply and aging of the Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	2,964	2,944	2,916	2,870	2,826	2,780
Projected Water Demand	403	399	395	389	383	377
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	66	66	66	66	66	66
Projected Supply Surplus (+) / Deficit (-)	**-337**	**-333**	**-329**	**-323**	**-317**	**-311**

Evaluation of Potentially Feasible Water Management Strategies:

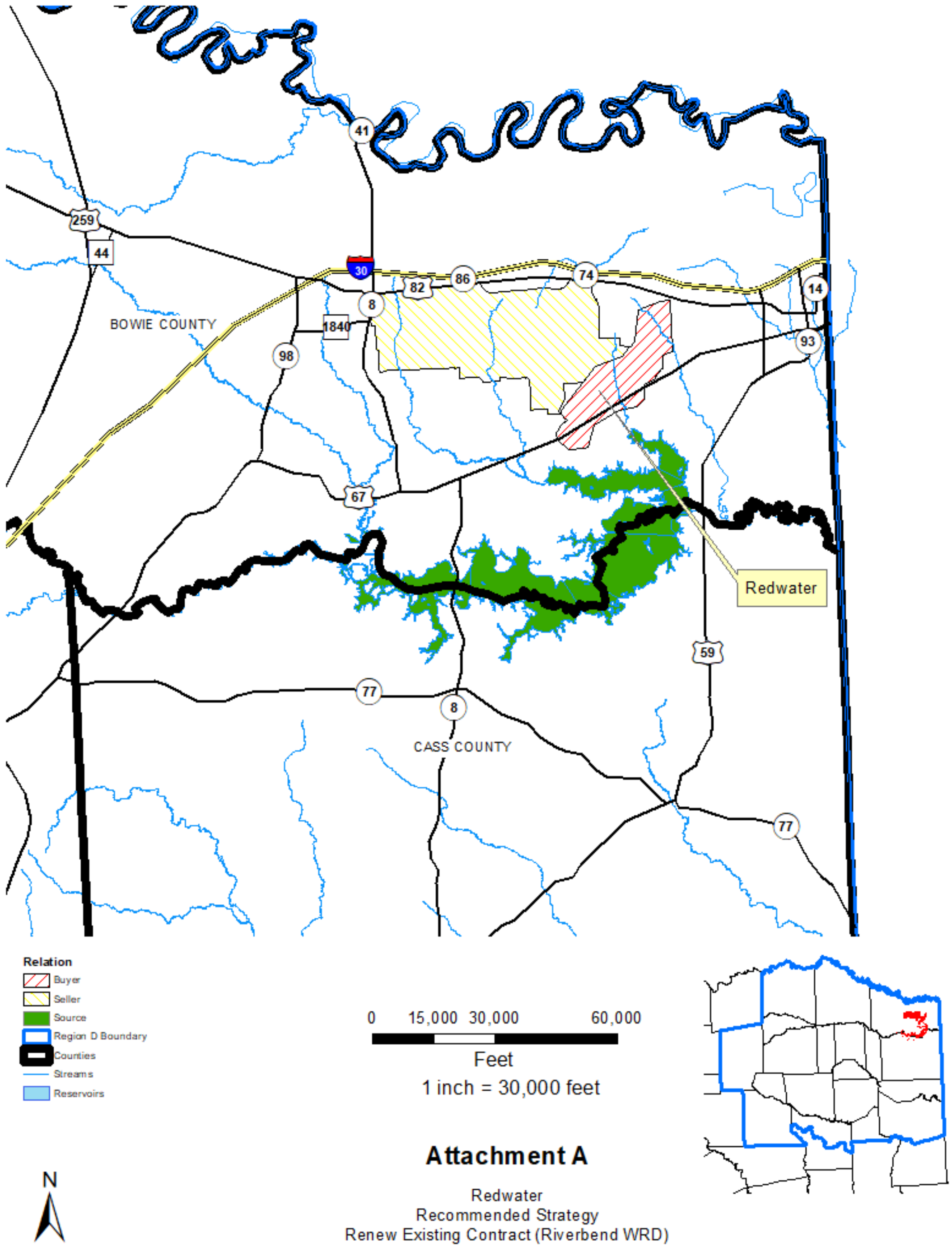
There were four alternative strategies considered to meet the City's water supply shortages. Advanced conservation was not considered because Redwater's supply would not be projected to meet TCEQ regulatory minimums. A water loss reduction strategy is recommended based on reported total water loss percentage of 27.9%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Env. Impact**
Water Loss Reduction	**52**				**1**
Renew Existing Contract (ac-ft/yr)	**337**		**$82,000**	**$243**	**1**

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Water Loss Reduction (ac-ft/yr)	52	52	51	50	49	49
Renew Existing Contract (ac-ft/yr)	337	333	329	323	317	311

It is recommended that the City of Redwater continue its surface water purchase from Texarkana contingent upon Riverbend WRD's recommended strategies. Development of infrastructure necessary to provide water to the City's customers is to be considered consistent with this recommended strategy.



Attachment A

Redwater
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Redwater - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (337 acft/yr @ 242.68 $/acft)	$82,000
TOTAL ANNUAL COST	**$82,000**
Available Project Yield (acft/yr)	337
Annual Cost of Water ($ per acft), based on PF=0	$243
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$243
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.75

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RIVERBEND WRD

Description of Water User Group:

Riverbend Water Resources District (WRD) provides water service in Bowie, Cass, and Red River Counties via two separate intake structures. The system population is projected to be 401 in 2030 and 375 in the year 2080. Riverbend is now the contracting entity for the water supply made available from the surface water right owned by the City of Texarkana from Lake Wright Patman. The WRD is projected to have a shortage in 2030 due to constraints in water supply and aging of Texarkana's New Boston Road Water Treatment Plant and GPI Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	401	398	394	388	381	375
Projected Water Demand	380	375	371	365	359	353
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-380**	**-375**	**-371**	**-365**	**-359**	**-353**

Evaluation of Potentially Feasible Water Management Strategies:

Riverbend WRD is supplied by water in Lake Wright Patman. A request was submitted by Riverbend WRD to consider a number of WMS and WMSPs, including implementation of the Ultimate Rule Curve via contract with the USACE, amending the current surface water right to increase diversion from Wright Patman Lake up to a maximum firm storage available within the Ultimate Rule Curve, and new infrastructure including a new intake, pump station, pipeline, and water treatment plant to be located at the Texas Americas Center, and a new 2.5 MGD water treatment plant for the provision of municipal supplies in Cass County.

The requested strategies have been considered to meet the Riverbend WRD's (along with its member entities and their customers) identified contractual water supply shortages. There are no significant current water needs in the area that could be met by water reuse. Groundwater was not considered as an alternative as the entities rely upon existing surface water supplies. Conservation targets for near term reductions in demand are reflected in the City of Texarkana, Texas' Water Conservation and Drought Contingency Plan. However, Advanced Water Conservation is not recommended as a water management strategy as such a strategy would not potentially meet the TCEQ regulatory minimum of 0.6 gpm/connection.

Riverbend WRD has requested consideration of the strategy to decommission the existing New Boston Rd WTP and construct a new WTP by 2030 (referred to hereafter as the Riverbend Strategy), although the timing of this action is still under development by the Riverbend WRD and its member entities. As the Riverbend WRD has indicated a desire to remain flexible, alternatives as to the timing of various WMS projects have not been ruled out at present, and should be considered consistent for the purposes of the 2026 Region D Plan.

While future growth utilizing the adopted TWDB methodology is limited, significant growth has been contractually obligated for customer demands for manufacturing in Bowie County. Along with declining projections of municipal growth in the area, the contracted manufacturing demands largely represent the dominant need over the 2030 – 2080 period.

Detailed Description of Evaluated Water Management Strategy Projects

Riverbend WRD has requested for inclusion a water management strategy entailing multiple WMS Projects (WMSPs). A summary of each project is included here.

Amend and Increase of Water Right (2030) – Based on the contractual demands identified herein, this WMSP is planned to occur by 2030, and would entail amendment of Certificate of Adjudication 03-4836. The amendment would include changing the total use of the water right to a more general, multi-use permit, and an increase in diversion of 57,517 ac-ft/yr, for a total permitted diversion of 237,517 ac-ft/yr. If the actual implementation of this strategy is a new surface water permit, such an approach should be considered consistent for the purposes of this Plan.

Interim to Ultimate Storage (2030) – In order to meet the contracted and projected demands for the District, development of this WMSP by 2030 would entail full implementation of the Ultimate Rule Curve per the contract with the USACE for storage in Lake Wright Patman.

New Wright Patman Intake, Pump Station, Raw Water Pipeline, and New WTP (2030) – The District has requested this WMSP to meet contractual and projected demands by 2030. This evolving WMSP has been identified specifically to provide the infrastructure necessary to meet member entities' and their customers' needs in the year 2030. The Riverbend WRD's Regional Water Master Plan (Roth, 2018) and the Second Cost Estimates (AECOM 2018) were utilized as the basis to evaluate and identify the specifics of the project. Sizing, timing, and costs were necessarily updated from that information to meet the contractual demands identified by Riverbend WRD and adopted for the purposes of the 2026 Region D Plan. Costs have been derived utilizing the UCM. Where appropriate, costs and assumptions from the Riverbend WRD Regional Water Master Plan and Second Cost Estimates were incorporated into the UCM. This strategy entails the construction of a new intake location with a deeper invert elevation allowing access to additional storage in Wright Patman, a new pump station, raw water pipeline, a new 25 MGD WTP, a 5 MGD WTP expansion in 2040 and a final 10 MGD WTP expansion in 2050, and the decommission of the existing New Boston WTP to meet member entities' and wholesale customer contractual and projected needs. The supply necessary to meet the contractual needs identified in the 2026 planning process is a maximum firm supply of 115,360 ac-ft/yr. The total project cost is $649.1 million, with an annual cost up to $63.5 million and a unit cost of $549 per ac-ft. during debt service ($1.68/1,000 gal.) and $156 per ac-ft after debt service. Supply adequate to meet the identified needs, when considered in conjunction with all member entities' and customer needs, do not over allocate the existing firm supply available from Wright Patman Reservoir within the Ultimate Rule Curve, if other recommended Water Management Strategy Projects are also employed. It is noted that the District's present plans are for implementation of this project by 2026, although the timing of this WMSP may vary and should be considered consistent with the 2026 Region D Plan.

New 2.5 MGD Package WTP and Transmission Line (2030) – The District has requested this WMSP to meet municipal demands starting in 2030 for its member entities and customers in Cass County. Utilizing the existing Graphics Packaging International (GPI) intake, this WMSP entails construction of a 12" transmission pipeline to be connected from the IP intake, which would be routed to a new 2.5 MGD package WTP, along with clearwells for a total of 3 MG of ground storage capacity, high service pumps, and electrical modifications. The supply from this WMSP would total 1,918 ac-ft/yr, assuming a peaking factor of 1.46. The total project cost is $79.1 million, with an annual cost of $8.3 million and a unit cost of $5,570 per ac-ft during debt service ($17.09/1,000 gal.) and $1,852 per ac-ft after debt service.

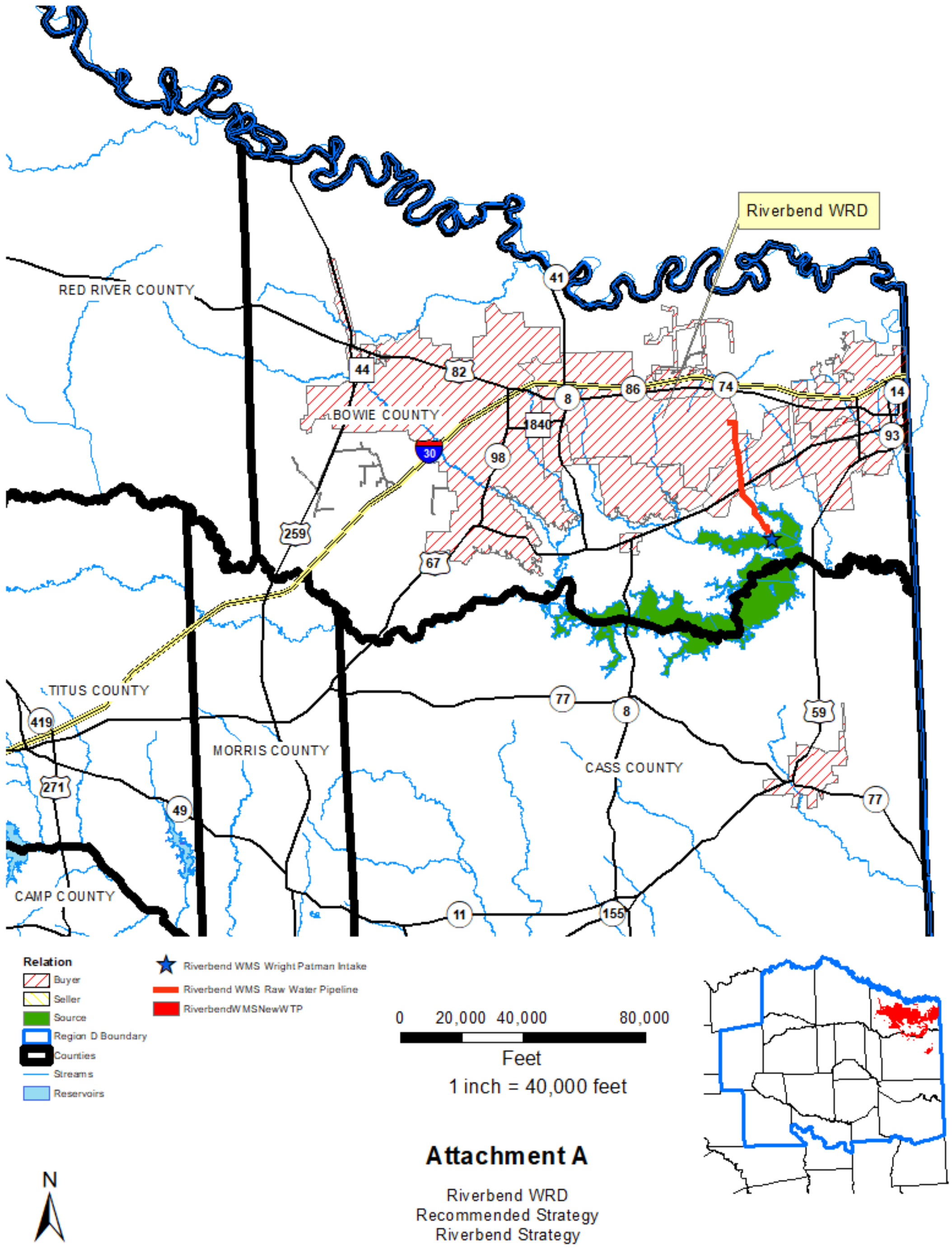
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Riverbend WMS	**115,820**	**$649,125,000**	**$63,539,000**	**$549**	**1**
New 2.5 MGD Package WTP and Transmission Line	**1,496**	**$79,082,000**	**$8,332,000**	**$5,570**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Riverbend WMS	**13,810**	**73,099**	**80,081**	**88,793**	**97,520**	**115,820**
New 2.5 MGD Package WTP and Transmission Line	**0**	**1,370**	**1,423**	**1,496**	**1,493**	**1,493**

To meet the Riverbend WRD's, its member entities', and customers' contractual and projected needs and the requested approach for the 2026 RWP, it is recommended that the water right be amended to multi-use for a total permitted diversion of 237,517 ac-ft/yr utilizing the permitted storage at the Ultimate Rule Curve, full implementation up to the Ultimate Rule Curve per contract for storage out of Lake Wright Patman with the USACE, and construction of a new intake, pipeline, and water treatment plant be constructed by 2030 to meet these WUGs' contractual needs. It is further recommended that a new 2.5 MGD package WTP and transmission line be constructed by 2030 to meet identified municipal needs in Cass County. Each of these WMSPs are contingent upon the other, as each are necessary to secure the identified supplies necessary to meet the projected municipal demands and contractual industrial demands identified herein.

At present, considerable discussions are underway between all of the member entities of Riverbend Water Resources District. As noted previously and reiterated here, this 2026 Plan recognizes that Riverbend may become the contracting entity between its members and the City of Texarkana, Texas. The strategies shown herein for entities with shortages in Bowie, Cass, and Red River Counties rely on continued use of water from Lake Wright Patman. Presently, the strategies related to Riverbend WRD are presented with the Riverbend WRD's water management strategies. However, the strategies should be considered consistent with the plan for this planning cycle if the City of Texarkana, Texas, is the contracting party rather than Riverbend WRD, as long as the water source remains Lake Wright Patman.



Attachment A

Riverbend WRD
Recommended Strategy
Riverbend Strategy

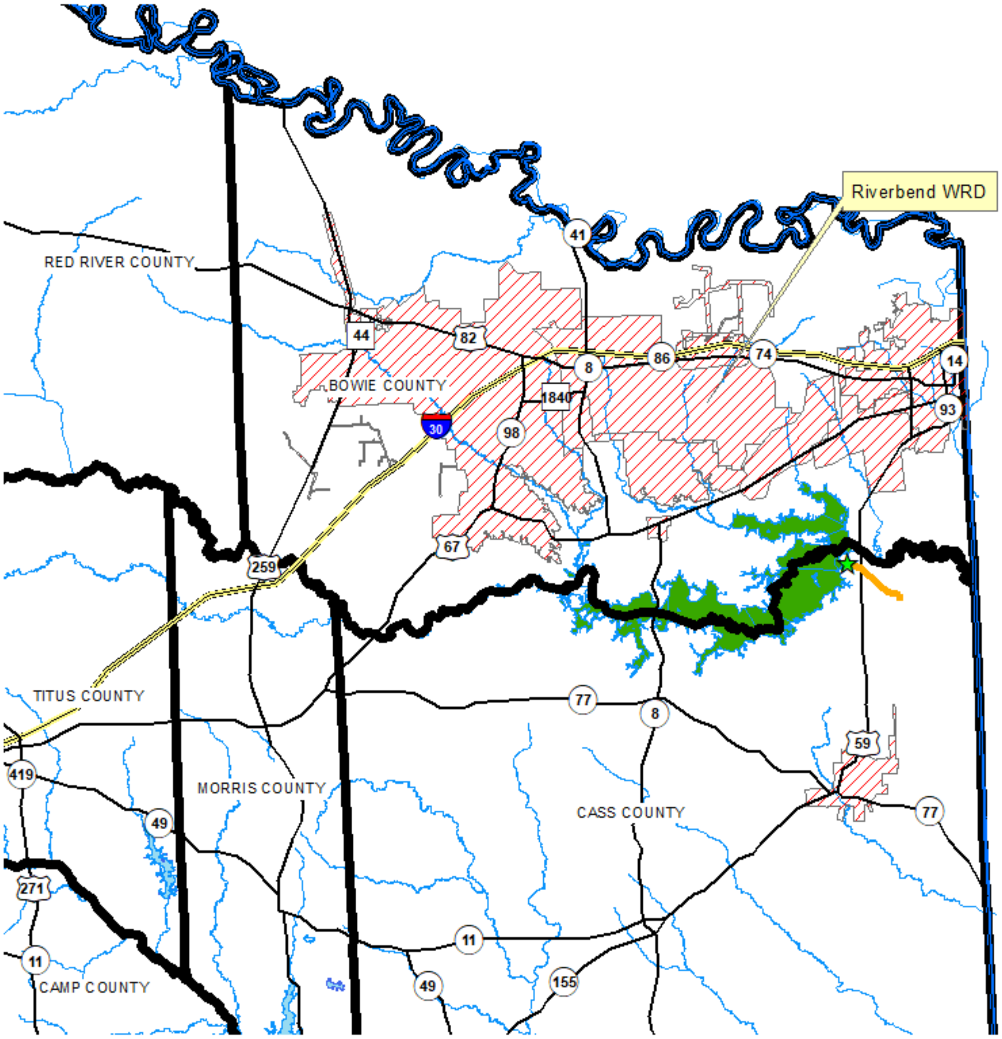
Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

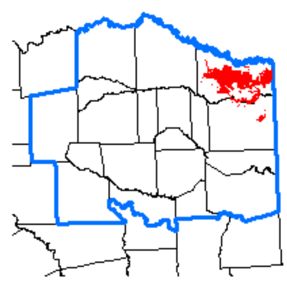
Riverbend WMS - Riverbend WMS

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (151 MGD)	$59,019,000
Transmission Pipeline (78 and 54 in dia., 8.3 miles)	$109,284,000
Two Water Treatment Plants (25 MGD and 15 MGD)	$280,212,000
Integration, Relocations, Backup Generator & Other	$2,407,000
TOTAL COST OF FACILITIES	**$450,922,000**
- Planning (3%)	$13,528,000
- Design (7%)	$31,565,000
- Construction Engineering (1%)	$4,509,000
Legal Assistance (2%)	$9,018,000
Fiscal Services (2%)	$9,018,000
Pipeline Contingency (15%)	$16,393,000
All Other Facilities Contingency (20%)	$68,328,000
Environmental & Archaeology Studies and Mitigation	$24,982,000
Land Acquisition and Surveying (45 acres)	$505,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$20,357,000
TOTAL COST OF PROJECT	**$649,125,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$45,504,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$1,117,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$1,475,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$11,888,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (39497383 kW-hr @ 0.09 $/kW-hr)	$3,555,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$63,539,000**

Available Project Yield (acft/yr)	115,820
Annual Cost of Water ($ per acft), based on PF=1.46	$549
Annual Cost of Water After Debt Service ($ per acft), based on PF=1.46	$156
Annual Cost of Water ($ per 1,000 gallons), based on PF=1.46	$1.68
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1.46	$0.48
Note: One or more cost element has been calculated externally	
JMP	*2/10/2025*





Attachment B

Riverbend WRD
Recommended Strategy
Riverbend Strategy Cass Co WTP

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Riverbend WMS - New 2.5 MGD WTP and transmission line

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (2.5 MGD)	$1,933,000
Transmission Pipeline (12 in. dia., 3.9 miles)	$4,395,000
Storage Tanks (Other Than at Booster Pump Stations)	$2,233,000
Water Treatment Plant (2.5 MGD)	$29,750,000
Integration, Relocations, Backup Generator & Other	$26,000
TOTAL COST OF FACILITIES	**$38,337,000**
- Planning (3%)	$1,150,000
- Design (7%)	$2,684,000
- Construction Engineering (1%)	$383,000
Legal Assistance (2%)	$767,000
Fiscal Services (2%)	$767,000
Pipeline Contingency (15%)	$659,000
All Other Facilities Contingency (20%)	$6,789,000
Environmental & Archaeology Studies and Mitigation	$24,611,000
Land Acquisition and Surveying (18 acres)	$446,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$2,489,000
TOTAL COST OF PROJECT	**$79,082,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$5,562,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$67,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$48,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$2,616,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (428004 kW-hr @ 0.09 $/kW-hr)	$39,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$8,332,000**

Available Project Yield (acft/yr)	1,496
Annual Cost of Water ($ per acft), based on PF=1.46	$5,570
Annual Cost of Water After Debt Service ($ per acft), based on PF=1.46	$1,852
Annual Cost of Water ($ per 1,000 gallons), based on PF=1.46	$17.09
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1.46	$5.68
Note: One or more cost element has been calculated externally	
JMP	*2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF TEXARKANA

Description of Water User Group:

The City of Texarkana, Texas, is a municipality located in Bowie County, Texas. Although the City of Texarkana, Texas, is a separate and distinct entity from the City of Texarkana, Arkansas, both entities are served by the same system (operated by Texarkana Water Utility). For the purposes of the 2026 Region D Water Plan, it has been assumed that water supplied from Arkansas (i.e., Millwood Reservoir) serves the population of Texarkana, Arkansas, while water supplied from Texas serves Texarkana, Texas.

For the City of Texarkana, Texas, the system is projected to serve 36,860 people in 2030, decreasing to 34,795 by 2080. The current sources of supply based in Texas are surface water from Lake Wright Patman and a run of river diversion permit from the Red River (although no infrastructure is currently in place for the latter). The City provides water to area municipal and industrial customers and is projected to have a water supply deficit of 6,769 ac-ft/yr in 2030 decreasing to 6,362 ac-ft/yr in 2080, due to water supply constraints and the age and functionality of the existing New Boston Water Treatment Plant and GPI treatment plant.

In 1969 Texarkana, Texas, entered into separate water supply contracts with surrounding communities. The contracts provided that Texarkana, Texas, and member cities would participate in paying debt service on bonds to be issued by Lake Texarkana Water Supply Corporation (LTWSC, today known as Riverbend Water Resources District, referred to hereafter as Riverbend). These member cities would all make payments for water supplied through facilities. In exchange Texarkana, Texas, and member cities were guaranteed ownership interest in LTWSC facilities and specified amounts of water in Wright Patman. Each city was guaranteed a maximum amount of water sufficient to meet the needs of the member cities, but also agreed to pay a minimum amount to ensure adequate funding for LTWSC facilities. Member cities historically relied on Texarkana, Texas, to manage and administer the water, the LTWSC facilities and water rates fairly for the benefits of all parties. When debt was paid off member cities would own an undivided interest in LTWSC facilities equal to that percentage that was paid by each member city to discharge debt.

In 2010, Texarkana, Texas executes water supply contract extensions, an interlocal cooperation agreement with Riverbend, and the formation of an advisory committee regarding the creation of water facilities and new cooperative agreements. The City of Texarkana sells and/or supplies surface water to: City of Atlanta, Central Bowie County WSC, City of De Kalb, City of Hooks, Macedonia-Eylau MUD#1, City of Maud, City of Nash, City of New Boston, City of Queen City, Red River County WSC, City of Redwater, TexAmericas Center, City of Wake Village, County-Other portions of Bowie, Cass and Red River Counties, and Manufacturing in Bowie and Cass Counties. Texarkana, along with the Cities of DeKalb, Hooks, Maud, Nash, New Boston, Redwater, Wake Village, TexAmericas Center, and sub-WUG entities comprising Bowie County-Other and Red River County-Other, comprise Riverbend Water Resources District (Riverbend). The system does have a water conservation and drought management plan in place.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	36,860	36,651	36,360	35,844	35,322	34,795
Projected Water Demand	6,769	6,702	6,649	6,554	6,459	6,362
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-6,769**	**-6,702**	**-6,649**	**-6,554**	**-6,459**	**-6,362**

Evaluation of Potentially Feasible Water Management Strategies:

There were several alternative strategies considered to meet the City's water supply shortages. Advanced conservation was not considered because the City's supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to utilize surface water from Lake Wright Patman. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal for supply in conjunction with Riverbend WRD has been considered herein.

Each alternative is summarized in the following table.

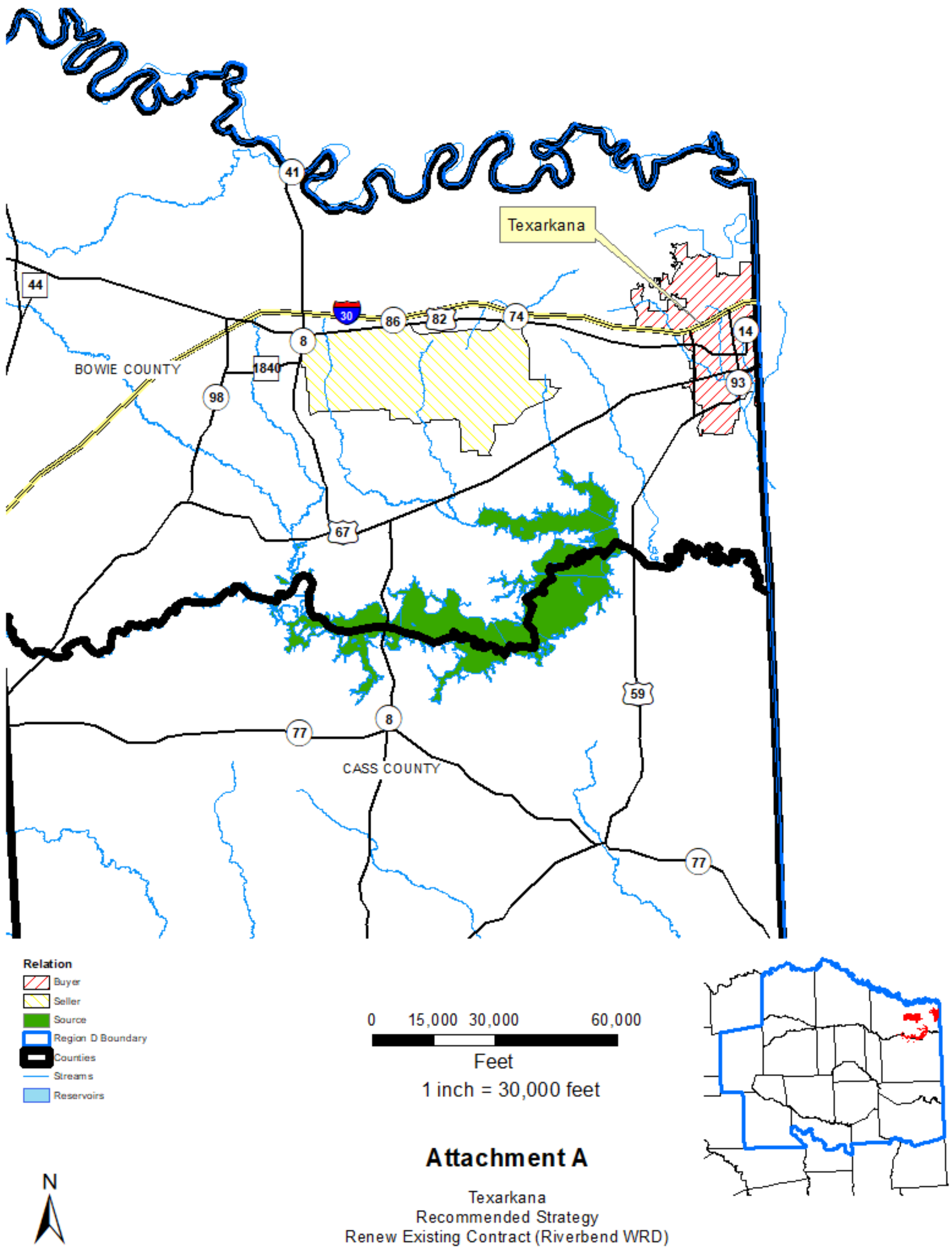
Strategy	Firm Yield (ac-ft)	Start Year	Total Capital Cost	Total Annual Cost	Unit Cost	Env. Impact
Renew contract with Riverbend WRD contingent upon Riverbend Strategy	6,769	2030	$0	$1,643,000	$243	1

Recommendations:

	2030	2040	2050	2060	2070	2080
Renew contract with Riverbend WRD contingent upon Riverbend Strategy	**6,769**	**6,702**	**6,649**	**6,554**	**6,459**	**6,362**

It is recommended that the City of Texarkana, Texas continue and renew its surface water use and contracting approach as a participating member entity with Riverbend WRD contingent upon Riverbend WRD's recommended strategies.

At present, considerable discussions are underway between all of the member cities of Riverbend Water Resources District. As noted previously and reiterated here, this 2026 Plan recognizes that Riverbend has become the contracting entity between its members and Texarkana, Texas. The strategies shown herein for entities with shortages in Bowie, Cass, and Red River Counties rely on continued use of water from Lake Wright Patman. Presently, the strategies related to the City of Texarkana, Texas, are presented with the Riverbend WRD's water management strategies. However, the strategies should be considered consistent with the plan for this planning cycle if the City of Texarkana, Texas, is the contracting party rather than Riverbend WRD, as long as the water source remains Lake Wright Patman.



Attachment A

Texarkana
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Texarkana - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (6769 acft/yr @ 242.68 $/acft)	$1,643,000
TOTAL ANNUAL COST	**$1,643,000**
Available Project Yield (acft/yr)	6,769
Annual Cost of Water ($ per acft), based on PF=0	$243
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$243
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.74
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.74

JMP *2/10/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WAKE VILLAGE

Description of Water User Group:

The City of Wake Village provides water service in Bowie County. The City's population is projected to be 5,831 in 2030 and 5,470 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2030 due to constraints on water supply and aging of Texarkana's Water Treatment Plant.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	5,831	5,793	5,737	5,649	5,561	5,470
Projected Water Demand	649	641	635	625	615	605
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-649**	**-641**	**-635**	**-625**	**-615**	**-605**

Evaluation of Potentially Feasible Water Management Strategies:

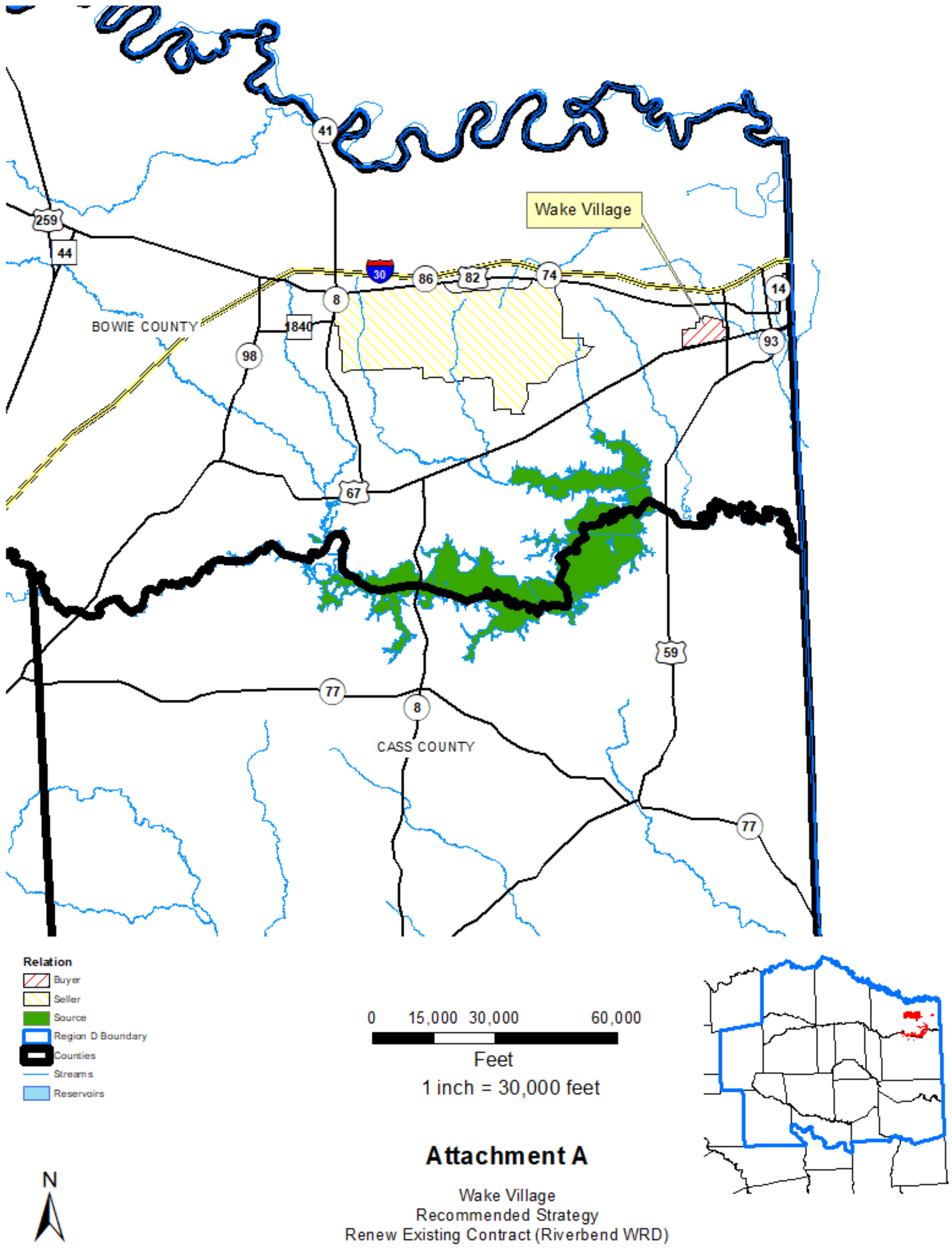
There were four alternative strategies considered to meet the City's water supply shortages. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Renew Existing Contract	**649**	**$0**	**$157,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Renew Existing Contract (ac-ft/yr)	649	641	635	625	615	605

It is recommended that the City of Wake Village continue its surface water purchase from Texarkana contingent upon Riverbend WRD recommended strategies.



Attachment A

Wake Village
Recommended Strategy
Renew Existing Contract (Riverbend WRD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Wake Village - Renew Existing Contract

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (649 acft/yr @ 242.68 $/acft)	$157,000
TOTAL ANNUAL COST	**$157,000**
Available Project Yield (acft/yr)	649
Annual Cost of Water ($ per acft), based on PF=0	$242
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$242
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$0.74
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$0.74

JMP *2/10/2025*

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

CAMP COUNTY

WUGs:

Camp County Manufacturing

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS MANUFACTURING IN CAMP COUNTY - CYPRESS

Description of Water User Group:

The Manufacturing WUG in Camp County has a demand that is projected to be increasing from 44 ac-ft/yr in 2030 to 54 ac-ft/yr in 2080. Manufacturing in Camp County has a current surface water supply from Bob Sandlin Lake/Reservoir thru City of Pittsburg and NETMWD and a groundwater supply from Bi-County WSC. The total rated available supply from these sources is 2 ac-ft/yr in through 2080. Manufacturing in Camp County is projected to have a water supply deficit of 42 ac-ft/yr in 2030 decreasing to a deficit of 46 ac-ft/yr in 2050 and increasing to a deficit of 52 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	44	46	48	50	52	54
Current Water Supply	2	2	2	2	2	2
Projected Supply Surplus (+)/Deficit(-)	-42	-44	-46	-48	-50	-52

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Camp County Manufacturing water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing manufacturer is not available. Surface water alternatives include increasing their contract with the City of Pittsburg .

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater					
Surface Water	**3**	**0**	**$4,398**	**$1,466**	**None**

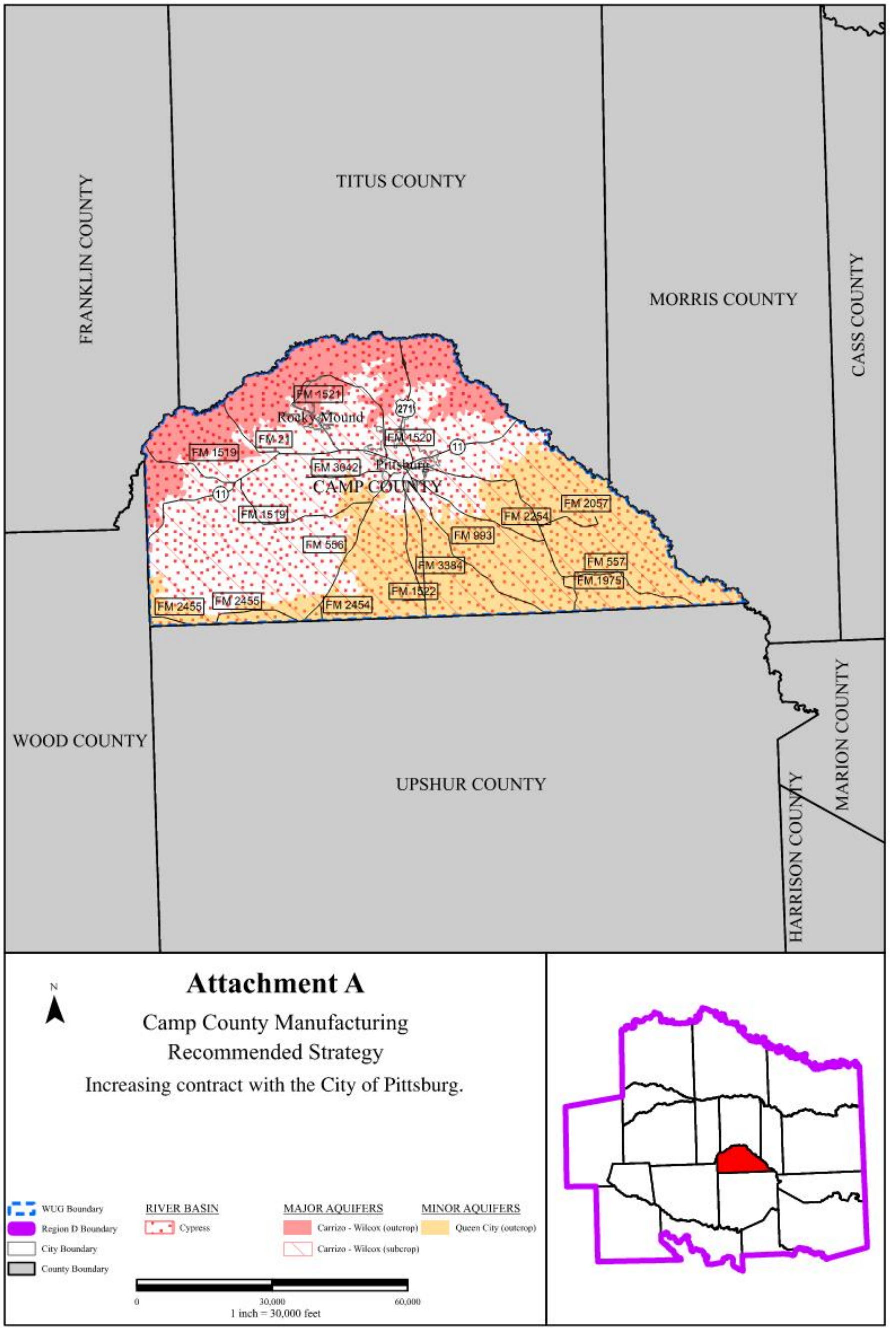
Recommendations:

	2030	2040	2050	2060	2070	2080
Increase Contract (City of Pittsburg) ac-ft/yr)	0	3	1	0	0	0

The recommended strategy for the Camp County Manufacturing to meet their projected deficit of 3 ac-ft/yr in 2030 would be to increase their contract with the City of Pittsburg. The recommended supply source will be Lake Bob Sandlin in Camp County. Lake Bob Sandlin in Camp County is projected to have a more than ample supply availability to meet the needs of the Manufacturing in Camp County for the planning period.

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices
Manufacturing Camp Cypress - Increase Existing Contract from Pittsburg

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018	
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (0 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$0
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$0**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$0
Environmental & Archaeology Studies and Mitigation	$0
Land Acquisition and Surveying (0 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (3 acft/yr @ 1466 $/acft)	$4,000
TOTAL ANNUAL COST	**$4,000**
Available Project Yield (acft/yr)	3
Annual Cost of Water ($ per acft), based on PF=1	$1,333
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$1,333
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$4.09
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$4.09
Paula Coleman	*11/3/2019*



Attachment A

Camp County Manufacturing
Recommended Strategy
Increasing contract with the City of Pittsburg.

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

CASS COUNTY

WUGs:

City of Atlanta
County-Other, Cass
Holly Springs WSC
Cass County Manufacturing
Queen City

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF ATLANTA

Description of Water User Group:

The City of Atlanta provides water service in Cass County. The City's population is projected to be 5,031 in 2030 and 3,960 in the year 2080. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is expected to have shortages due to constraints on water supply and aging of Texarkana's existing Water Treatment Plant located at the Graphics Packaging International (GPI) facility as identified in the Riverbend WRD's Regional Water Master Plan.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	5,031	4,805	4,557	4,358	4,159	3,960
Projected Water Demand	981	934	885	847	808	769
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	2,328	2,328	2,328	2,328	2,328	2,328
Projected Supply Surplus (+) / Deficit (-)	**0**	**0**	**0**	**0**	**0**	**0**

Evaluation of Potentially Feasible Water Management Strategies:

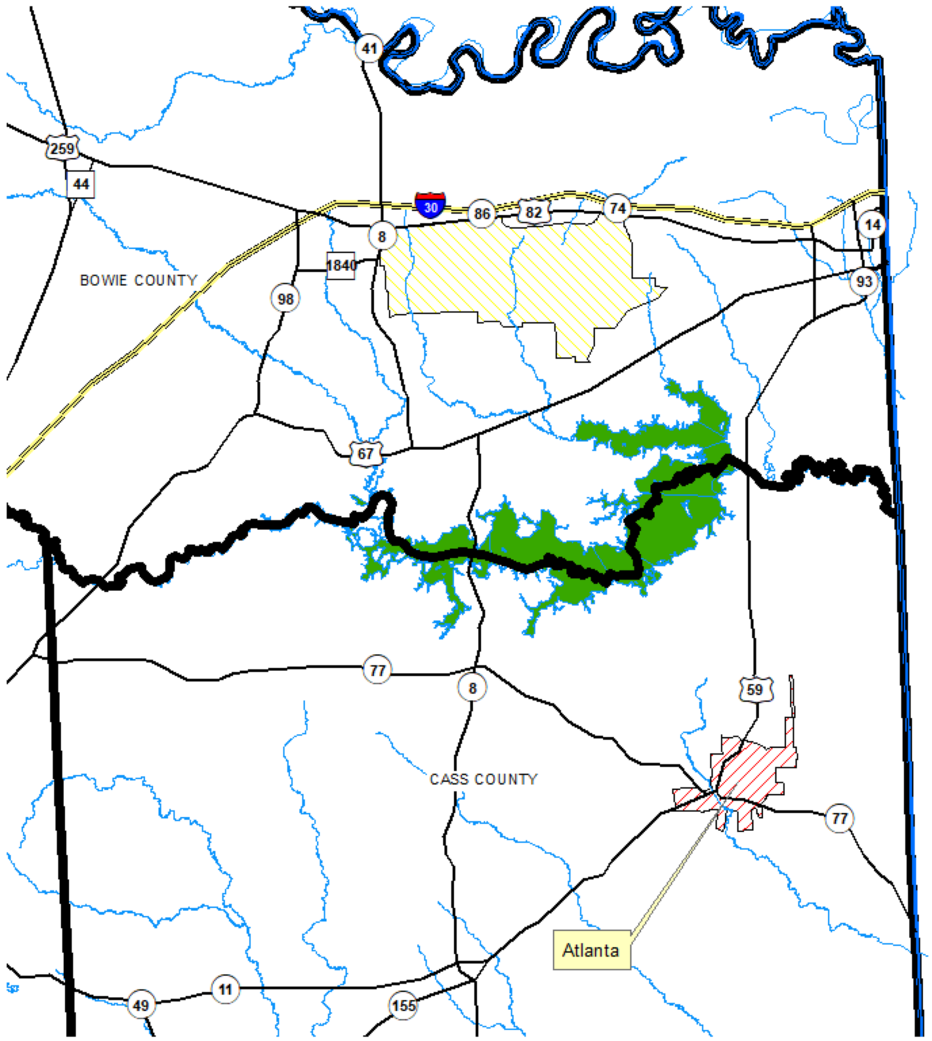
There were five alternative strategies considered to meet the City's water supply shortages. Advanced conservation was not considered because the per capita use per day would be less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. Voluntary reallocation of manufacturing supply was identified in order to account for the fact that the City's present supply comes via diversion of supply for GPI at Lake Wright Patman, a part of the Cass Manufacturing WUG, thus the amount for voluntary reallocation does not affect the 120,000 ac-ft/yr of contracted supply between Texarkana and GPI. Further, a request was submitted by Riverbend Water Resources District to consider a new 2.5 MGD package water treatment plant and transmission line for supply from Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Voluntary Reallocation (from Cass Manufacturing)	**2,328**	**$0**	**$0**	**$0**	**1**
Renew Existing Contract	**2,328**	**$0**	**$563,000**	**$242**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Voluntary Reallocation (from Cass Manufacturing)	**2,328**	**2,328**	**2,328**	**2,328**	**2,328**	**2,328**
Renew Existing Contract (ac-ft/yr)	**2,328**	**2,328**	**2,328**	**2,328**	**2,328**	**2,328**

It is recommended that the City of Atlanta continue its surface water purchase from Texarkana contingent upon voluntary reallocation of supply from Cass Manufacturing and Riverbend WRD's recommended strategy for a new 2.5 MGD package water treatment plant and transmission line.

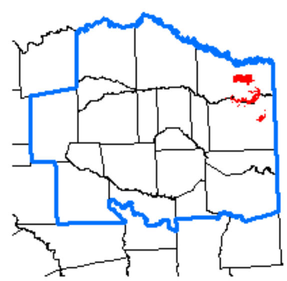


Relation
- Buyer
- Seller
- Source
- Region D Boundary
- Counties
- Streams
- Reservoirs

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet



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Attachment A

Atlanta

Recommended Strategy

Renew Existing Contract (Riverbend WRD)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS COUNTY OTHER IN CASS COUNTY

Description of Water User Group:

The County Other WUG in Cass County is a split entity and has a demand that is projected to be decreasing from 697 ac-ft/yr in 2030 to 332 ac-ft/yr in 2080. County Other in Cass County has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and surface water from Lake O' the Pines (Avinger thru NETMWD), and Wright Patman Lake (Domino thru Texarkana Water Utilities/Riverbend). The total rated available supply from these sources is 336 ac-ft/yr. County Other in Cass County is projected to have a water supply deficit of 361 ac-ft/yr in 2030 and increasing to a surplus of 4 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

County Other Cass	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Water Demand						
Cypress Basin	497	447	394	345	294	237
Sulphur Basin	200	180	158	139	118	95
Total	**697**	**627**	**552**	**484**	**412**	**332**
Current Water Supply						
Cypress Basin	212	212	212	212	212	212
Sulphur Basin	124	124	124	124	124	124
Total	**336**	**336**	**336**	**336**	**336**	**336**
Projected Supply Surplus (+)/Deficit(-)						
Cypress Basin	-285	-235	-182	-133	-82	-25
Sulphur Basin	-76	-56	-34	-15	6	29
Total	**-361**	**-291**	**-216**	**-148**	**-76**	**4**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Cass County, County Other Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were utilized where feasible since the demands are not concentrated it is impossible to distribute the water. Groundwater has been identified as a potentially feasible strategy.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater Carrizo Wilcox, Cypress	**323**	**$ 1,973,000**	**$ 166,000**	**$ 514**	**Minimal**
Groundwater Carrizo Wilcox, Sulphur	**216**	**$ 1,324,000**	**$ 114,000**	**$ 528**	**Minimal**
Surface Water					

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells(Carrizo Wilcox, Cypress; ac-ft/yr)	323	323	323	323	323	323
Drill New Wells (Carrizo Wilcox, Sulphur; ac-ft/yr)	216	216	216	216	216	216

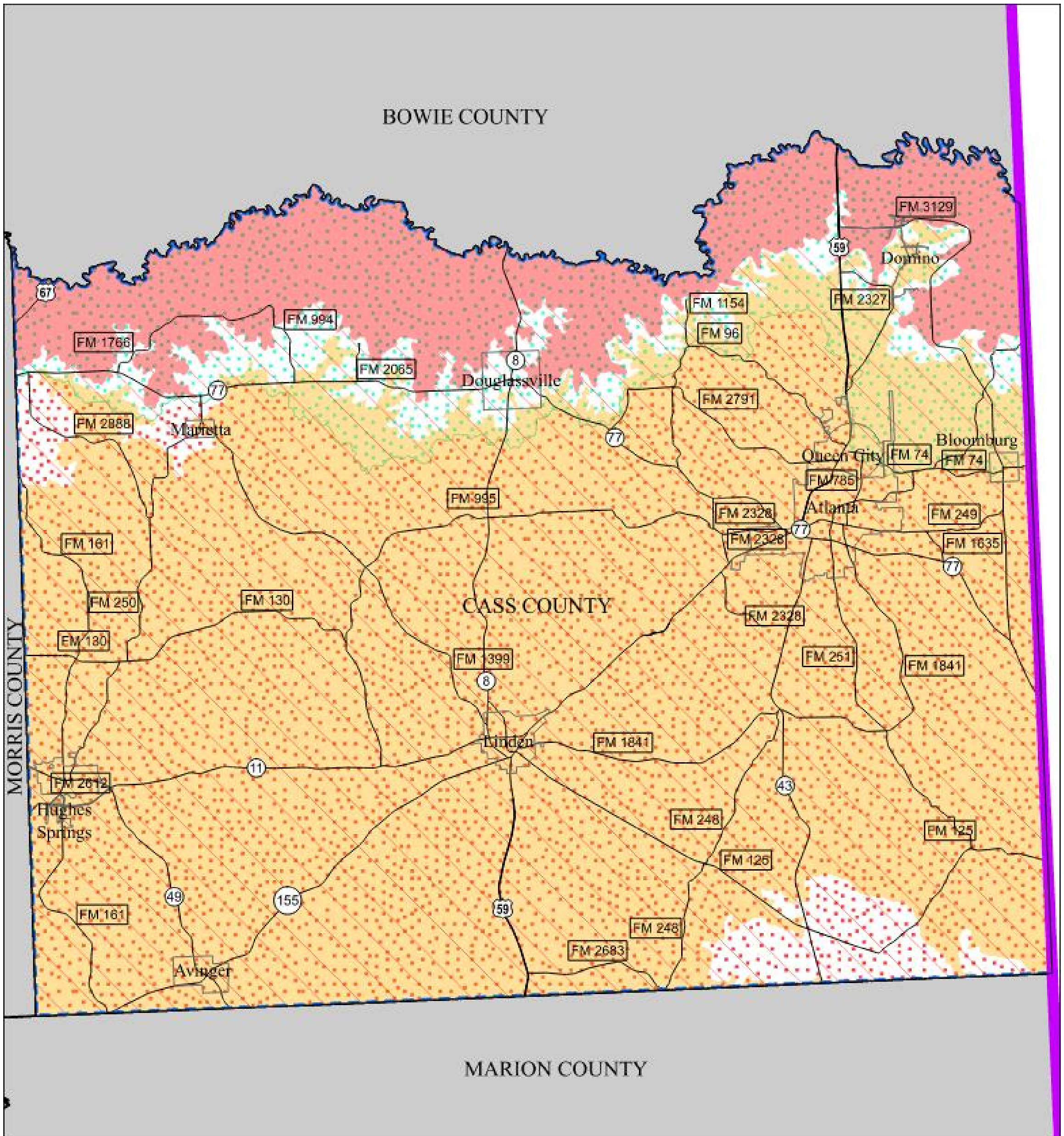
The recommended strategy for the Cass County, County Other, Cypress to meet their projected deficit of 285 ac-ft/yr in 2030 reducing to 25 ac-ft/yr in 2080 would be to construct three water wells prior to 2030. The recommended supply source will be the Carrizo Wilcox Aquifer in Cass County. One well with rated capacity of 200 gpm each would provide approximately 108 ac-ft/yr. Three new wells will be needed to provide the 285 ac-ft/yr needed.

The recommended strategy for the Cass County, County Other, Sulphur to meet their projected deficit of 76 ac-ft/yr in 2030 increasing to a surplus of 29 ac-ft/yr in 2080 would be to construct two water wells prior to 2030. The recommended supply source will be the Carrizo Wilcox Aquifer in Cass County. One well with rated capacity of 200 gpm each would provide approximately 108 ac-ft/yr. Two new wells will be needed to provide the 76 ac-ft/yr needed. The Carrizo Wilcox Aquifer in Cass County is projected to have a more than ample supply availability to meet the needs of the County Other in Cass County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

Cost Estimate Summary Water Supply Project Option September 2018 Prices County Other Cass Cypress - Drill New Well Carrizo Wilcox Aquifer Cass Cypress	
Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018	
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$1,394,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$1,394,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$488,000
Environmental & Archaeology Studies and Mitigation	$33,000
Land Acquisition and Surveying (2 acres)	$5,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	$53,000
TOTAL COST OF PROJECT	**$1,973,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$139,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$14,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (157800 kW-hr @ 0.08 $/kW-hr)	$13,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$166,000**
Available Project Yield (acft/yr)	323
Annual Cost of Water ($ per acft), based on PF=1	$514
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$84
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$1.58
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.26
Stanley Hayes	*10/3/2019*

Cost Estimate Summary Water Supply Project Option September 2018 Prices	
County-Other Cass Sulpur - Drill New Well Carrizo Wilcox Aquifer Cass Sulphur	
Cost based on ENR CCI 11170.28 for September 2018 and	
a PPI of 202.4 for September 2018	
Item	**Estimated Costs for Facilities**
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$929,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$929,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$325,000
Environmental & Archaeology Studies and Mitigation	$31,000
Land Acquisition and Surveying (1 acres)	$3,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	$36,000
TOTAL COST OF PROJECT	**$1,324,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$93,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$9,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (146646 kW-hr @ 0.08 $/kW-hr)	$12,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$114,000**
Available Project Yield (acft/yr)	216
Annual Cost of Water ($ per acft), based on PF=1	$528
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$97
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$1.62
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.30
Paula Coleman	*11/1/2019*

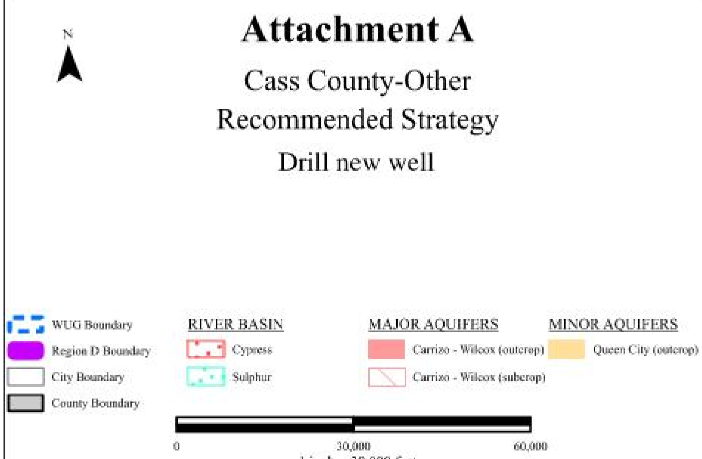


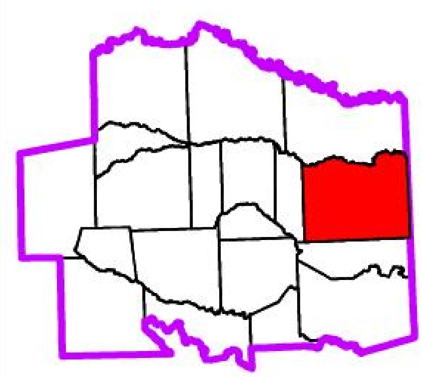
Attachment A

Cass County-Other

Recommended Strategy

Drill new well





EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS HOLLY SPRINGS WSC

Description of Water User Group:

The Holly Springs WSC WUG is a split WUG. In Cass County Cypress, it has a demand that is projected to be decreasing from 75 ac-ft/yr in 2030 to 58 ac-ft/yr in 2080. Holly Springs WSC in Cass County has a current water supply from Hughes Springs through NETMWD and Lake O' Pines. The total rated available supply from this source is 60 ac-ft/yr in 2030 decreasing to 59 in 2080. Holly Springs WSC in Cass County is projected to have a water supply deficit of 15 ac-ft/yr in 2030 and increasing to surplus of 1 ac-ft/yr in 2080.

In Morris County, Cypress, it has a demand that is projected to be decreasing from 52 ac-ft/yr in 2030 to 30 ac-ft/yr in 2080. Holly Springs WSC in Morris County has a current water supply from Hughes Springs thru NETMWD and Lake O' Pines. The total rated available supply from this source is 32 ac-ft/yr in 2030 thru 2040 and 33 ac-ft/yr in 2050 thru 2080. Holly Springs WSC in Morris County is projected to have a water supply deficit of 20 ac-ft/yr in 2030 and increasing to a surplus of 3 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Water Demand						
Cass County	75	71	67	64	61	58
Morris County	52	47	41	37	33	30
Total	**127**	**118**	**108**	**101**	**94**	**88**
Current Water Supply						
Cass County	60	60	59	59	59	59
Morris County	32	32	33	33	33	33
Total	**92**	**92**	**92**	**92**	**92**	**92**
Projected Supply Surplus (+)/Deficit(-)						
Cass County	-15	-11	-8	-5	-2	1
Morris County	-20	-15	-8	-4	0	3
Total	**-35**	**-26**	**-16**	**-9**	**-2**	**4**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Holly Springs WSC Cass County water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because it is a rural system. Surface water alternatives include increasing their contract with the City of Hughes Springs thru NETMWD and Lake O' Pines.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater					
Surface Water	**80**	**0**	**$130,000**	**$1,629**	**None**

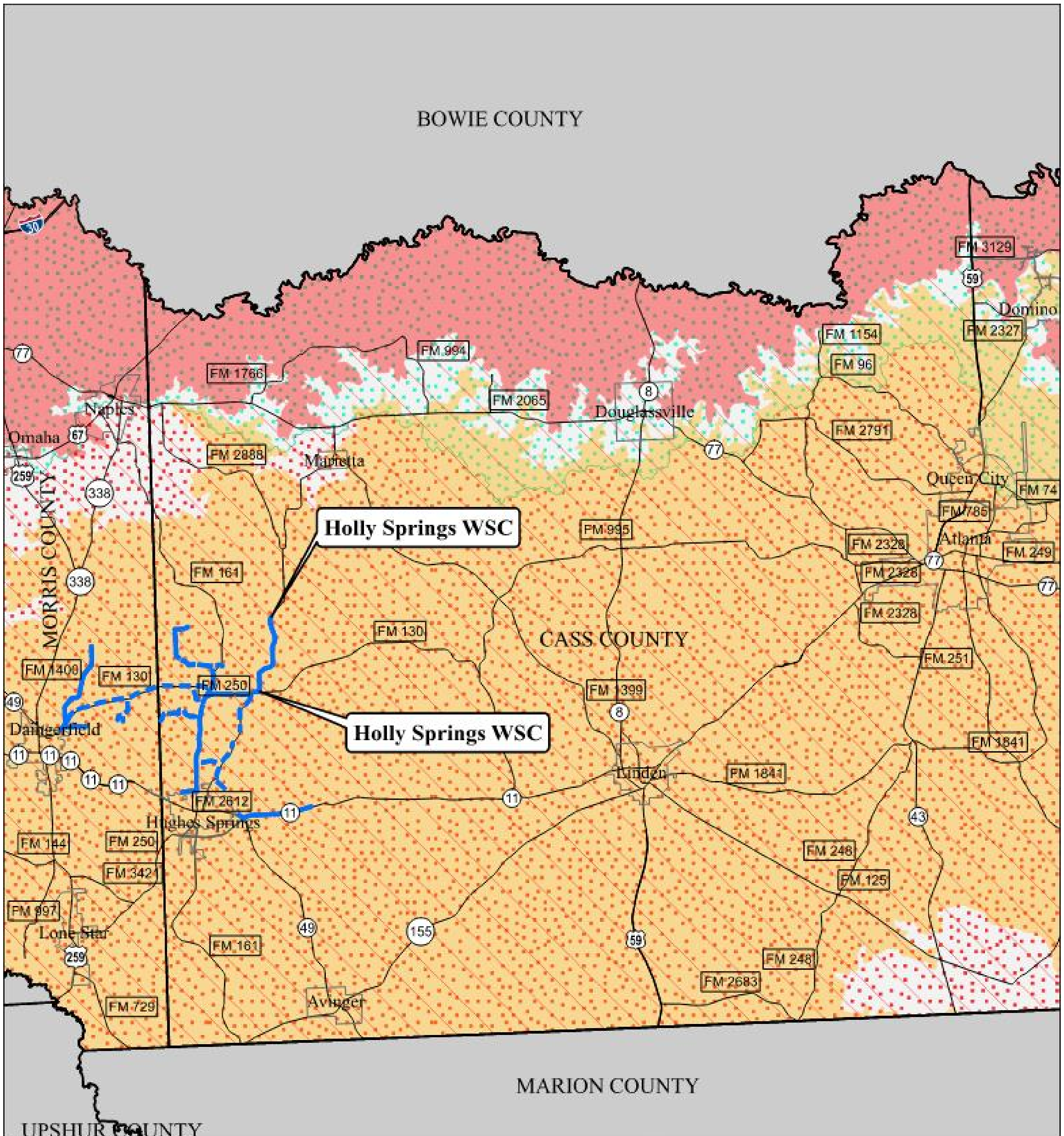
Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Cass County	15	15	15	15	15	15
Morris County	20	20	20	20	20	20
Increase Contract (NETMWD; ac-ft/yr)	35	35	35	35	35	35

The recommended strategy for the Holly Springs WSC to meet their projected deficit of 35 ac-ft/yr in 2030 would be to increase their contract with City of Hughes Springs thru NETMWD and Lake O' Pines. The recommended supply source will be the Lake O'Pines in Marion County. Lake O' Pines in Marion County is projected to have a more than ample supply availability to meet the needs of the Holly Springs WSC thru Hughes Springs and NETMWD for the planning period.

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices
Holly Springs - Increase Existing Contract from Hughes Springs

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018	
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (0 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$0
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$0**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$0
Environmental & Archaeology Studies and Mitigation	$0
Land Acquisition and Surveying (0 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (80 acft/yr @ 1629 $/acft)	$130,000
TOTAL ANNUAL COST	**$130,000**
Available Project Yield (acft/yr)	80
Annual Cost of Water ($ per acft), based on PF=1	$1,625
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$1,625
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$4.99
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$4.99
Paula Coleman	*11/3/2019*

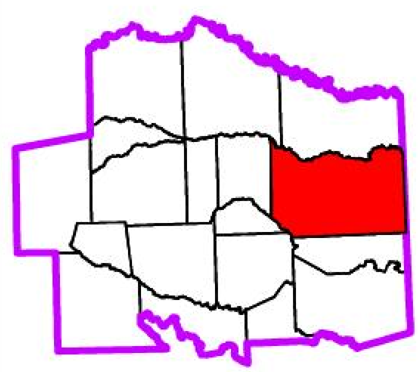


Attachment A

Holly Springs WSC

Recommended Strategy

Drill new well



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS COUNTY OTHER IN CASS COUNTY

Description of Water User Group:

The Manufacturing WUG in Cass County is a split entity and has a demand that is projected to be decreasing from 36,152 ac-ft/yr in 2030 to 43,354 ac-ft/yr in 2080. Manufacturing in Cass County has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and surface water from Wright Patman Lake. The total rated available supply from these sources is 32,604 ac-ft/yr. County Other in Cass County is projected to have a water supply deficit of -3534 ac-ft/yr in 2030 and increasing to a deficit of -10,737 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

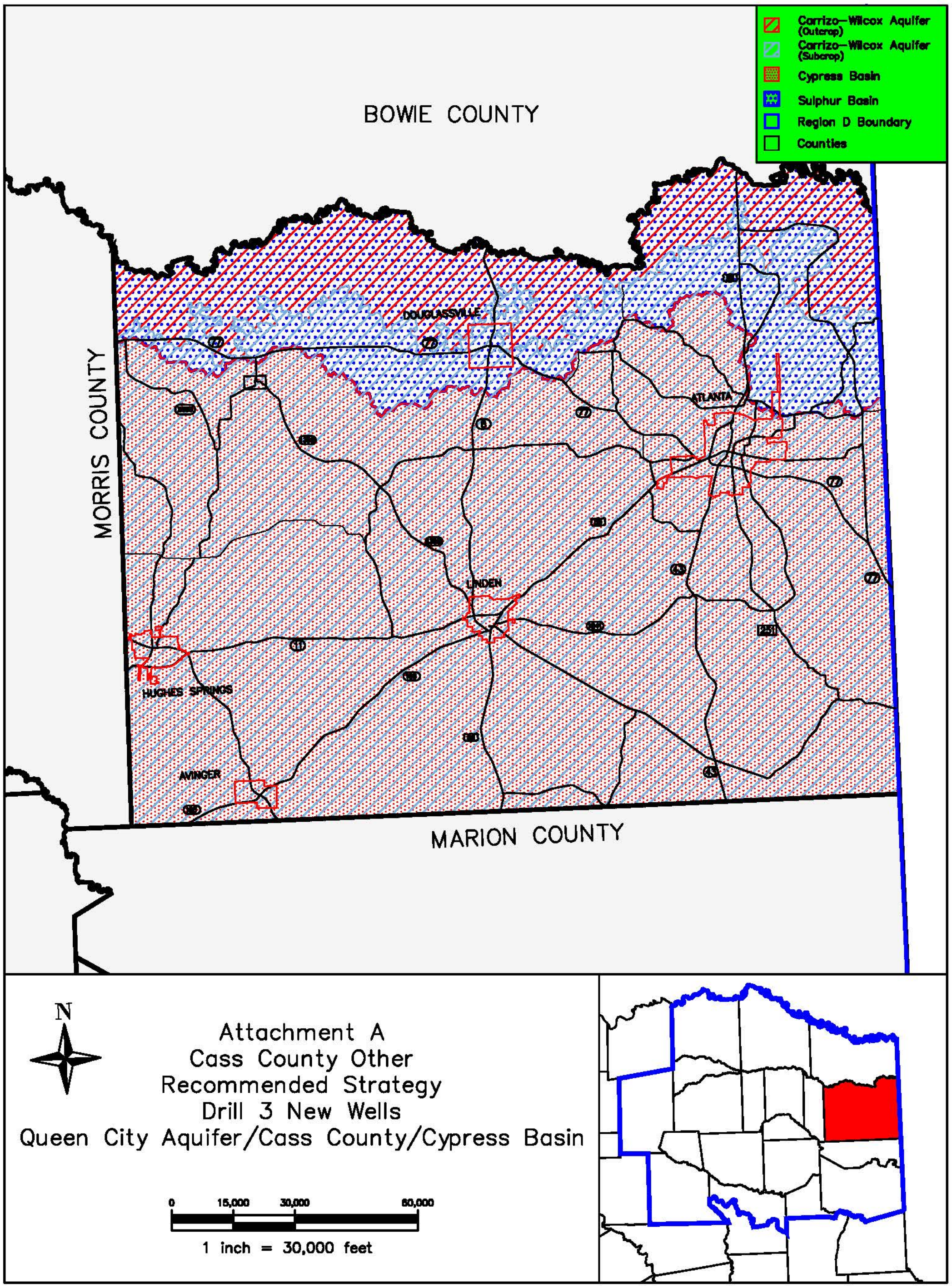
County Other Cass	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Water Demand						
Cypress Basin	14	15	15	16	17	17
Sulphur Basin	36,138	37,475	38,862	40,299	41,790	43,337
Total	**36,152**	**37,490**	**38,877**	**40,315**	**41,807**	**43,354**
Current Water Supply						
Cypress Basin	245	245	245	245	245	245
Sulphur Basin	32,604	32,602	32,601	32601	32600	32600
Total	**638**	**638**	**638**	**638**	**638**	**638**
Projected Supply Surplus (+)/Deficit(-)						
Cypress Basin	231	230	230	229	228	228
Sulphur Basin	-3534	-4873	-6261	-7698	-9190	-10737
Total	**-3303**	**-4643**	**-6031**	**-7469**	**-8962**	**-10509**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Cass County, County Other Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were utilized where feasible. Groundwater has been identified as a potentially feasible strategy.

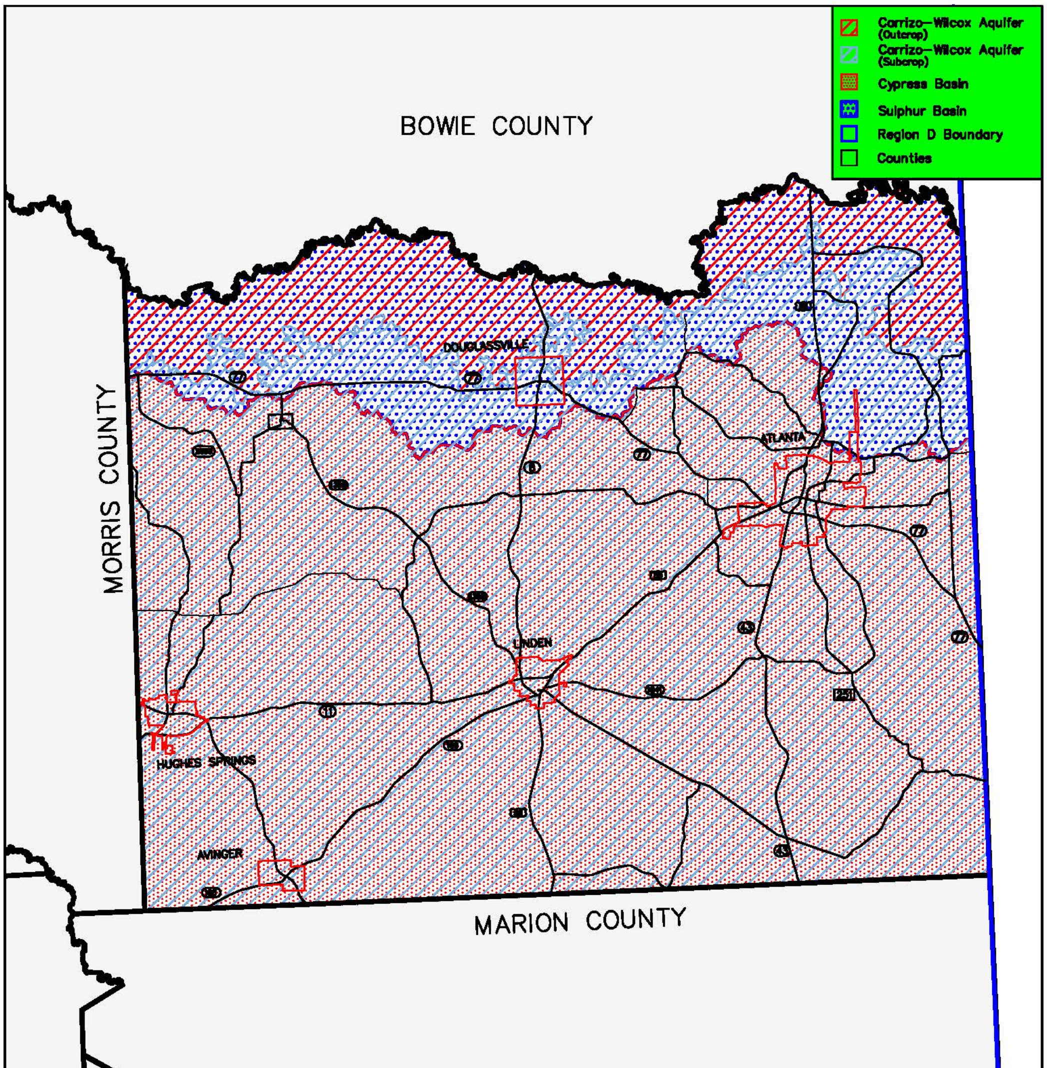
Recommendations:

The recommended strategy for the Cass County, County Other, to meet their projected deficit of -3303 ac-ft/yr in 2030 increasing to 10509 ac-ft/yr in 2080 would be to increase water contracts for surface water. The recommended supply source will be Wright Patman Lake.



Attachment A
Cass County Other
Recommended Strategy
Drill 3 New Wells
Queen City Aquifer/Cass County/Cypress Basin

Cost Estimate Summary Water Supply Project Option September 2018 Prices	
County-Other Cass Sulpur - Drill New Well Carrizo Wilcox Aquifer Cass Sulphur	
Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018	
Item	**Estimated Costs for Facilities**
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$929,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$929,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$325,000
Environmental & Archaeology Studies and Mitigation	$31,000
Land Acquisition and Surveying (1 acres)	$3,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	$36,000
TOTAL COST OF PROJECT	**$1,324,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$93,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$9,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (146646 kW-hr @ 0.08 $/kW-hr)	$12,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$114,000**
Available Project Yield (acft/yr)	216
Annual Cost of Water ($ per acft), based on PF=1	$528
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$97
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$1.62
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.30
Paula Coleman	*11/1/2019*



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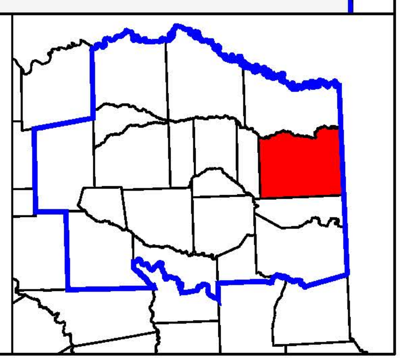
Attachment A
Cass County Other
Recommended Strategy
Drill 2 New Wells
Queen City Aquifer/Cass County/Sulphur Basin

0 15,000 30,000 60,000

1 inch = 30,000 feet



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF QUEEN CITY

Description of Water User Group:

The City of Queen City provides water service in Cass County. The City's population is projected to be 1,296 in 2030 and 1,158 in the year 2080. The City primarily utilizes groundwater supply from the Carrizo-Wilcox Aquifer, although it has the capability to use water supply from the City of Texarkana from Lake Wright Patman that it has used in the past. The City is not expected to have shortages as sufficient groundwater supplies are projected over the 2030 – 2080 planning period. However, the City's full demands have been considered in evaluation of strategies for the purposes of the 2026 Region D Plan as the City's demands were included as part of the evaluation of strategies within the Riverbend WRD's Regional Water Master Plan.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	1,296	1,247	1,210	1,182	1,164	1,158
Projected Water Demand	240	230	223	218	214	213
Current Water Supply	527	520	513	512	512	512
Projected Supply Surplus (+) / Deficit (-)	**11**	**18**	**25**	**26**	**26**	**26**

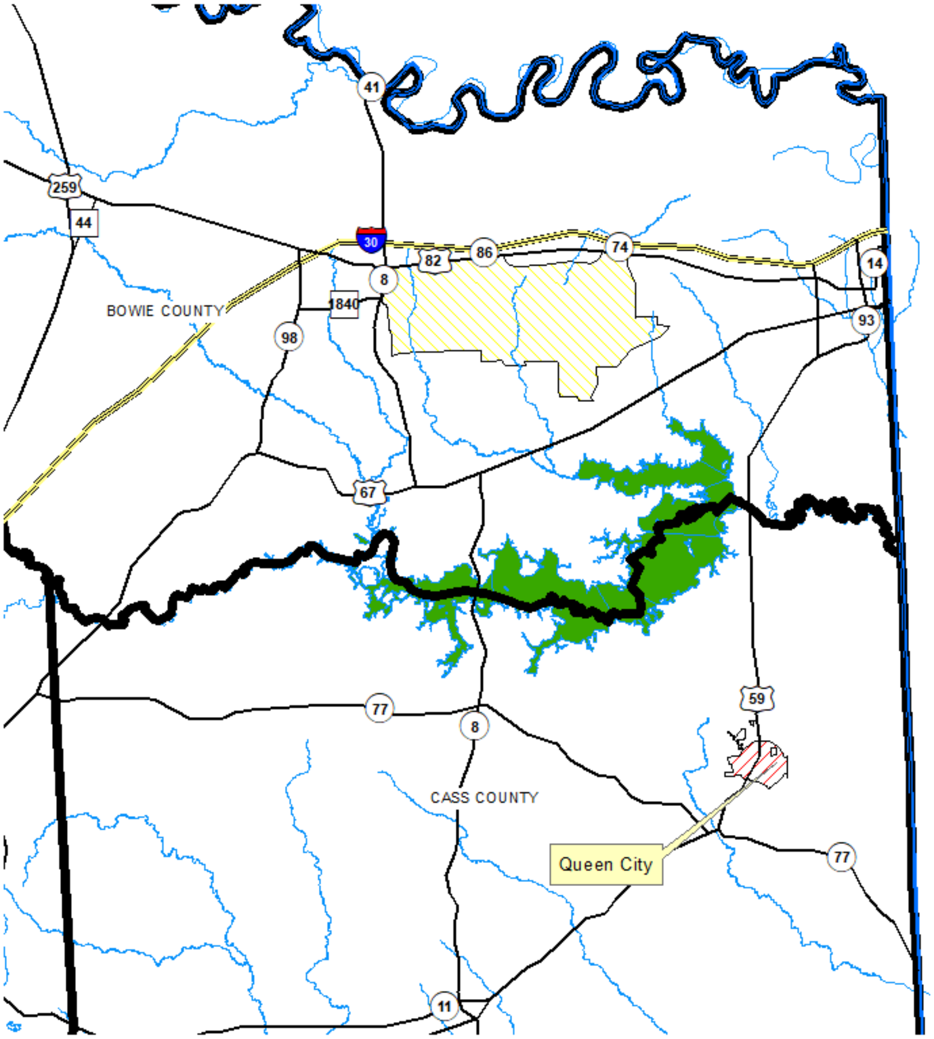
Evaluation of Potentially Feasible Water Management Strategies:

There were five alternative strategies considered to meet the City's water supply shortages as summarized in the Table below. Advanced conservation was not considered because the per capita use per day would be less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Existing groundwater supply is sufficient to meet the City's needs, and is expected to continue to meet projected future demands for the City. Voluntary reallocation of manufacturing supply was identified in order to account for the fact that the Riverbend WRD Regional Master Plan indicates that supply could be provided via diversion of supply for GPI at Lake Wright Patman, a part of the Cass Manufacturing WUG, thus the amount for voluntary reallocation does not affect the 120,000 ac-ft/yr of contracted supply between Texarkana and GPI. Further, a request was submitted by Riverbend Water Resources District to consider a new 2.5 MGD package water treatment plant and transmission line for supply from Wright Patman Reservoir. Thus, a new contract with Texarkana/Riverbend has been considered herein.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Voluntary Reallocation (from Cass Manufacturing)	**251**	**$0**	**$0**	**$0**	**1**
New Contract	**251**	**$0**	**$121,000**	**$482**	**1**

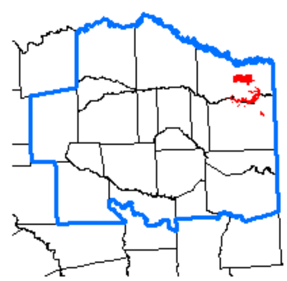
Recommendations:

As the City of Queen City's groundwater supplies are sufficient to meet projected future demands for the City, no additional WMS is recommended.



Relation
Buyer
Seller
Source
Region D Boundary
Counties
Streams
Reservoirs

0 15,000 30,000 60,000
Feet
1 inch = 30,000 feet



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Attachment A

Queen City
Alternative Strategy
New Contract (Riverbend WRD)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

GREGG COUNTY

WUGs:

City of White Oak

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF WHITE OAK

Description of Water User Group:

The City of White Oak is located in Gregg County and serves the incorporated area of the City. The population is projected to decrease from 6421 persons in 2030 to 6125 persons in 2080. The City is included as a WUG. in Gregg County. The system's current water supply consists of surface water from the Sabine river basin. The total supply capacity is 2590 ac-ft/yr. The System does not have a water conservation plan. The system is projected to have a water supply deficit of 66 ac-ft/yr in 2030 decreasing to a surplus of 61 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	6421	6486	6441	6335	6230	6125
Projected Water Demand	2656	2678	2659	2616	2572	2529
Current Water Supply	2590	2590	2590	2590	2590	2590
Projected Supply Surplus (+)/Deficit(-)	**-66**	**-88**	**-69**	**-26**	**18**	**61**

Evaluation of Potentially Feasible Water Management Strategies:

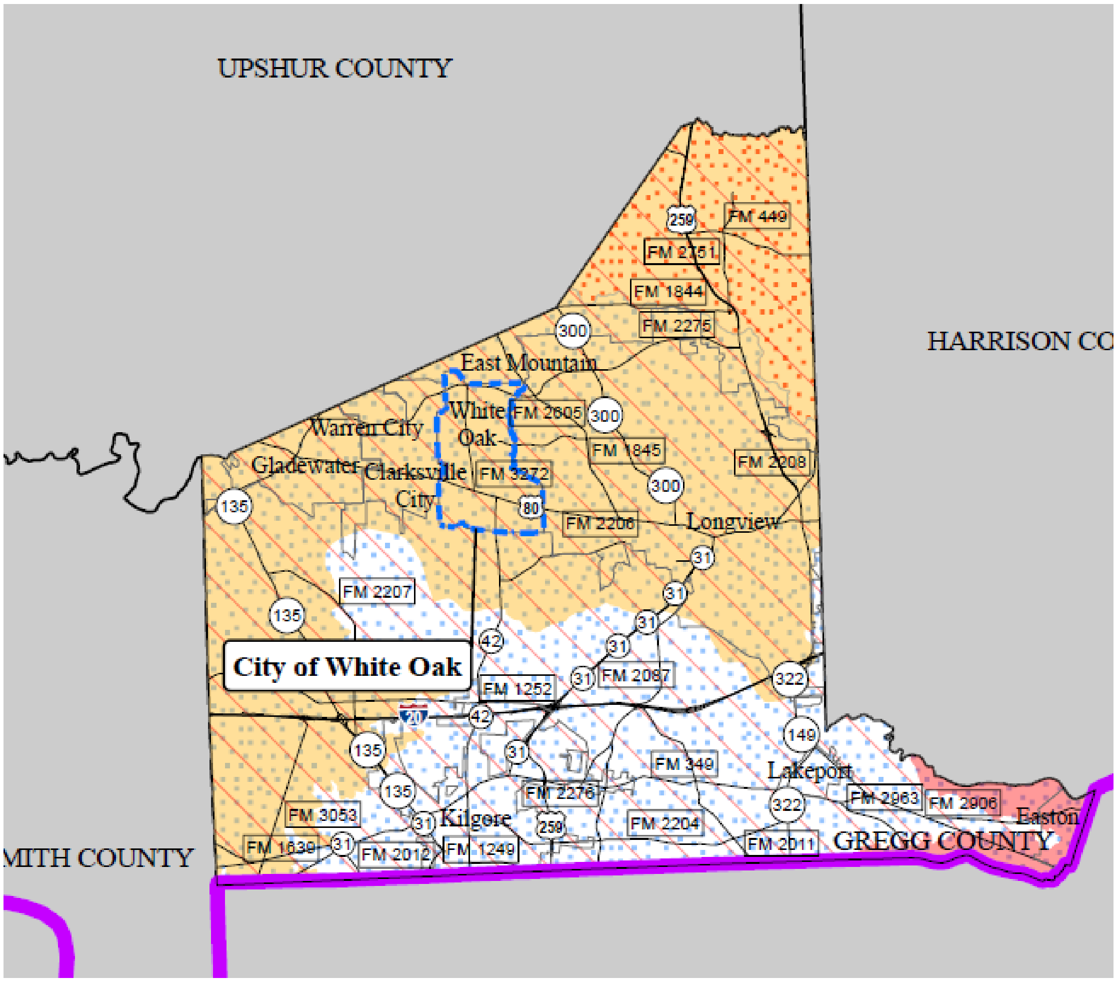
Four alternative strategies were considered to meet the City's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcd threshold set by the planning group. Water reuse was not considered because the system does not have a demand for non-potable water. Increased water purchase contracts with the City of Longview shall be utilized to remedy the water deficit.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater (Carrizo-Wilcox Aquifer, Sabine Basin)					
Surface Water					

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Purchase Surface Water	66	88	69	26	0	0

The recommended strategy for the City to meet their projected deficit of 66 ac-ft/yr in 2030 and deficit of 26 ac-ft/yr in 2060 would be to increase the water purchase contract with the City of Longview.



UPSHUR COUNTY
HARRISON CO
MITH COUNTY
GREGG COUNTY
City of White Oak
East Mountain
White Oak
Warren City
Gladewater
Clarksville City
Longview
Kilgore
Lakeport
Easton
FM 449
FM 2751
FM 1844
FM 2275
FM 2605
FM 1845
FM 3272
FM 2208
FM 2206
FM 2207
FM 1252
FM 2087
FM 349
FM 2276
FM 2204
FM 2011
FM 2963
FM 2906
FM 3053
FM 1639
FM 2012
FM 1249

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

HARRISON COUNTY

WUGs:

Harrison County Irrigation
Harrison County Mining
City of Scottsville

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS IRRIGATION IN HARRISON COUNTY

Description of Water User Group:

The Irrigation WUG in Harrison County is a split entity and has a demand that is projected to be constant 560 ac-ft/yr from 2030 to 2080. Irrigation in Harrison County, Cypress Basin has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, surface water from Cypress Run-of-River permit, and Sabine Run-of-River permit. The total rated available supply from these sources is 53 ac-ft/yr for the Cypress split. Irrigation in Harrison County is projected to have a water supply deficit of 283 ac-ft/yr in 2030 and staying even to a deficit of 283 ac-ft/yr in 2080 for the Cypress split.

Irrigation in Harrison County, Sabine Basin has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer surface water from Sabine Run-of-River permit, and Cypress Run-of-River permit. The total rated available supply from these sources is 33 ac-ft/yr for the Sabine split. Irrigation in Harrison County is projected to have a water supply deficit of 191 ac-ft/yr in 2030 thru 2080 for the Sabine split.

Water Supply and Demand Analysis:

Mining Harrison Cypress	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Water Demand						
Cypress	336	336	336	336	336	336
Sabine	224	224	224	224	224	224
Total	**560**	**560**	**560**	**560**	**560**	**560**
Current Water Supply						
Cypress	53	53	53	53	53	53
Sabine	33	33	33	33	33	33
Total	**86**	**86**	**86**	**86**	**86**	**86**
Projected Supply Surplus (+)/Deficit(-)						
Cypress	-283	-283	-283	-283	-283	-283
Sabine	-191	-191	-191	-191	-191	-191
Total	**-474**	**-474**	**-474**	**-474**	**-474**	**-474**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Harrison County Irrigation water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing irrigation is not available. Surface water alternatives were omitted since there is not a supply source within close proximity to the county with available supply. New wells in the Queen City Aquifer was identified as a potentially feasible strategy for the WUG.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater Queen City Aquifer Cypress Basin	**484**	**$ 577,000**	**$ 58,000**	**$ 120**	**Minimal**
Groundwater Queen City Aquifer Sabine Basin	**161**	**$ 193,000**	**$ 19,000**	**$ 118**	**Minimal**
Surface Water					

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Queen City Aquifer, Cypress Basin; ac-ft/yr)	283	283	283	283	283	283
Drill New Wells (Queen City Aquifer, Sabine Basin; ac-ft/yr)	191	191	191	191	191	191

The recommended strategy for the Harrison County Irrigation, Cypress Basin, to meet their projected deficit of 283 ac-ft/yr in 2030 through 2080 would be to construct three water wells prior to 2030 as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County. Three wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 283 ac-ft/yr.

The recommended strategy for the Harrison County Irrigation, Sabine Basin, to meet their projected deficit of 191 ac-ft/yr in 2030 from 2080 would be to construct one water well prior to 2030. The recommended supply source will be the Queen City Aquifer in Harrison County Sabine. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. The Queen City Aquifer in Harrison County Sabine is projected to have a more than ample supply availability to meet the needs of the Irrigation in Harrison County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

Irrigation Harrison Cypress - Drill New Well Queen City Aquifer Harrison Cypress

Cost based on ENR CCI 11170.28 for September 2018 and
a PPI of 202.4 for September 2018

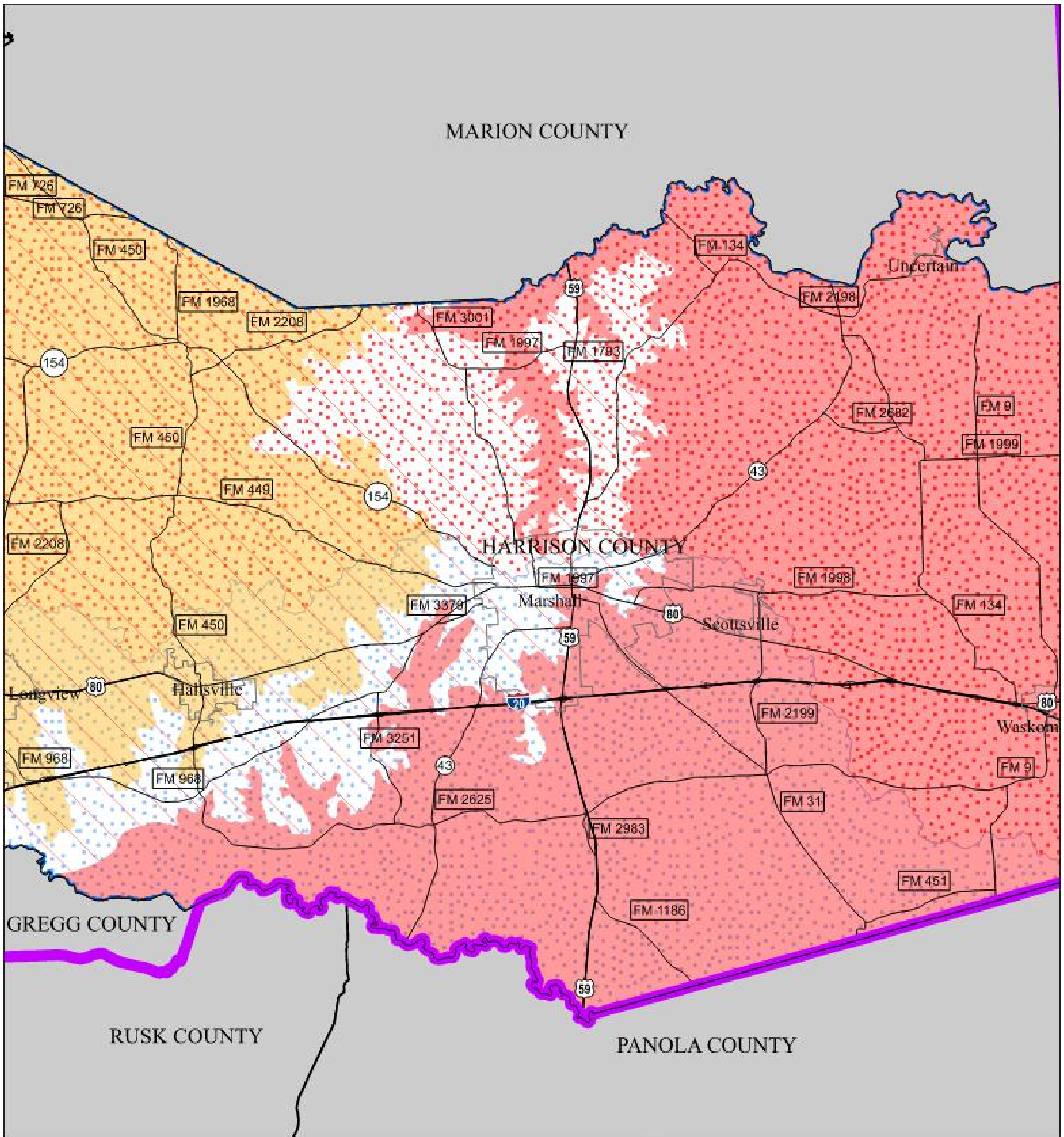
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$414,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$414,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$145,000
Environmental & Archaeology Studies and Mitigation	$2,000
Land Acquisition and Surveying (2 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	$16,000
TOTAL COST OF PROJECT	**$577,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$41,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$4,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (168446 kW-hr @ 0.08 $/kW-hr)	$13,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$58,000**
Available Project Yield (acft/yr)	484
Annual Cost of Water ($ per acft), based on PF=1	$120
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$35
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$0.37
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.11
Stanley Hayes	*10/3/2019*

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

Irrigation Harrison Sabine - Drill New Well Queen City Aquifer Harrison Sabine

Cost based on ENR CCI 11170.28 for September 2018 and
a PPI of 202.4 for September 2018

Item	*Estimated Costs for Facilities*
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$138,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$138,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$48,000
Environmental & Archaeology Studies and Mitigation	$1,000
Land Acquisition and Surveying (1 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	$6,000
TOTAL COST OF PROJECT	**$193,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$14,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$1,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (56149 kW-hr @ 0.08 $/kW-hr)	$4,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$19,000**
Available Project Yield (acft/yr)	161
Annual Cost of Water ($ per acft), based on PF=1	$118
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$31
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$0.36
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.10
Stanley Hayes	*10/3/2019*



Attachment A

Harrison County Irrigation
Recommended Strategy
Drill new well

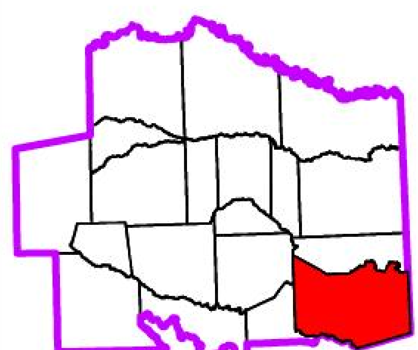
WUG Boundary
Region D Boundary
City Boundary
County Boundary

RIVER BASIN
Cypress
Sabine

MAJOR AQUIFERS
Carrizo - Wilcox (outcrop)
Carrizo - Wilcox (subcrop)

MINOR AQUIFERS
Queen City (outcrop)

0 30,000 60,000
1 inch = 30,000 feet



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS MINING IN HARRISON COUNTY – CYPRESS

Description of Water User Group:

The Mining WUG in Harrison County is a split entity and has a total demand that is projected to be 2,691 ac-ft/yr in 2030 to 2080. Mining in Harrison County, Cypress has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and Queen City Aquifer, and contract with Sabine River Authority for surface water from Lake Fork. The total rated available supply from these sources is 299 ac-ft/yr in 2030 increasing to 333 ac-ft/yr in 2080. Mining in Harrison County is projected to have a water supply deficit of 433 ac-ft/yr in 2030 and increasing to a deficit of 399 ac-ft/yr in 2080 for the Harrison Cypress split.

Mining in the Harrison County Sabine split has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, surface water from Sabine Run-of-River permit, and contract with Sabine River Authority for surface water from Lake Fork. The total rated available supply from these sources is 540 ac-ft/yr in 2030 increasing to 576 ac-ft/yr in 2080. Mining in Harrison County is projected to have a water supply deficit of 1,419 ac-ft/yr in 2030 increasing to a deficit of 1,383 ac-ft/yr in 2080 for the Sabine split.

Water Supply and Demand Analysis:

Mining Harrison	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Water Demand						
Cypress	1,959	1,959	1,959	1,959	1,959	1,959
Sabine	732	732	732	732	732	732
Total	**2,691**	**2,691**	**2,691**	**2,691**	**2,691**	**2,691**
Current Water Supply						
Cypress	299	307	316	323	333	333
Sabine	540	550	559	567	576	576
Total	**839**	**857**	**875**	**890**	**909**	**909**
Projected Supply Surplus (+)/Deficit(-)						
Cypress	-433	-425	-416	-409	-399	-399
Sabine	-1,419	-1,409	-1,400	-1,392	-1,383	-1,383
Total	**-1,852**	**-1,834**	**-1,816**	**-1,801**	**-1,782**	**-1,782**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Harrison County Mining water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing mines is not available. Surface water alternatives were omitted since there is not a supply source within close proximity to the county with available supply. Wells in the Queen City Aquifer (portions in the Cypress Creek and Sabine River basins) were identified and evaluated as a potentially feasible strategy for the WUG.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater Queen City Aquifer Cypress Basin	**332**	**$ 384,000**	**$ 39,000**	**$ 117**	**Minimal**
Groundwater Queen City Aquifer Sabine Basin	**1,452**	**$1,555,000**	**$ 183,00**	**$ 126**	**Minimal**
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Queen City Aquifer Cypress Basin; ac-ft/yr)	433	433	433	433	433	433
Drill New Wells (Queen City Aquifer Sabine Basin; ac-ft/yr)	1,419	1,419	1,419	1,419	1,419	1,419

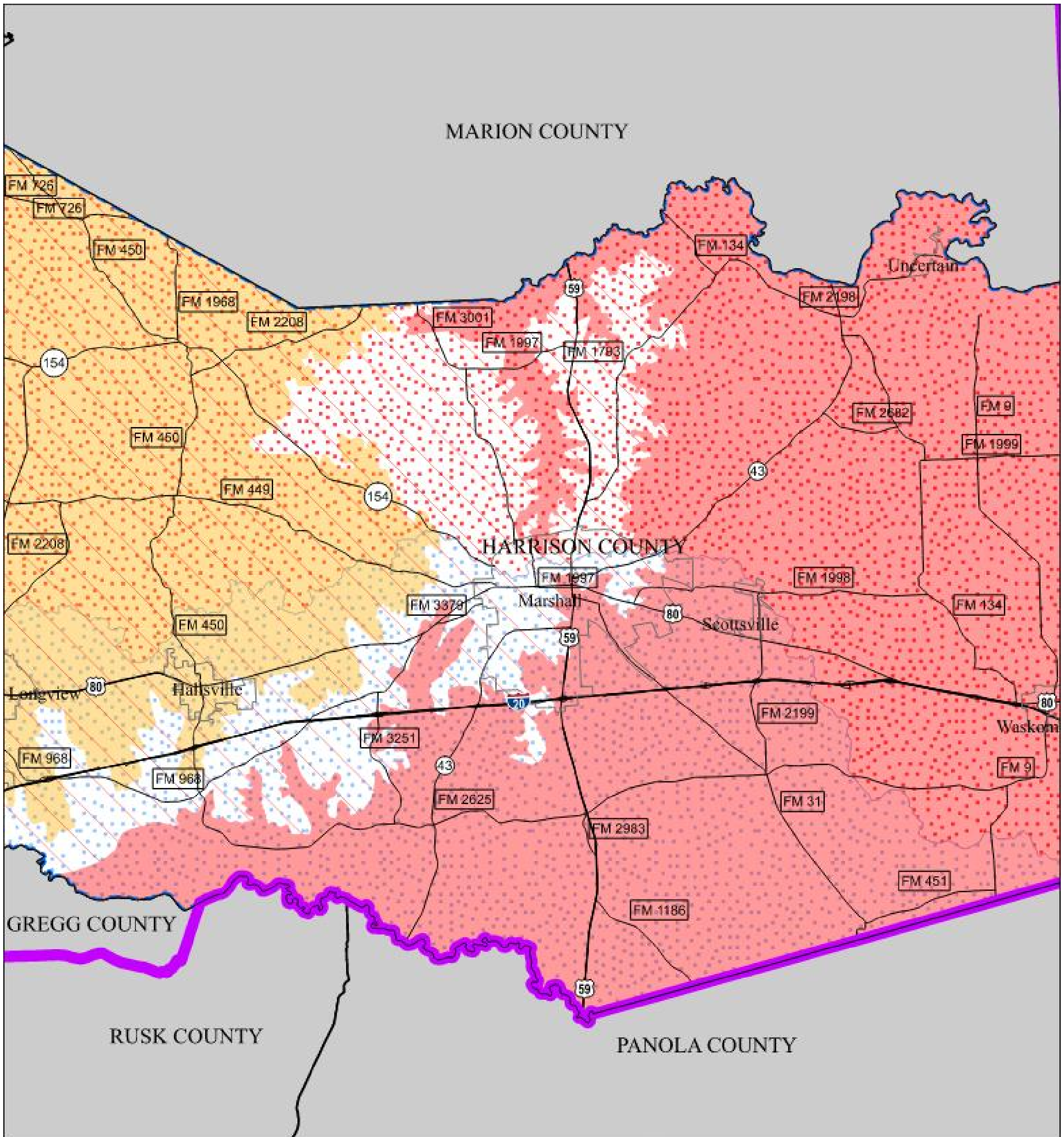
The recommended strategy for the Harrison County Mining, Cypress Basin, to meet their projected deficit of 433 ac-ft/yr in 2030 and 416 ac-ft/yr in 2050 would be to construct two additional water wells similar to their existing wells just prior to each decade as the deficits occur to 2050. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. Two wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 332 ac-ft/yr.

The recommended strategy for the Harrison County Mining, Sabine Basin, to meet their projected deficit of 1,419 ac-ft/yr in 2030 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Sabine. Nine wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 1,452 ac-ft/yr. The Queen City Aquifer in Harrison County Sabine is projected to have a more than ample supply availability to meet the needs of the Mining in Harrison County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

Cost Estimate Summary ***Water Supply Project Option*** ***September 2018 Prices***	
Mining Harrison Cypress - Drill New Well Queen City Aquifer Harrison Cypress	
Cost based on ENR CCI 11170.28 for September 2018 and	
a PPI of 202.4 for September 2018	
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
#NAME?	#NAME?
Transmission Pipeline (6 in dia., miles)	#NAME?
Transmission Pump Station(s) & Storage Tank(s)	#NAME?
Well Fields (Wells, Pumps, and Piping)	#NAME?
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	#NAME?
Advanced Water Treamtent Facility (MGD)	#NAME?
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**#NAME?**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	#NAME?
Environmental & Archaeology Studies and Mitigation	$1,000
Land Acquisition and Surveying (1 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	#NAME?
TOTAL COST OF PROJECT	**#NAME?**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	#NAME?
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	#NAME?
Intakes and Pump Stations (2.5% of Cost of Facilities)	#NAME?
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	#NAME?
Advanced Water Treatment Facility	#NAME?
#NAME?	#NAME?
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**#NAME?**
Available Project Yield (acft/yr)	332
Annual Cost of Water ($ per acft), based on PF=1	$0
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$0
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$0.00
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.00
Stanley Hayes	*10/3/2019*

Cost Estimate Summary Water Supply Project Option September 2018 Prices Mining Harrison Sabine - Drill New Well Queen City Aquifer Harrison Sabine	
Cost based on ENR CCI 11170.28 for September 2018 and	
a PPI of 202.4 for September 2018	
Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Primary Pump Station (0 MGD)	$0
Transmission Pipeline (6 in dia., miles)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$1,118,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treamtent Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, & Other	$0
TOTAL COST OF FACILITIES	**$1,118,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$391,000
Environmental & Archaeology Studies and Mitigation	$4,000
Land Acquisition and Surveying (5 acres)	$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	$42,000
TOTAL COST OF PROJECT	**$1,555,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$109,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$11,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (782434 kW-hr @ 0.08 $/kW-hr)	$63,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$183,000**
Available Project Yield (acft/yr)	1,452
Annual Cost of Water ($ per acft), based on PF=1	$126
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$51
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$0.39
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.16
Stanley Hayes	*10/4/2019*



Attachment A

Harrison County Mining
Recommended Strategy
Drill new well

N

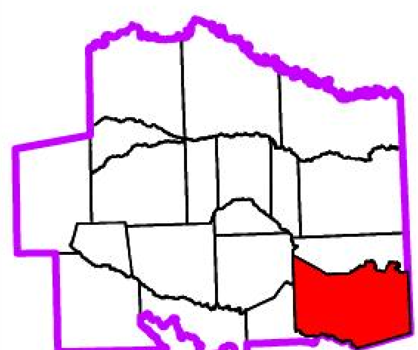
WUG Boundary
Region D Boundary
City Boundary
County Boundary

RIVER BASIN
Cypress
Sabine

MAJOR AQUIFERS
Carrizo - Wilcox (outcrop)
Carrizo - Wilcox (subcrop)

MINOR AQUIFERS
Queen City (outcrop)

0 30,000 60,000
1 inch = 30,000 feet



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF SCOTTSVILLE

Description of Water User Group:

The City of Scottsville is located in southeastern Harrison County and serves the incorporated city limits and an area immediately north, east, and south of the City of Scottsville. In 2018, the system had 480 residential connections. The population is projected to increase from 1,308 persons in 2030 to 1,887 persons in 2080. The City is included as a WUG. in Harrison County. The system's current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 402 GPM, or 216 ac-ft/yr. The system is bounded on the east by the Waskom Rural Water WSC #1, on the south by Blocker Crossroads WSC, on the west by the City of Marshall, and the north by Leigh WSC. The City does not have a water conservation plan. The City of Scottsville is projected to have a water supply deficit of 122 ac-ft/yr in 2030 increasing to a deficit of 270 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,308	1,450	1,472	1,615	1,753	1,887
Projected Water Demand	338	374	379	416	452	486
Current Water Supply	216	216	216	216	216	216
Projected Supply Surplus (+)/Deficit(-)	**-122**	**-158**	**-163**	**-200**	**-236**	**-270**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Scottsville's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the City does not have a central sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the City and surface water treatment is not economically feasible for a system of this size. Wells in the Queen City Aquifer (Cypress Basin) in Harrison County were identified as a potentially feasible strategy for the WUG.

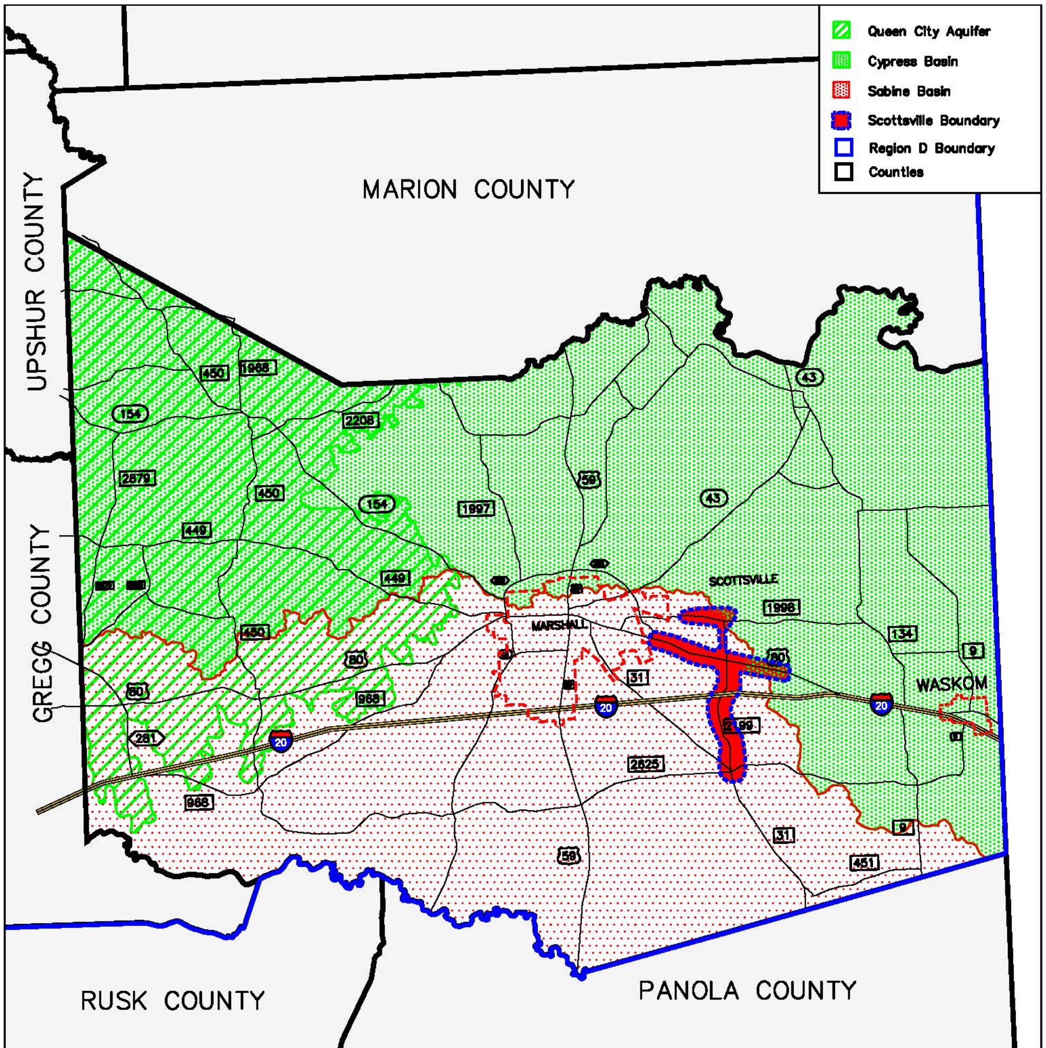
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater	**122**	**$ 1,429,000**	**$ 116,000**	**$ 716**	**1**
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Queen City, Cypress and Sabine Basin; ac-ft/yr)	122	158	163	200	236	270

The recommended strategy for the City of Scottsville to meet their projected deficit of 122 ac-ft/yr in 2030 and 270 ac-ft/yr in 2080 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. The Queen City Aquifer in Harrison County Cypress is projected to have a more than ample supply availability to meet the needs of the City of Scottsville for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



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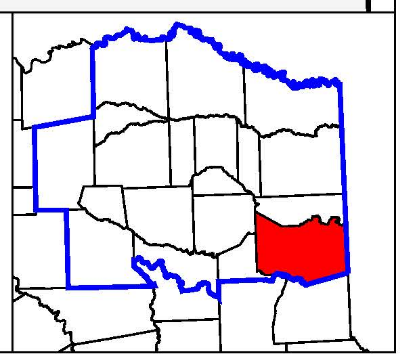
Attachment A
Harrison County
City of Scottsville
Recommended Strategy
Drill New Well
Queen City Aquifer/Harrison County/Cypress Basin/
Sabine Basin

0 15,000 30,000 60,000

1 inch = 30,000 feet



REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

HOPKINS COUNTY

WUGs:

Brinker WSC

City of Cumby

Hopkins County Irrigation

Hopkins County Livestock

Miller Grove WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BRINKER WATER SUPPLY CORPORATION IN HOPKINS COUNTY

Description of Water User Group:

Brinker WSC provides water service in Hopkins County. It is projected that the users in WUG will have a shortage starting in 2030. The WUG population is projected to be 2,591 by 2030 and increases to 3,066 by 2080. The WSC utilizes groundwater from the Carrizo-Wilcox aquifer and has a contract for water supply with City of Sulphur Springs for 77 ac-ft/yr. Brinker WSC is projected to have a deficit of 97 ac-ft in 2030, increasing to a deficit of 171 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	2,591	2,753	2,799	2,886	2,976	3,066
Projected Water Demand	425	450	458	472	487	501
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	328	328	329	330	330	330
Projected Supply Surplus (+) / Deficit (-)	**-97**	**-122**	**-130**	**-143**	**-157**	**-171**

Evaluation of Potentially Feasible Water Management Strategies:

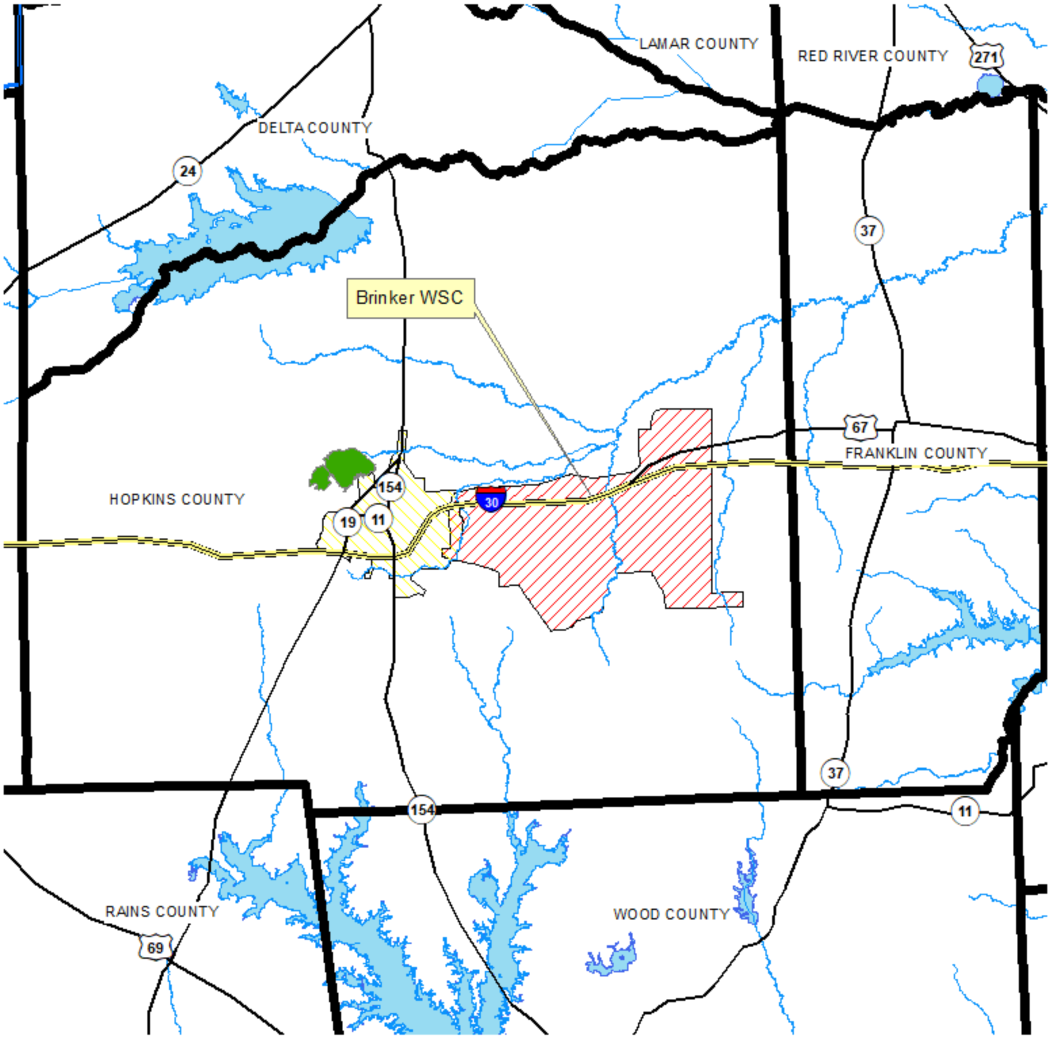
One alternative strategy is considered to meet WSC's water supply shortages. Advanced conservation was not selected because even though the per capita use per day was not less than the 140 gpcd threshold set by the water planning group, they don't satisfy the TCEQ minimum supply requirement. Reuse is not a feasible option because water supply is mainly used for public consumption. Additional use of groundwater has been identified as a likely source of water for Brinker WSC in Hopkins County; however, projected needs exceed the availability of groundwater in the Sulphur basin based on the modeled available groundwater (MAG) estimates and review of available information from a local hydrogeological assessment. A potential regionalization strategy is the Wood County Pipeline. Purchase of additional surface water from Sulphur Springs Lake under the existing contract from the City of Sulphur Springs was also considered.

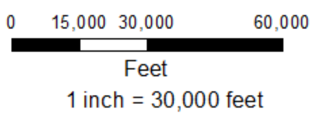
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	**171**	**$2,726,000**	**$332,000**	**$1942**	**1**
Increase Existing Contract w/ Sulphur Springs	**171**	**$0**	**$197,000**	**$1,152**	**1**

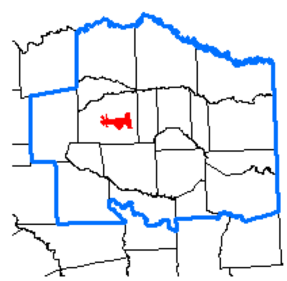
Recommendations:

	2030	2040	2050	2060	2070	2080
Increase Existing Contract (ac-ft/yr)	97	122	130	143	157	171

To meet the identified needs for Brinker WSC, the recommended strategy is to increase the existing surface water contract from the City of Sulphur Springs prior to 2030.







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Attachment A

Brinker WSC
Recommended Strategy
Increase Existing Contract (Sulphur Springs)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Brinker WSC - Increase Contract w/ Sulphur Springs

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (171 acft/yr @ 1150.25 $/acft)	$197,000
TOTAL ANNUAL COST	**$197,000**
Available Project Yield (acft/yr)	171
Annual Cost of Water ($ per acft), based on PF=0	$1,152
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$1,152
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$3.53
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$3.53

JKJ *2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CUMBY

Description of Water User Group:

The City of Cumby provides water service in Hopkins County. It is projected that the users in the WUG will have a surplus starting in 2030. The WUG population is projected to be 736 by 2030 and decreases to 733 by 2080. The City of Cumby utilizes groundwater from the Nacatoch aquifer through 4 wells with a combined production capacity of 223 gpm. The City of Cumby is projected to have a surplus of 22 ac-ft in 2030 increasing to a deficit of 23 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	**736**	**716**	**743**	**741**	**737**	**733**
Projected Water Demand	**98**	**95**	**99**	**99**	**98**	**97**
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	120	120	120	120	120	120
Projected Supply Surplus (+) / Deficit (-)	**22**	**25**	**21**	**21**	**22**	**23**

Projected Supply Surplus (+) / Deficit (-) by Basin	2030	2040	2050	2060	2070	2080
Sabine	**21**	**24**	**20**	**20**	**21**	**22**
Sulphur	**1**	**1**	**1**	**1**	**1**	**1**
Total	**22**	**25**	**21**	**21**	**22**	**23**

Evaluation of Potentially Feasible Water Management Strategies:

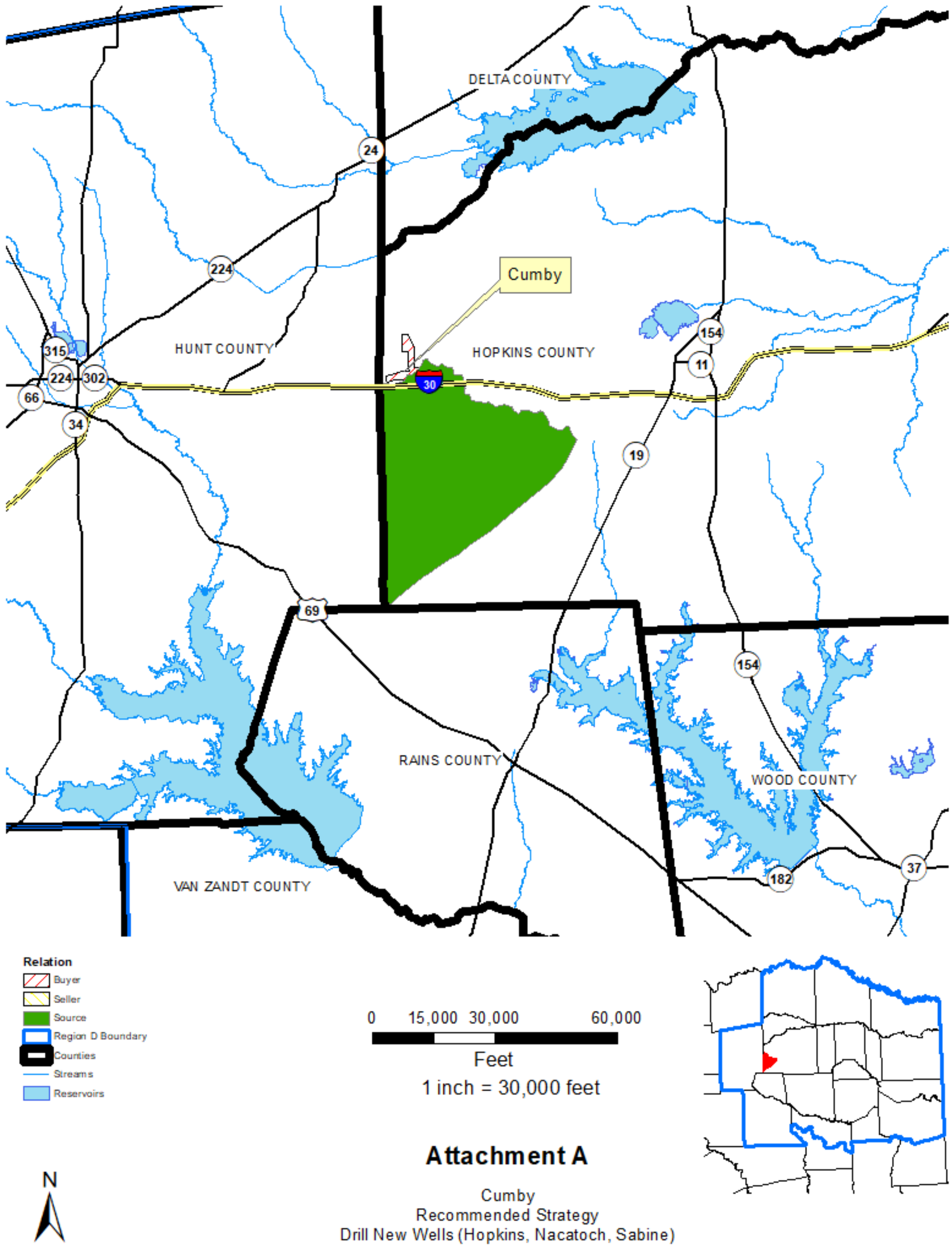
Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. The system is not presently large enough to treat surface water in a cost-effective manner. Additional groundwater from the Nacatoch Aquifer can be considered as a potential water management strategy but since it has Projected Surplus it is not recommended. The most recent water loss audit report shows a water loss of approximately 38.36% and recommends water loss mitigation.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualiz ed Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**23**				**2**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (acft/yr)	23	22	23	23	23	22

The City of Cumby is projected to have sufficient water supply throughout the planning period, with no anticipated shortages. However, a Water Loss Reduction strategy is recommended to enhance water conservation efforts and improve system efficiency. Implementing this strategy will help the City of Cumby reduce losses and optimize available resources, ultimately allowing access to additional water supplies for future needs.



Attachment A

Cumby
Recommended Strategy
Drill New Wells (Hopkins, Nacatoch, Sabine)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN HOPKINS COUNTY

Description of Water User Group:

The Irrigation WUG in Hopkins County has a demand that is projected to remain constant at 3,910 ac-ft/yr for the planning period. The Irrigation WUG in Hopkins County is supplied by groundwater from the Carrizo-Wilcox Aquifer and run-of-river diversions from the Sabine and Sulphur Rivers at 123 acft/yr. A deficit of 3,787 ac-ft/yr is projected to occur throughout the planning period.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	3,910	3,910	3,910	3,910	3,910	3,910
Current Water Supply	123	123	123	123	123	123
Projected Supply Surplus (+)/Deficit(-)	**-3,787**	**-3,787**	**-3,787**	**-3,787**	**-3,787**	**-3,787**

Projected Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Sabine	-106	-106	-106	-106	-106	-106
Sulphur	-3,673	-3,673	-3,673	-3,673	-3,673	-3,673
Cypress	-8	-8	-8	-8	-8	-8
Total	**-3,787**	**-3,787**	**-3,787**	**-3,787**	**-3,787**	**-3,787**

Evaluation of Potentially Feasible Water Management Strategies:

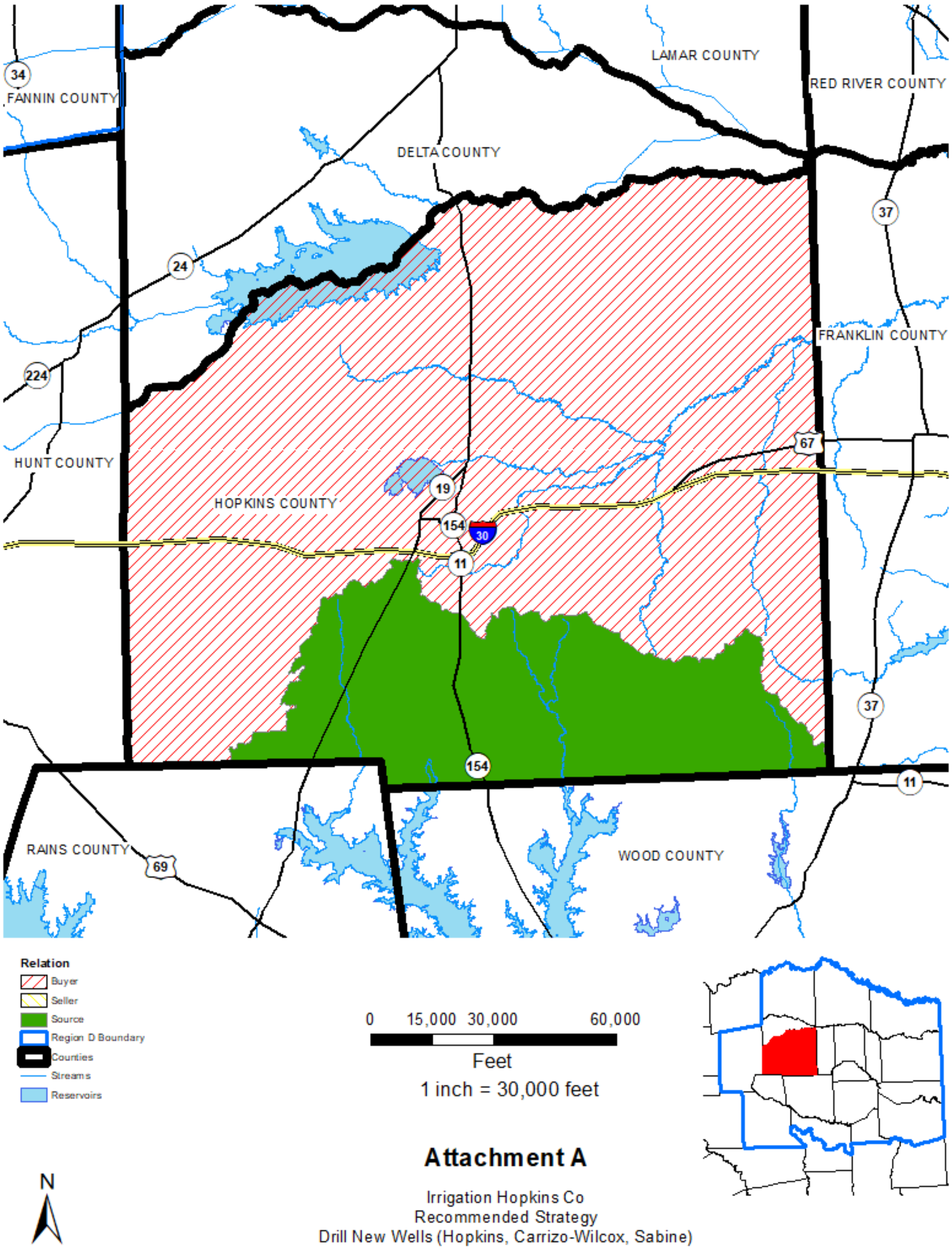
Advanced water conservation for irrigation practices was not considered, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to the distributed farm irrigation systems. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers has been identified as a potential source of water for irrigation in Hopkins County.

Strategy	Strategy Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox, Sabine Basin)	**423**	**$4,745,000**	**$905,000**	**$972**	**1**
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	**43**	**$17,237,000**	**$3,656,000**	**$790**	**2**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Sabine Basin; ac-ft/yr)	**0**	**111**	**387**	**420**	**423**	**423**
Drill New Wells (Carrizo-Wilcox, Sulphur Basin; ac-ft/yr)	**43**	**42**	**41**	**41**	**39**	**39**

The recommended strategies for the Hopkins County Irrigation to meet their projected deficit of 3,787 ac-ft/yr would be to construct twelve additional water wells with a rated capacity of 300 gpm in the portion of the Carrizo-Wilcox Aquifer located in Hopkins County in the Sulphur River Basin. This portion of the Carrizo-Wilcox Aquifer is projected to have sufficient source availability to only meet a portion of the projected irrigation demands for Hopkins County. It is thus recommended that by 2040 three additional water wells with a rated capacity of 300 gpm be constructed in the portion of the Carrizo-Wilcox Aquifer located in the Sabine River Basin in Hopkins County. This portion of the aquifer is projected to have insufficient source availability to meet the remaining Hopkins County Irrigation needs over the remainder of the 2030-2080 planning period. The unmet needs remain in the WUG starting at 3,744 acft/yr in 2030 to 3,325 acft in 2080.



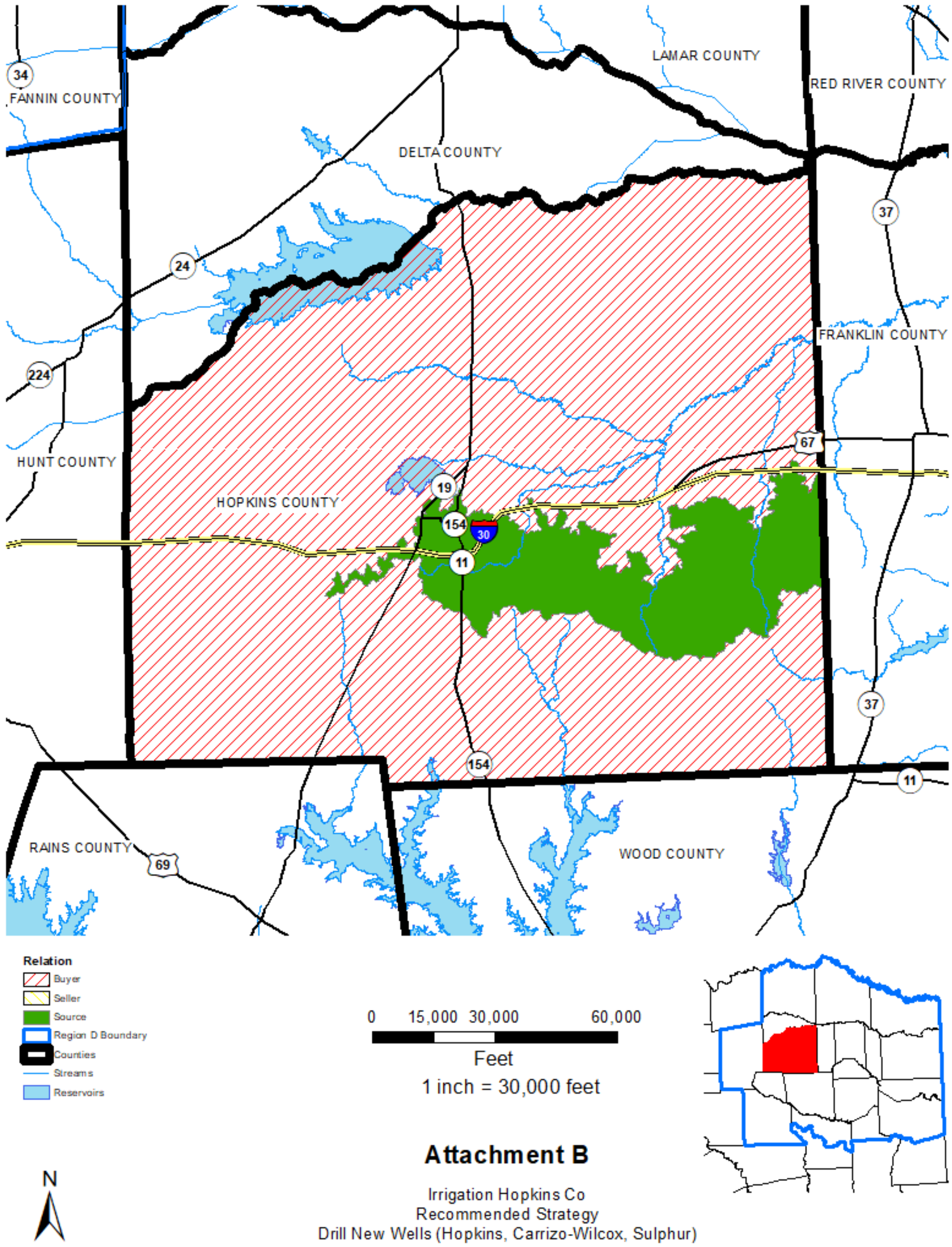
Attachment A

Irrigation Hopkins Co
Recommended Strategy
Drill New Wells (Hopkins, Carrizo-Wilcox, Sabine)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices
Hopkins County Irrigation - Drill New Wells (Hopkins, Carrizo-Wilcox Aquifer, Sabine Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$3,316,000
TOTAL COST OF FACILITIES	**$3,316,000**
- Planning (3%)	$99,000
- Design (7%)	$232,000
- Construction Engineering (1%)	$33,000
Legal Assistance (2%)	$66,000
Fiscal Services (2%)	$66,000
All Other Facilities Contingency (20%)	$663,000
Environmental & Archaeology Studies and Mitigation	$77,000
Land Acquisition and Surveying (5 acres)	$43,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$150,000
TOTAL COST OF PROJECT	**$4,745,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$334,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$33,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (796548 kW-hr @ 0.09 $/kW-hr)	$72,000
Purchase of Water (931 acft/yr @ 500 $/acft)	$466,000
TOTAL ANNUAL COST	**$905,000**
Available Project Yield (acft/yr)	931
Annual Cost of Water ($ per acft), based on PF=0	$972
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$613
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$2.98
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.88



Attachment B

Irrigation Hopkins Co
Recommended Strategy
Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Hopkins County Irrigation - Drill New Wells (Hopkins, Carrizo-Wilcox Aquifer, Suphur Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$12,092,000
TOTAL COST OF FACILITIES	**$12,092,000**
- Planning (3%)	$363,000
- Design (7%)	$846,000
- Construction Engineering (1%)	$121,000
Legal Assistance (2%)	$242,000
Fiscal Services (2%)	$242,000
All Other Facilities Contingency (20%)	$2,418,000
Environmental & Archaeology Studies and Mitigation	$233,000
Land Acquisition and Surveying (15 acres)	$137,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$543,000
TOTAL COST OF PROJECT	**$17,237,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$1,213,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$121,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (91087 kW-hr @ 0.09 $/kW-hr)	$8,000
Purchase of Water (4627 acft/yr @ 500 $/acft)	$2,314,000
TOTAL ANNUAL COST	**$3,656,000**
Available Project Yield (acft/yr)	4,627
Annual Cost of Water ($ per acft), based on PF=0	$790
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$528
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$2.42
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.62

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN HOPKINS COUNTY

Description of Water User Group:

The Livestock WUG in Hopkins County has a demand that is projected to remain constant at 4,253 ac-ft/yr for the planning period. The Livestock WUG in Hopkins County is supplied by groundwater from the Carrizo-Wilcox and Nacatoch Aquifers, livestock local supplies from the Cypress, Sulphur, and Sabine basins and surface water purchased from Sulphur Springs. A deficit of 198 ac-ft/yr is projected to occur in 2030 to 2080 in the Sabine basin. Both the Cypress and Sulphur basins are projected to have surplus water throughout the planning period. Cypress maintains a consistent surplus of 94 ac-ft/yr, while Sulphur's surplus is 60 ac-ft/yr in 2030, increasing significantly to 505 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	4,253	4,253	4,253	4,253	4,253	4,253
Current Water Supply	4,209	4,378	4,388	4,572	4,654	4,654
Projected Supply Surplus (+)/Deficit(-)	**-44**	**125**	**135**	**319**	**401**	**401**

Projected Supply Surplus (+)/Deficit(-) by Basin	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sabine	-198	-198	-198	-198	-198	-198
Sulphur	60	229	239	423	505	505
Cypress	94	94	94	94	94	94
Total	**-44**	**125**	**135**	**319**	**401**	**401**

Evaluation of Potentially Feasible Water Management Strategies:

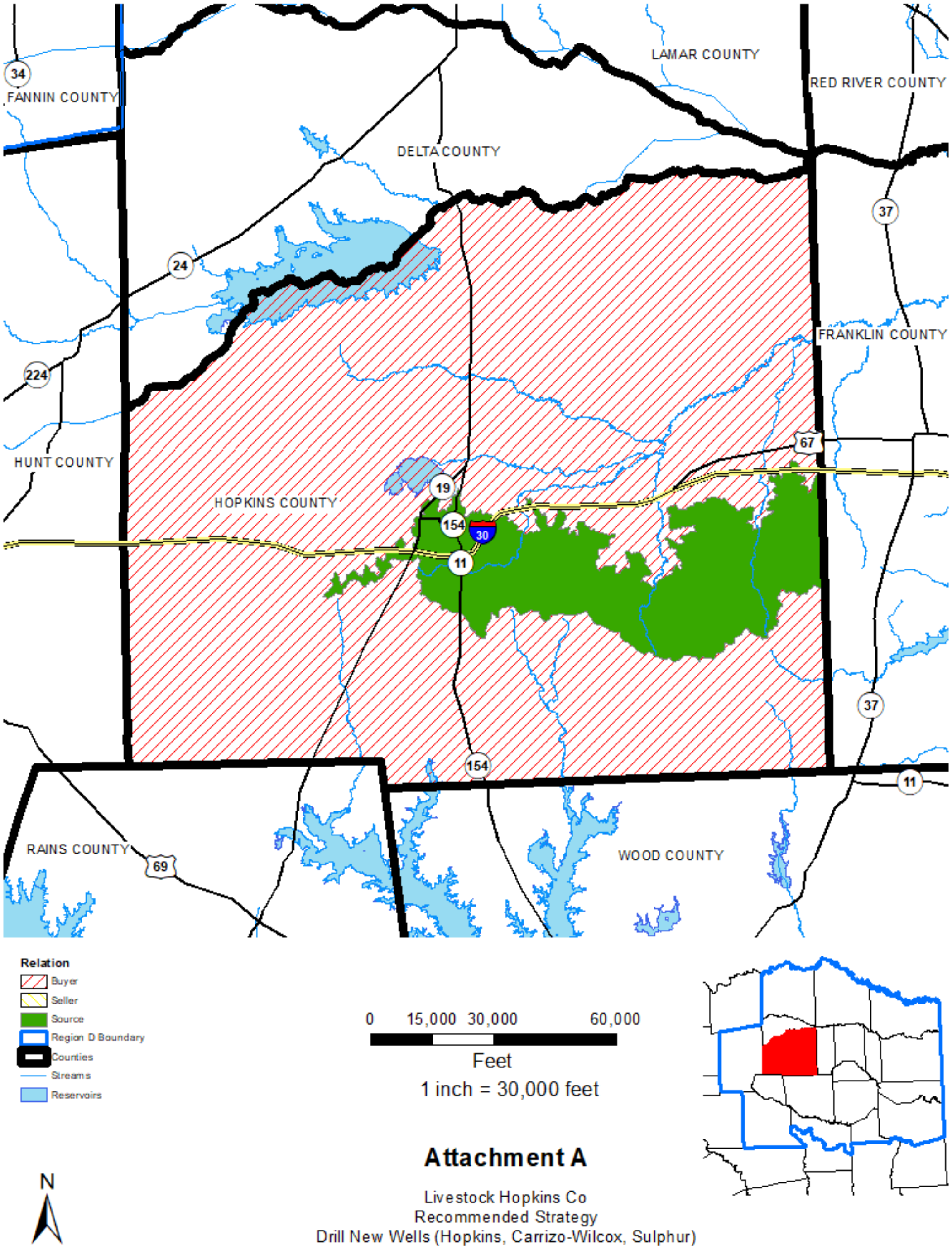
Advanced water conservation for livestock practices was not considered, as present livestock practices likely result in sale of the livestock to reduce demand and extend water supply. The use of reuse water is not considered feasible as there is no centralized water supply. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers has been identified as a potential source of water for irrigation in Hopkins County.

Strategy	Strategy Yield (AF)	Total Capital Cost	Total Annualize d Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	**13**	**$12,724,000**	**$1,591,000**	**$1,312**	**2**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Sulphur Basin; ac-ft/yr)	**10**	**11**	**11**	**12**	**13**	**13**

The recommended strategy for the Hopkins County Livestock to meet their projected deficit of 44 ac-ft/yr would be to construct additional water wells with a rated capacity of 75 gpm in the Carrizo-Wilcox/Sulphur/Hopkins aquifer. The recommended supply source will be the Carrizo-Wilcox Aquifer in Hopkins County, Sulphur River Basin. The portion of the Carrizo-Wilcox Aquifer in the Sulphur River Basin in Hopkins County is projected to have insufficient supply availability to meet the needs of Hopkins County Livestock over the planning period. The WUG has unmet needs of 34 ac-ft/yr in 2030.



Attachment A

Livestock Hopkins Co
Recommended Strategy
Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Livestock Hopkins County - Drill New Wells (Hopkins, CarrizoWilcox Aquifer, Sulphur Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
CAPITAL COST	
Dam and Reservoir (Conservation Pool acft, acres)	$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	$0
Terminal Storage (Conservation Pool acft, acres)	$0
Intake Pump Stations (0 MGD)	$0
Transmission Pipeline (None)	$0
Transmission Pump Station(s) & Storage Tank(s)	$0
Well Fields (Wells, Pumps, and Piping)	$8,785,000
Storage Tanks (Other Than at Booster Pump Stations)	$0
Water Treatment Plant (0 MGD)	$0
Advanced Water Treatment Facility (MGD)	$0
Conservation (Leaking Pipe/Meter Replacement)	$0
Integration, Relocations, Backup Generator & Other	$0
TOTAL COST OF FACILITIES	**$8,785,000**
Engineering:	
- Planning (3%)	$264,000
- Design (7%)	$615,000
- Construction Engineering (1%)	$88,000
Legal Assistance (2%)	$176,000
Fiscal Services (2%)	$176,000
Pipeline Contingency (15%)	$0
All Other Facilities Contingency (20%)	$1,757,000
Environmental & Archaeology Studies and Mitigation	$294,000
Land Acquisition and Surveying (18 acres)	$168,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$401,000
TOTAL COST OF PROJECT	**$12,724,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$895,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$88,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0

Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (15965 kW-hr @ 0.09 $/kW-hr)	$1,000
Purchase of Water (1213 acft/yr @ 500 $/acft)	$607,000
TOTAL ANNUAL COST	**$1,591,000**
Available Project Yield (acft/yr)	1,213
Annual Cost of Water ($ per acft), based on PF=0	$1,312
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$574
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.02
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.76

RSJ *2/13/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MILLER GROVE WATER SUPPLY CORPORATION

Description of Water User Group:

Miller Grove WSC provides water service in Hopkins County. It is projected that the users in the WUG will have a shortage in 2030. The WUG population is projected to be 1,384 by 2030 and increases to 1,654 by 2080. Miller Grove WSC utilizes groundwater from the Carrizo-Wilcox aquifer. Miller Grove WSC is projected to have a deficit of 36 ac-ft by 2030, increasing to 80 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,384	1,458	1,495	1,548	1,601	1,654
Projected Water Demand	232	244	250	258	268	276
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	196	196	196	196	196	196
Projected Supply Surplus (+) / Deficit (-)	**-36**	**-48**	**-54**	**-62**	**-72**	**-80**

Evaluation of Potentially Feasible Water Management Strategies:

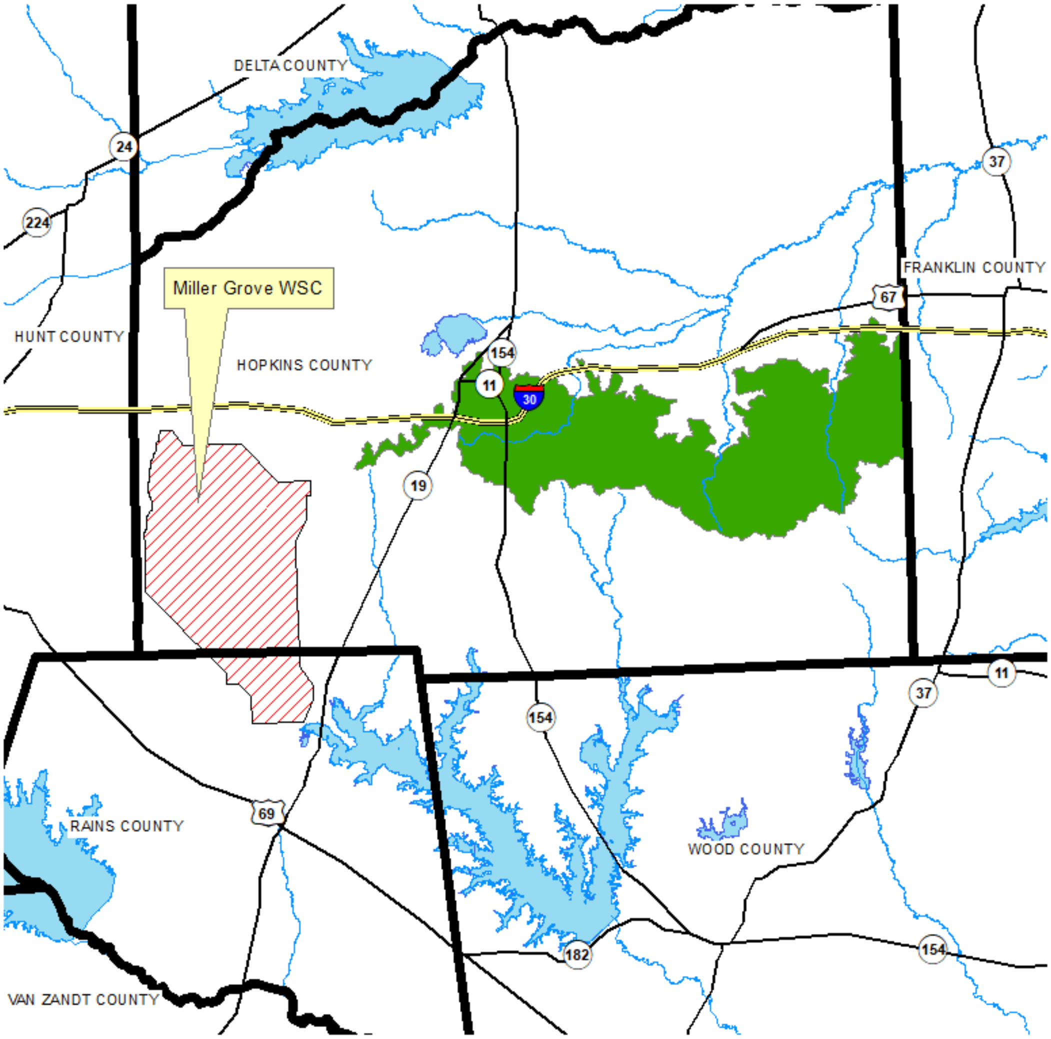
Advanced conservation was not selected because the per capita use per day was more than the 140 gpcd threshold set by the water planning group but did not satisfy the TCEQ minimum supply requirement. Reuse is not a feasible option because water supply is mainly used for public consumption. Additional use of groundwater has been identified as a potential source of water the WSC. Purchase of surface water from Chapman Lake under contract from Sulphur Springs was also considered.

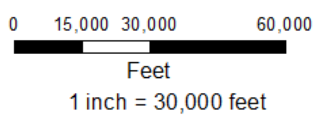
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells (Carrizo-Wilcox Aquifer, Sulphur Basin)	**80**	**$1,541,000**	**$166,000**	**$3,192**	**1**

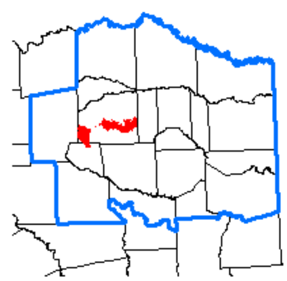
Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox Aquifer, Sabine; ac-ft/yr)	**80**	**80**	**80**	**80**	**80**	**80**

The recommended strategy for Miller Grove WSC to meet their projected deficit of 36 ac-ft/yr in 2030 and 80 ac-ft/yr in 2080 would be to construct two additional water wells with a rated capacity of 75 gpm in the Carrizo-Wilcox/Sulphur/Hopkins aquifer. Two wells with rated capacity of 75 gpm each would provide approximately 40 acre-feet each. No supply is generated from current recommended strategy, WUG has unmet needs of 36 ac-ft/yr in 2030 and 80 ac-ft/yr in 2080.







Attachment A

Miller Grove WSC
Recommended Strategy
Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices
Miller Grove WSC - Drill New Wells (Hopkins, Carrizo Wilcox Aquifer, Sulphur Basin)

Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,041,000
Water Treatment Plant (0.1 MGD)	$31,000
TOTAL COST OF FACILITIES	**$1,072,000**
- Planning (3%)	$32,000
- Design (7%)	$75,000
- Construction Engineering (1%)	$11,000
Legal Assistance (2%)	$21,000
Fiscal Services (2%)	$21,000
All Other Facilities Contingency (20%)	$214,000
Environmental & Archaeology Studies and Mitigation	$28,000
Land Acquisition and Surveying (2 acres)	$18,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$49,000
TOTAL COST OF PROJECT	**$1,541,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$108,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$10,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$18,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (41422 kW-hr @ 0.09 $/kW-hr)	$4,000
Purchase of Water (52 acft/yr @ 500 $/acft)	$26,000
TOTAL ANNUAL COST	**$166,000**
Available Project Yield (acft/yr)	52
Annual Cost of Water ($ per acft), based on PF=0	$3,192

Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$1,115
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$9.80
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$3.42
JKJ	*2/12/2025*

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

HUNT COUNTY

WUGs:

B H P WSC
Caddo Basin SUD
Caddo Mills
Cash SUD
The City of Celeste
The City of Greenville
Hickory Creek SUD
Hunt County Irrigation
North Hunt SUD
Poetry WSC
Texas A&M Commerce
The City of Wolfe City

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF B H P WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

B H P WSC provides water service in western Hunt County. The WUG population is projected to be 6,056 people in 2030 and 10,352 by the year 2080. The water supply for this WSC is treated surface water purchased from the NTMWD, the source of whose supplies derive from the NTMWD system (i.e., indirect reuse via Lake Lavon and the NTMWD reservoir system) and the Sabine River Authority's system (i.e., Lake Fork and Lake Tawakoni). The WSC is projected to have a deficit of 53 ac-ft/yr in 2030 increasing to a deficit of 414 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	6,056	7,047	7,913	8,719	9,533	10,352
Projected Water Demand	568	656	736	811	887	963
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	515	522	519	523	530	549
Projected Supply Surplus (+) / Deficit (-)	**-53**	**-134**	**-217**	**-288**	**-357**	**-414**

Evaluation of Potentially Feasible Water Management Strategies:

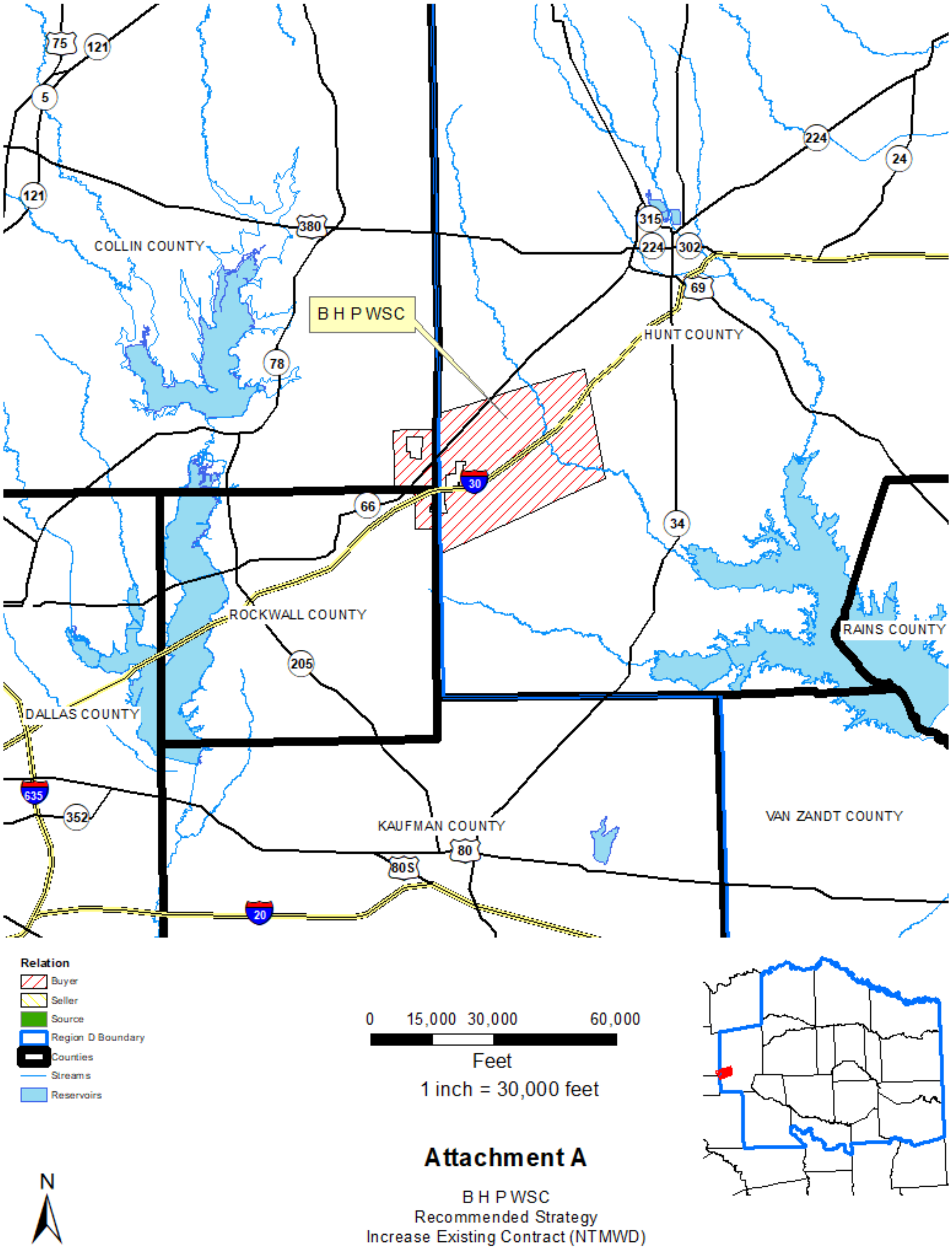
Multiple alternative strategies considered to meet B H P WSC's water supply shortages are listed in the table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. The NETRWPG has considered the conservation efforts of this WUG, and has assumed for the purposes of this plan that the WUG will ascribe to any required conservation efforts that may be applied by a wholesale water provider of either existing supply or supply from a future water management strategy. Reuse is not a feasible option because water supply is mainly used for public consumption. Potentially feasible strategies include increase of the existing contract with NTMWD. Groundwater use from the portion of the Nacatoch Aquifer located in the Sabine River Basin in Hunt County was also evaluated as a potentially feasible strategy.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	**505**	**$1,689,000**	**$416,000**	**$824**	**1**

Recommendations:

	2020	2030	2040	2050	2060	2070
Advanced Water Conservation (ac-ft/yr)	0	1	1	1	2	3
Increase Contract (NTMWD) (ac-ft/yr)	2	71	124	208	331	502

The recommended strategy for BHP WSC is to implement Advanced Water Conservation up to the amounts identified herein over the 2020-2070 planning period (consistent with preliminarily identified recommendations for conservation for this WUG from the 2021 Region C Plan), and to increase the existing contract with the NTMWD. This strategy is contingent upon Region C recommended strategies for the NTMWD.



Attachment A

B H P WSC
Recommended Strategy
Increase Existing Contract (NTMWD)

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

B H P WSC - Increase Existing Contract (NTMWD)

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018

Item	*Estimated Costs for Facilities*
ANNUAL COST	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (502 acft/yr @ 500 $/acft)	$251,000
TOTAL ANNUAL COST	**$251,000**
Available Project Yield (acft/yr)	502
Annual Cost of Water ($ per acft), based on PF=1	$500
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$500
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$1.53
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$1.53

JMP *10/5/2019*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CADDO BASIN SUD IN HUNT COUNTY

Description of Water User Group:

Caddo Basin SUD provides water service in western Hunt County and eastern Collin County. The WUG population is projected to be 18,175 in 2030 and 43,698 by the year 2080. The SUD purchases treated water from North Texas MWD and Farmersville. The SUD is projected to have a shortage beginning in 2030 based on the availability of current firm supplies from North Texas MWD. The SUD is projected to have a deficit of 198 ac-ft in 2030 increasing to a deficit of 2,615 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	18,175	26,075	35,538	38,969	41,334	43,698
Projected Water Demand	2,276	3,250	4,430	4,858	5,153	5,447
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	2,078	2,535	2,955	2,876	2,824	2,832
Projected Supply Surplus (+) / Deficit (-)	**-198**	**-715**	**-1,475**	**-1,982**	**-2,329**	**-2,615**

Evaluation of Potentially Feasible Water Management Strategies:

Seven alternative strategies were considered to meet the SUD's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group; however, preliminary coordination with the Region C Planning Group indicates that conservation is a potential strategy for that portion of the WUG within the Region C planning area, thus conservation amounts identified by the Region C Planning Group have been incorporated herein for this WUG. Water reuse was not considered because the SUD does not have a demand for non-potable water. Groundwater was considered, but the SUD has previously indicated that it currently purchases treated water from NTMWD and is planning to meet its future needs from water purchases. Thus, the SUD could potentially increase existing contracts with NTMWD. Another potentially feasible contract increase could be from the City of Farmersville. The SUD also has an existing emergency interconnect with the City of Greenville, thus, a contract with the City of Greenville was considered.

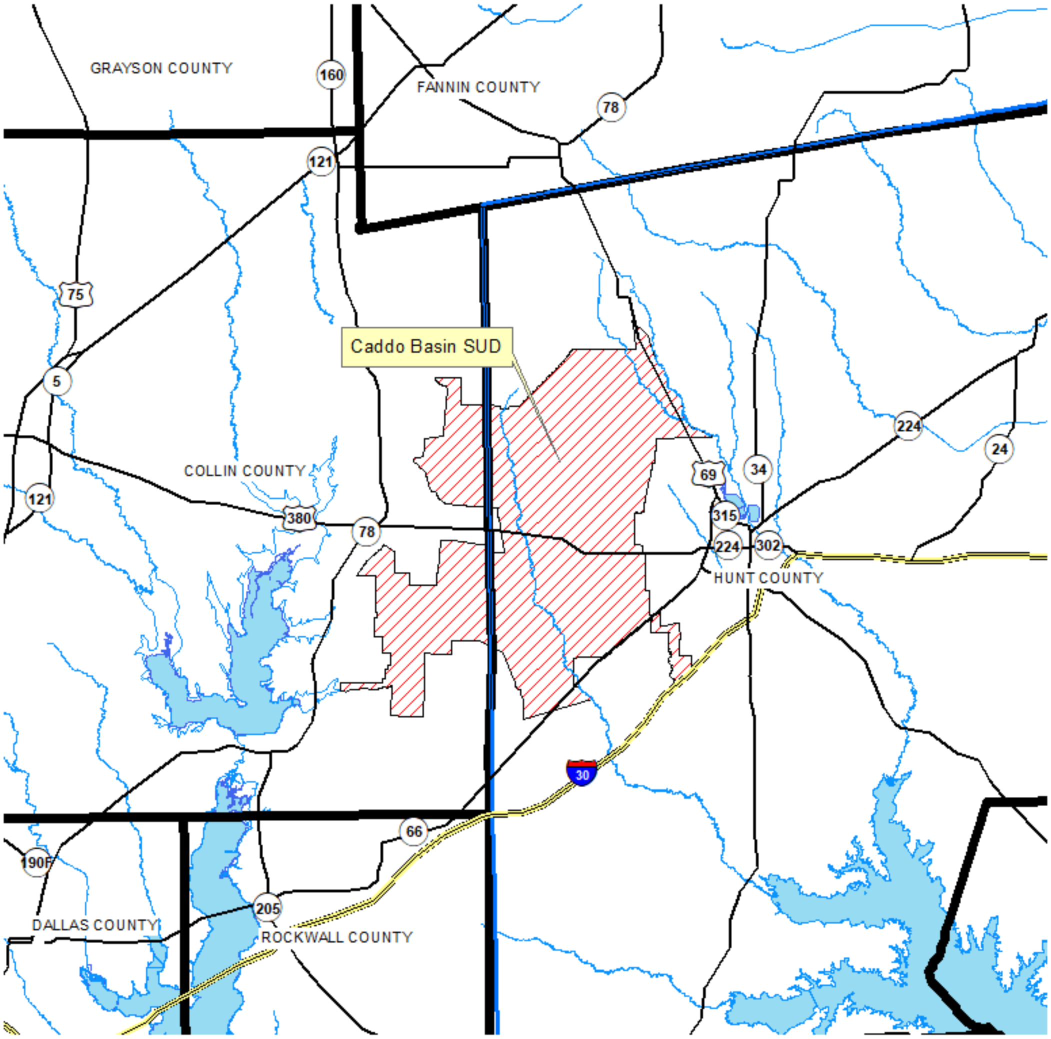
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation (Region C Portion)	**18**	**$0**	**$0**	**$0**	**1**
Water Reuse	**0**	**-**	**-**	**-**	**-**
Ground Water (Hunt, Woodbine Aquifer, Trinity)	**0**	**-**	**-**	**-**	**-**
Increase Existing Contract (NTMWD)	**1,848**	**$0**	**$421,000**	**$228**	**1**
Increase Existing Contract (Farmersville)	**1,848**	**$0**	**$421,000**	**$228**	**1**
New Contract (Greenville)	**1,866**	**$2,473,000**	**$1,889,000**	**$1,012**	**1**

Recommendations:

	2020	2030	2040	2050	2060	2070

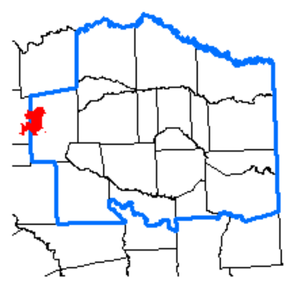
Advanced Water Conservation (Region C Portion; ac-ft/yr)	**2**	**4**	**4**	**7**	**12**	**18**
Increase Contract (NTMWD; ac-ft/yr)	**5**	**216**	**402**	**715**	**1,190**	**1,848**

The recommended strategy for Caddo Basin SUD is to implement Advanced Water Conservation up to the amounts identified herein over the 2030-2080 planning period (consistent with preliminarily identified recommendations for conservation for this WUG for the 2026 Region C Plan), and to increase the existing contract with the NTMWD. This strategy is contingent upon Region C recommended strategies for the NTMWD.



Relation
- Buyer
- Seller
- Source
- Region D Boundary
- Counties
- Streams
- Reservoirs

0 15,000 30,000 60,000
Feet
1 inch = 30,000 feet



N

Attachment A

Caddo Basin SUD
Recommended Strategy
Increase Existing Contract (NTMWD)

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

Caddo Basin - Increase Existing Contract with NTMWD

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018

Item	***Estimated Costs for Facilities***
ANNUAL COST	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (1848 acft/yr @ 228 $/acft)	$421,000
TOTAL ANNUAL COST	**$421,000**
Available Project Yield (acft/yr)	1,848
Annual Cost of Water ($ per acft), based on PF=1	$228
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$228
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$0.70
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$0.70

JMP *10/5/2019*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CADDO MILLS IN HUNT COUNTY

Description of Water User Group:

The City of Caddo Mills provides water service in Hunt County. This City's population is projected to be 1,083 by 2030 and increase to 1,186 by 2080. The City purchases treated water from the City of Greenville and Cash SUD and is projected to have a shortage beginning in 2030 based on the availability of current supplies to Greenville. Caddo Mills is projected to have a surplus in the planning period.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,083	1,103	1,123	1,143	1,165	1,186
Projected Water Demand	153	155	158	161	164	167
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	253	268	309	376	386	386
Projected Supply Surplus (+) / Deficit (-)	**100**	**113**	**151**	**215**	**222**	**219**

Evaluation of Potentially Feasible Water Management Strategies:

Caddo Mills is projected to have a surplus of supply thus only strategies related to water conservation were evaluated. Advanced conservation was not considered feasible because the per capita use per day was below the 140 gpcd threshold set by the planning group. A water loss reduction strategy is recommended based on reported total water loss percentage of 28.4%.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**22**				**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	21	21	21	22	22	22

The recommended strategy for the City of Caddo Mills to implement a water loss reduction strategy to preserve existing supplies.

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CASH SUD IN HUNT COUNTY

Description of Water User Group:

Cash SUD provides water in the south-central portion of Hunt County and small areas of northwestern Rains County, western Hopkins County, and eastern Rockwall County from purchased surface water supplies from the North Texas Municipal Water District (NTMWD) and the Sabine River Authority for supplies out of Lake Fork and Lake Tawakoni. Over 90% of the SUD's demand is located in Region D (Hunt County), with less than 10% in Region C (Rockwall County). In both regions, the system is projected to serve a total of 23,51 people in 2030 and 39,330 people by the year 2080. Cash SUD is projected to have a supply deficit of 513 ac-ft/yr by 2070 increasing to 970 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

In coordination with Cash SUD and Region C, the below summarization of Cash SUD supplies and demands has been developed.

Cash Special Utility District (Region C & D)

(Values in Ac-Ft/Yr)	Projected Population and Demand					
	2030	2040	2050	2060	2070	2080
Projected Region Population (C&D)	**23,510**	**27,252**	**31,197**	**34,545**	**36,139**	**39,330**
Projected Region Population (D)	20,533	23,302	26,069	28,178	28,409	30,101
Projected Region Population (C)	2,977	3,950	5,128	6,367	7,730	9,229
Projected Water Demand						
Municipal Demand (Region D)	2,591	2,927	3,274	3,539	3,568	3,781
Municipal Demand (Region C)	376	496	644	800	971	1,159
Total Projected Total Demand	***2,967***	***3,423***	***3,918***	***4,339***	***4,539***	***4,940***
Currently Available Water Supplies						
North Texas Municipal Water District	1,023	874	747	663	615	582
Sabine River Authority (current and future)	2,253	3,058	3,844	4,096	3,411	3,388
Total Current Supplies	***3,276***	***3,932***	***4,591***	***4,759***	***4,026***	***3,970***
Surplus/(Shortage)	***309***	***509***	***673***	***420***	***(513)***	***(970)***
Water Management Strategies						
Additional Delivery Infrastructure from NTMWD	*332*	*688*	*1,025*	*1,353*	*1,352*	*1,343*
Total Water Management Strategies	***337***	***696***	***1,035***	***1,364***	***1,366***	***1,361***

Evaluation of Potentially Feasible Water Management Strategies:

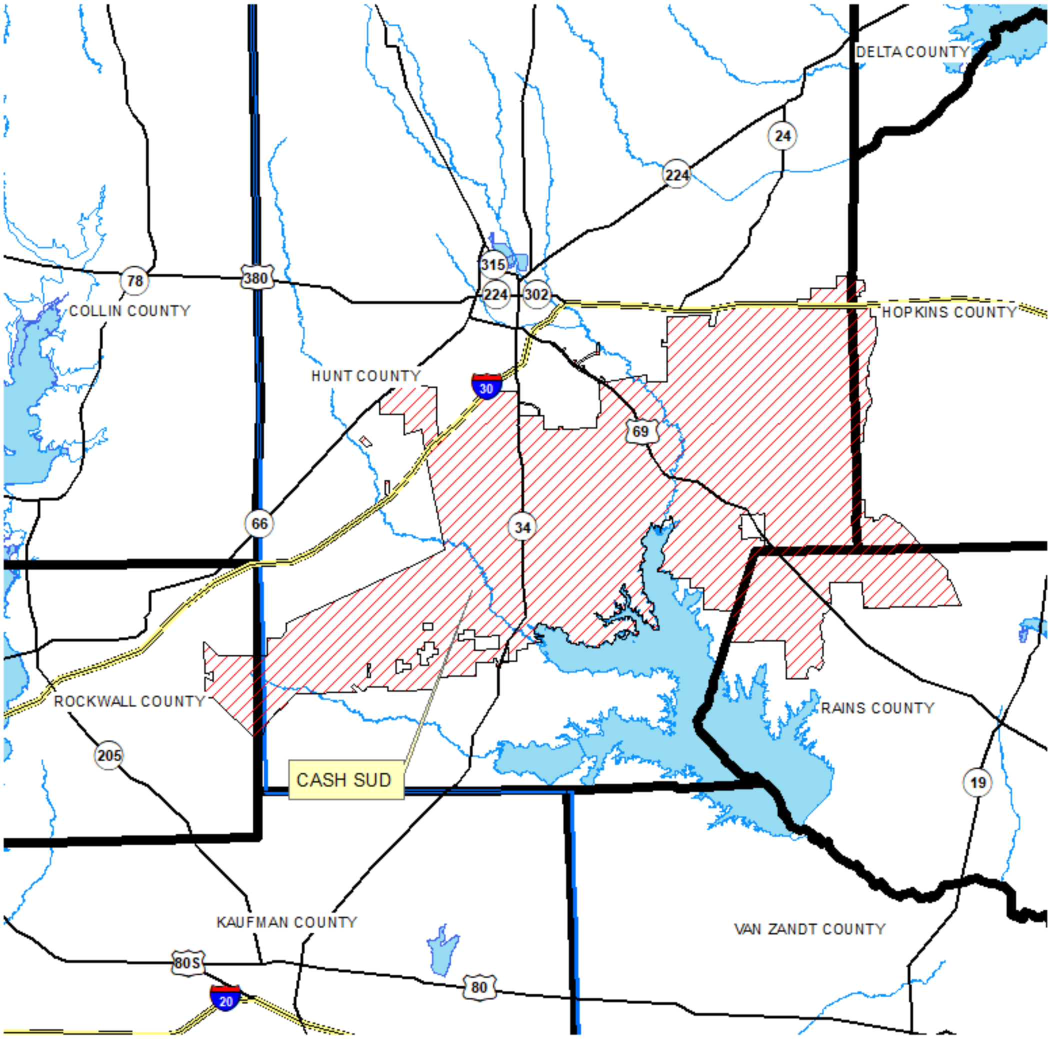
Cash SUD has a contract with NTMWD for 1.0 MGD (1,020 ac-ft/yr). Additional supply comes from the SRA. Cash SUD operates its own water treatment plant within Region D to treat the supply from SRA. The water management strategies for Cash SUD include conservation, acquisition of additional supplies from NTMWD, including additional delivery infrastructure.

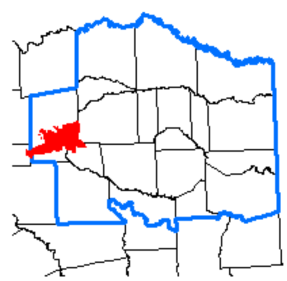
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Increase Contract w/ NTMWD (contingent upon Region C NTMWD WMS)	**1,353**	**$8,272,000**	**$2,965,000**	**$2,198**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (ac-ft/yr)	**5**	**8**	**10**	**11**	**14**	**18**
Increase Contract (NTMWD; ac-ft/yr)	**332**	**688**	**1,025**	**1,353**	**1,352**	**1,343**

The NETRWPG recommends Cash SUD increase its' existing contract with the NTMWD, contingent upon Region C NTMWD strategies. The NETRWPG supports the recommendation (as previously indicated by Region C for the purposes of the 2016 Plan) for construction of a new 16" transmission line from Fate to Union Valley, for an approximate cost of $6 million. The NETRWPG also supports the strategy recommendation from Region C for advanced water conservation for Cash SUD.





Attachment A

Cash SUD
Recommended Strategy
Increase Contract w/ NTMWD (contingent upon Region C NTMWD WMS)

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices

Cash SUD - Increase Contract with NTMWD

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018

Item	***Estimated Costs for Facilities***
Transmission Pipeline (16 in dia., 10 miles)	$6,000,000
TOTAL COST OF FACILITIES	**$6,000,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$1,800,000
Environmental & Archaeology Studies and Mitigation	$250,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	$222,000
TOTAL COST OF PROJECT	**$8,272,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$582,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$60,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.08 $/kW-hr)	$0
Purchase of Water (1353 acft/yr @ 1723 $/acft)	$2,331,000
TOTAL ANNUAL COST	**$2,973,000**
Available Project Yield (acft/yr)	1,353
Annual Cost of Water ($ per acft), based on PF=1	$2,198
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$1,762
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$6.74
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$5.42

Note: One or more cost element has been calculated externally

JMP *10/3/2019*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CELESTE

Description of Water User Group:

The City of Celeste is a small public water supply located in northwest Hunt County. The system is projected to serve 826 people in 2030 and 996 people by the year 2080. The current sources of supply are two wells into the Woodbine Aquifer with production capacities of 150 gpm and 200 gpm. The City provides water to its own customers in the Sabine River Basin and is projected to have a water supply deficit of 14 ac-ft/yr in 2030 increasing to 35 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	826	870	908	937	967	996
Projected Water Demand	109	114	119	123	127	130
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	95	95	95	95	95	95
Projected Supply Surplus (+) / Deficit (-)	**-14**	**-19**	**-24**	**-28**	**-32**	**-35**

Evaluation of Potentially Feasible Water Management Strategies:

Multiple alternative strategies considered to meet Celeste's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcd. The purchase of surface water from the City of Greenville and construction of a treated water pipeline was identified as a potentially feasible strategy and evaluated. Additional supplies from the City of Greenville would be contingent upon City of Greenville water strategies. Pumping of additional groundwater from the Woodbine Aquifer was also considered as an alternative for this entity. There is sufficient source availability in the Woodbine Aquifer through 2080.

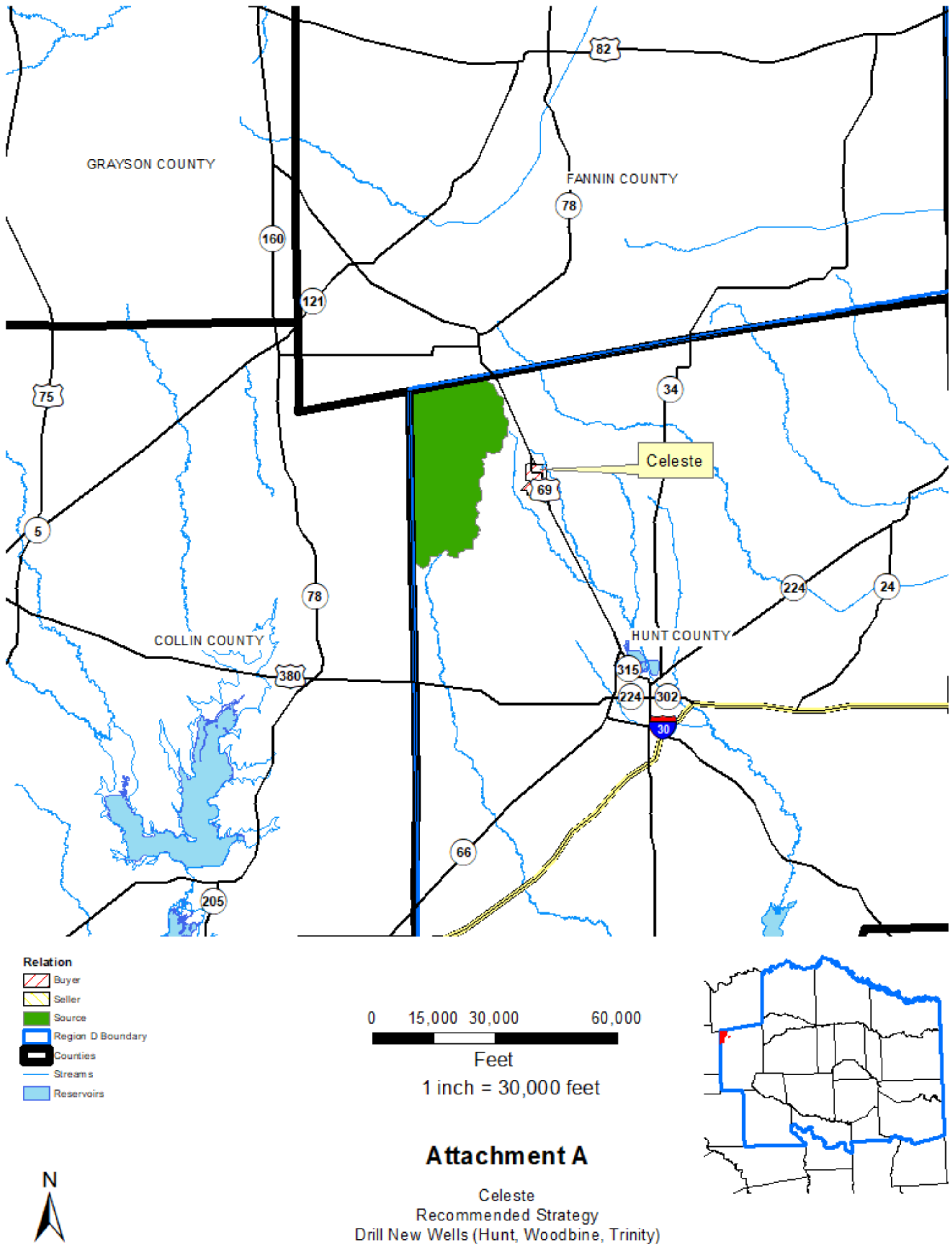
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Drill New Wells (Woodbine, Trinity Basin)	**35**	**$1,965,000**	**$187,000**	**$5,343**	**1**
New Contract and Treated Water Pipeline (Greenville, contingent on Seller WMS)	**35**	**$15,328,000**	**$1,222,000**	**$34,914**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Woodbine, Trinity Basin; ac-ft/yr)	**14**	**19**	**24**	**28**	**32**	**35**

The recommended strategy for the City of Celeste to meet their projected deficit of 14 ac-ft/yr in 2030 and 35 ac-ft/yr in 2080 would be to construct an additional water well and a contingency well similar to their existing wells in 2030. The recommended supply source will be the Woodbine Aquifer in Hunt County. One well with rated capacity of 150 gpm would provide over 35 acre-feet each. The portion of the Woodbine Aquifer in Hunt County within the Trinity River Basin is projected by Region D to have a more than ample supply availability to meet the needs of the City of Celeste through 2080.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



Attachment A

Celeste
Recommended Strategy
Drill New Wells (Hunt, Woodbine, Trinity)

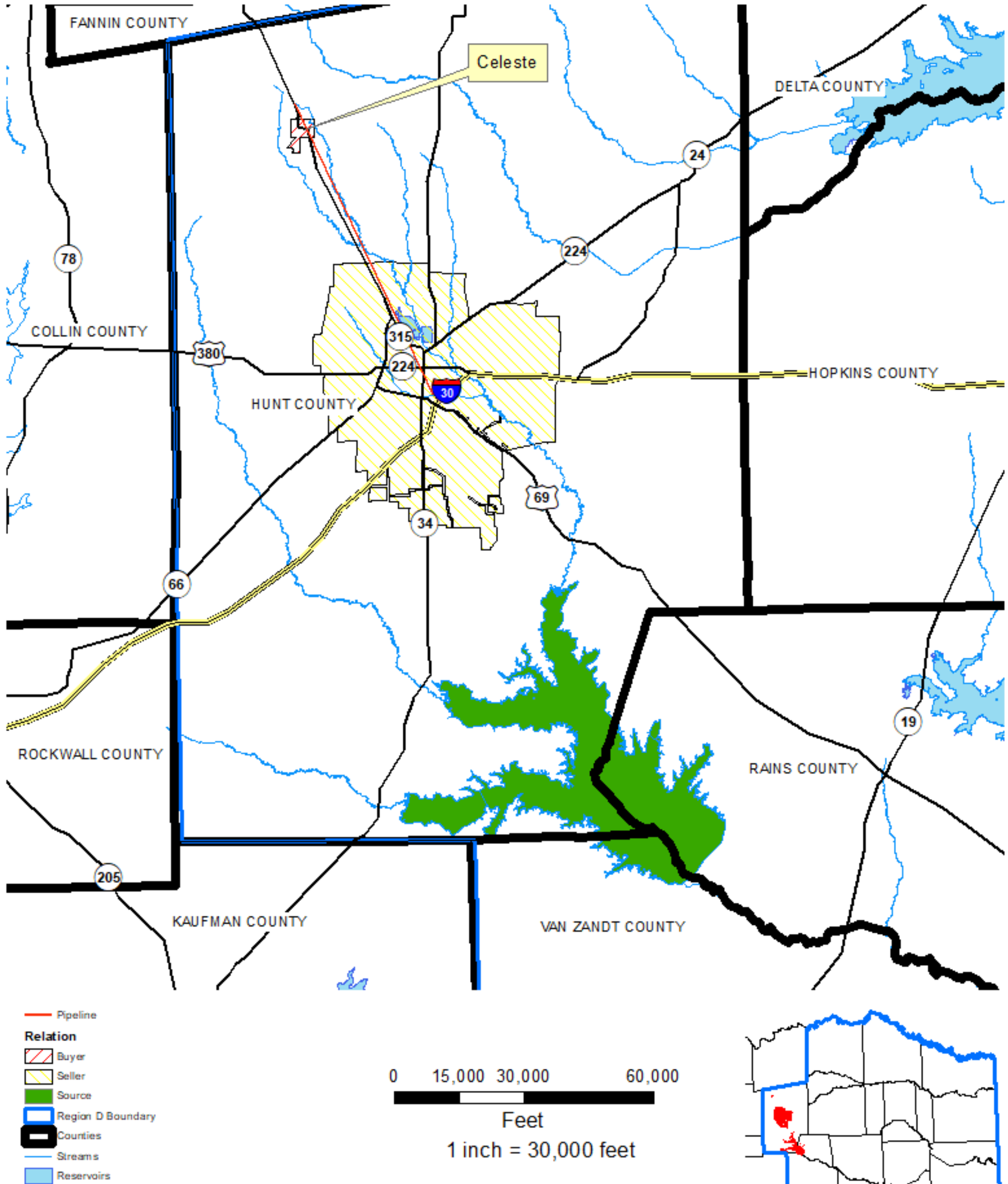
Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Celeste - Drill New Wells (Hunt, Woodbine Aquifer, Trinity Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,316,000
Water Treatment Plant (0.2 MGD)	$39,000
TOTAL COST OF FACILITIES	**$1,355,000**
- Planning (3%)	$41,000
- Design (7%)	$95,000
- Construction Engineering (1%)	$14,000
Legal Assistance (2%)	$27,000
Fiscal Services (2%)	$27,000
All Other Facilities Contingency (20%)	$271,000
Environmental & Archaeology Studies and Mitigation	$44,000
Land Acquisition and Surveying (2 acres)	$29,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$62,000
TOTAL COST OF PROJECT	**$1,965,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$138,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$13,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$23,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (145423 kW-hr @ 0.09 $/kW-hr)	$13,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$187,000**
Available Project Yield (acft/yr)	35
Annual Cost of Water ($ per acft), based on PF=0	$5,343
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$1,400

Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$16.39
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$4.30
JMP	*2/11/2025*



Attachment B

Celeste
Recommended Strategy
New Contract (Greenville) and Treated Water Pipeline

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Celeste - Drill New Wells (Hunt, Woodbine Aquifer, Trinity Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (0 MGD)	$328,000
Transmission Pipeline (8 in. dia., 12 miles)	$10,448,000
TOTAL COST OF FACILITIES	**$10,776,000**
- Planning (3%)	$323,000
- Design (7%)	$754,000
- Construction Engineering (1%)	$108,000
Legal Assistance (2%)	$216,000
Fiscal Services (2%)	$216,000
Pipeline Contingency (15%)	$1,567,000
All Other Facilities Contingency (20%)	$66,000
Environmental & Archaeology Studies and Mitigation	$414,000
Land Acquisition and Surveying (34 acres)	$405,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$483,000
TOTAL COST OF PROJECT	**$15,328,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$1,078,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$104,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$8,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (6161 kW-hr @ 0.09 $/kW-hr)	$1,000
Purchase of Water (35 acft/yr @ 883 $/acft)	$31,000
TOTAL ANNUAL COST	**$1,222,000**
Available Project Yield (acft/yr)	35

Annual Cost of Water ($ per acft), based on PF=2	$34,914
Annual Cost of Water After Debt Service ($ per acft), based on PF=2	$4,114
Annual Cost of Water ($ per 1,000 gallons), based on PF=2	$107.13
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=2	$12.62
JMP	*2/11/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF GREENVILLE

Description of Water User Group:

The City of Greenville provides water service in Hunt County. The WUG population is projected to be 54,617 in 2030 increasing to 75,417 by the year 2080. The City of Greenville uses surface water from Greenville's city lake and purchases surface water out of Lake Tawakoni from the Sabine River Authority. The City of Greenville sells water to the City of Caddo Mills, Shady Grove SUD and entities within Hunt County-Other, Manufacturing, Mining and Steam Electric WUGs in Hunt County. The City of Greenville is projected to have a deficit of 13,658 ac-ft by 2030 increasing to 21,801 ac-ft/yr by 2080. When incorporating projected treated water demands of existing customers, the projected deficit ranges from 12,829 ac-ft in 2030 to 21,296 ac-ft in 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	54,617	61,479	65,416	68,708	72,042	75,417
Projected Water Demand	19,410	21,807	23,203	24,371	25,554	26,751
Existing Water Demand from other entities	4,234	4,402	4,583	4,756	4,875	5,061
Current Total (Raw & Treated) Water Supply	13,959	13,959	13,959	13,959	13,959	13,959
Projected Supply Surplus (+) / Deficit (-)	**-13,658**	**-16,254**	**-17,865**	**-19,224**	**-20,604**	**-21,801**

Treated Supply Analysis	2030	2040	2050	2060	2070	2080
Projected Greenville WUG Water Demand	19,410	21,807	23,203	24,371	25,554	26,751
Existing Treated Water Demand from other entities	2,131	2,373	2,647	2,910	3,204	3,257
Existing Customer Projected Needs	0	0	0	0	0	0
Current Treated Water Supply	8,712	8,712	8,712	8,712	8,712	8,712
Existing Treated Supply to WUG (Greenville City Lake/Reservoir)	3,215	3,215	3,215	3,215	3,215	3,215
Existing Treated Supply to WUG (Tawakoni Lake/Reservoir)	3,366	3,124	2,850	2,587	2,293	2,240
Projected Treated Supply Surplus (+) / Deficit (-)	**-12,829**	**-15,468**	**-17,138**	**-18,569**	**-20,046**	**-21,296**

Evaluation of Potentially Feasible Water Management Strategies:

Multiple alternative strategies have been identified and evaluated to meet the City of Greenville's water supply shortages as summarized in the below table. Advanced conservation is recommended as the gpcd associated with the projected population and demand is approximately 322 gpcd. The City of Greenville's 2019 water conservation plan utilizes a base per capita water use of 156 gpcd. Thus, the recommended advanced water conservation strategy is to achieve the identified per capita water use of 156 gpcd. A water loss reduction strategy is recommended based on reported total water loss percentage of 18.3%. Water reuse was not considered because the City has not presently identified a demand for non-potable reuse water. Groundwater was not determined to be feasible due to limited availability and the City's current utilization of surface water supplies.

Potentially feasible surface water strategies include the purchase of water out of Chapman Lake from either the City of Sulphur Springs and/or NTMWD, and purchase of raw water from the Sabine River Authority's proposed Toledo Bend Transfer. To utilize the City of Sulphur Springs supply from Chapman Lake, one strategy would necessitate that the City construct an intake structure, pump station, pipeline, and new Water Treatment Plant (WTP) to bring water from Chapman Lake to the City. The City has previously evaluated the feasibility of a water swap whereby the City would obtain NTMWD supply from Chapman Lake (via construction of a tie-in pipeline to NTWMD's existing raw water line) in a 1-to-1 exchange for Greenville's supply from Lake Tawakoni. Since this strategy would not produce additional supply for the City, it has not been included herein as a feasible strategy to produce additional supply. However, given the identified need, a strategy to purchase supply from NTMWD and construct a tie-in pipeline has been identified and evaluated.

Because the City of Greenville currently provides wholesale water to a number of entities in the surrounding area, shortages for Caddo Mills, Hunt County-Other were included in the analysis of needed supply for Greenville under the assumption that Greenville could sell treated and untreated water, as needed, to these other entities.

The City of Greenville's existing water treatment plant was expanded to a capacity of 14 MGD. Based on TWDB projections, the City will need to expand WTP capacity by 2030 to accommodate projected demand for the City and its customers. The City's 2021 Water Distribution Master Plan identifies replacement of existing raw water transmission lines, additional raw water intake pumps, and the construction of a new WTP in phased development starting at 8 MGD with two 8 MGD expansions to an ultimate capacity of 24 MGD. This strategy would provide 38 MGD of raw water intake, transmission and treatment capacity with a peaking factor of 1.8, which would equate to 23,648 ac-ft/yr. However, the firm yield resulting from this strategy is reduced to reflect the additional supply made accessible in excess of the original transmission and treatment capacities, thus 12,571 ac-ft/yr of firm supply is made available as limited by the 21,283 ac-ft contract supply with SRA and the existing 8,712 ac-ft/yr of treatment capacity.

To meet projected demands for the City along with the other existing and potential customers, the City of Greenville would need to implement a voluntary reallocation of surplus supplies to Hunt County Manufacturing.

Projected demands for Steam Electric power generation are associated with a 1,750 MW combined cycle generation facility at Greenville.

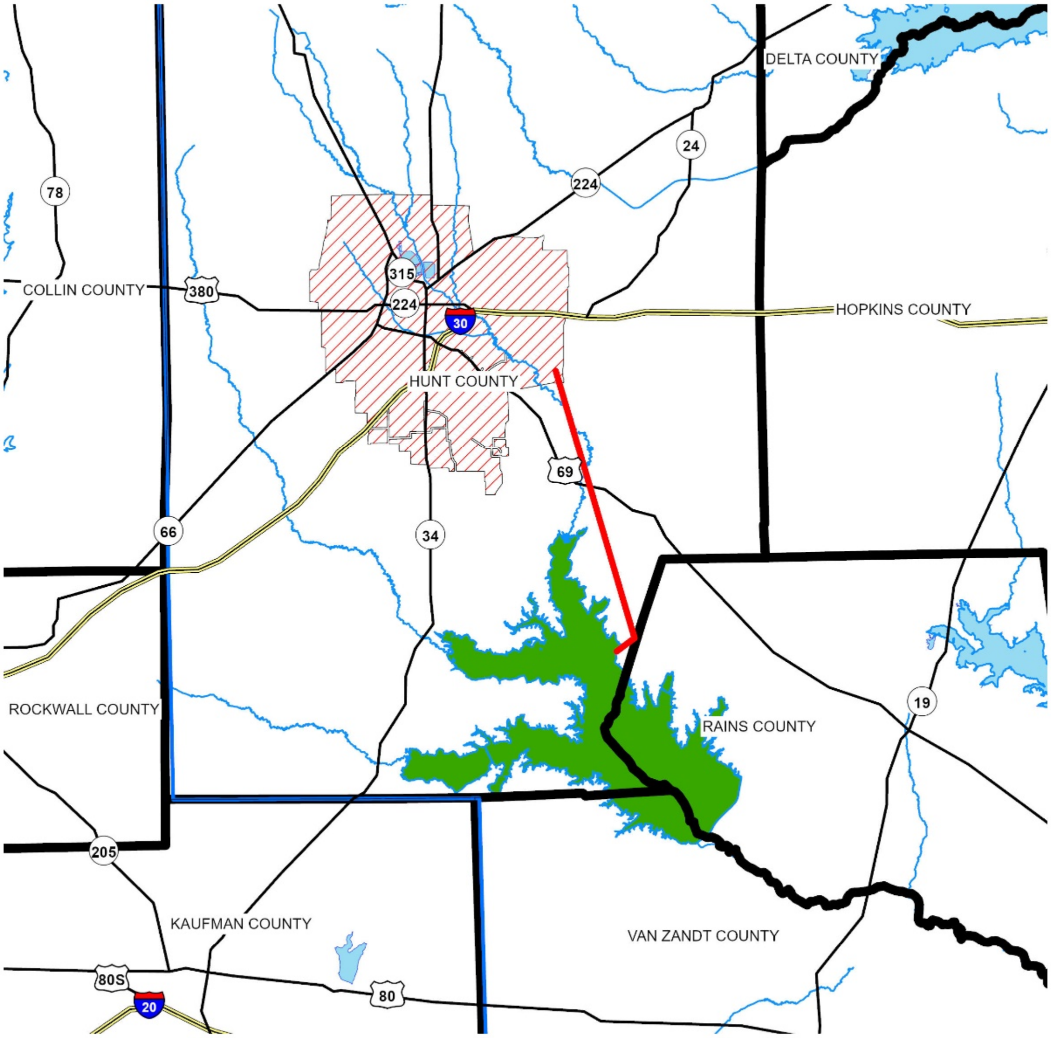
Strategy	Firm Yield (ac-ft)	Start Year	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Advanced Water Conservation	13,572	2030	0	$9,283,000	$684	
Water Loss Reduction	869	2030				1
Voluntary Reallocation of Hunt County Other Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)	354	2030	$0	$0	$0	1
Voluntary Reallocation of Hunt Manufacturing Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)	455	2030	$0	$0	$0	1
New WTP (24 MGD) with Raw Water Intake Pump and Transmission Pipeline	12,571	2030	$368,374,000	$36,288,000	$2,887	1

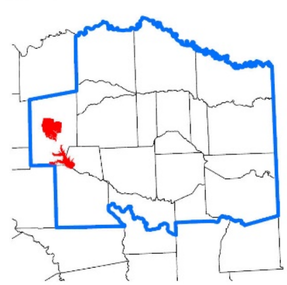
Upgrade						
Chapman Intake, Pump Station, and Raw Water Pipeline (contingent on City of Sulphur Springs Strategies)	500	2070	$60,235,000	$4,851,000	$9,702	3
Toledo Bend Tie-In Pipeline	500	2070	$12,559,000	$1,112,000	$2,224	3
Chapman Raw Water Tie-In Pipeline (purchase from NTMWD)	500	2070	$10,389,000	$945,000	$1,890	2

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation	**1,668**	**4,040**	**6,716**	**9,517**	**12,562**	**13,572**
Water Loss Reduction	**631**	**709**	**754**	**792**	**831**	**869**
Voluntary Reallocation of Hunt Manufacturing Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)	**455**	**455**	**455**	**455**	**455**	**455**
New WTP (24 MGD) with Raw Water Intake Pump and Transmission Pipeline Upgrade	**12,571**	**12,571**	**12,571**	**12,571**	**12,571**	**12,571**

The recommended strategies to meet the projected demands of the City of Greenville and its wholesale customers (both existing and identified potential future customers) first includes advanced water conservation efforts to reduce projected demand rate from 322 gpcd to 156 gpcd as well as water loss reduction to reduce system loss from 18.3%. Also by 2030, a new 24 MGD WTP (potentially constructed in phased) and raw water intake pump and transmission line upgrades should be constructed. This will allow the provision of additional treated supply capacity up to 12,571 ac-ft/yr. By 2030, voluntary reallocation of Hunt Manufacturing surplus supply is recommended as well.





Attachment A

Greenville
Recommended Strategy
New WTP

Cost Estimate Summary *Water Supply Project Option* *September 2023 Prices* *Greenville - Raw Water Transmission Line Replacement*	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Intake Pump Stations (0 MGD)	$22,128,000
Transmission Pipeline (42 in. dia., 68.2 miles)	$116,751,000
Transmission Pump Station(s) & Storage Tank(s)	$26,043,000
Two Water Treatment Plants (8 MGD and 16 MGD)	$100,717,000
Integration, Relocations, Backup Generator & Other	$610,000
TOTAL COST OF FACILITIES	**$266,249,000**
- Planning (3%)	$7,987,000
- Design (7%)	$18,637,000
- Construction Engineering (1%)	$2,662,000
Legal Assistance (2%)	$5,325,000
Fiscal Services (2%)	$5,325,000
Pipeline Contingency (15%)	$17,513,000
All Other Facilities Contingency (20%)	$29,900,000
Environmental & Archaeology Studies and Mitigation	$2,283,000
Land Acquisition and Surveying (77 acres)	$916,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$11,577,000
TOTAL COST OF PROJECT	**$368,374,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$25,876,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$1,213,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$1,106,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$7,192,000
Advanced Water Treatment Facility	$0

Pumping Energy Costs (10010136 kW-hr @ 0.09 $/kW-hr)	$901,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$36,288,000**
Available Project Yield (acft/yr)	12,571
Annual Cost of Water ($ per acft), based on PF=1.8	$2,887
Annual Cost of Water After Debt Service ($ per acft), based on PF=1.8	$828
Annual Cost of Water ($ per 1,000 gallons), based on PF=1.8	$8.86
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1.8	$2.54
JMP	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF HICKORY CREEK SUD IN HUNT COUNTY

Description of Water User Group:

Hickory Creek SUD provides water in northwestern Hunt County and small areas of eastern Collin and southern Fannin counties from four wells in the Woodbine Aquifer in Hunt County, having a total rated capacity of 1402 gpm, or 754 ac-ft/yr. The projected water groundwater availability limits this supply to approximately 349 ac-ft/yr based on Modeled Available Groundwater (MAG) results. Over 90% of the SUD's demand is located in Region D (Hunt County), with less than 10% in Region C (Collin and Fannin Counties). In both regions, the system is projected to serve a total of 3,872 people in 2030 and 7,403 people by the year 2080. The population and demand projections for the system are shown in the table below. In Hunt County, Hickory Creek SUD is projected to have a water supply deficit of 224 ac-ft/yr by 2030 increasing to 766 ac-ft/yr by 2080 In Collin and Fannin Counties the projected deficit totals 34 ac-ft in 2030 increasing to 61 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	3,872	4,391	5,005	5,699	6,492	7,403
Projected Water Demand	626	709	808	919	1,047	1,195
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	368	368	368	368	368	368
Projected Supply Surplus (+) / Deficit (-)	-258	-341	-440	-551	-679	-827

Projected Supply Surplus (+) / Deficit (-) by Basin	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sabine	-90	-125	-170	-220	-276	-343
Sulphur	-92	-119	-148	-183	-222	-267
Trinity	-76	-97	-122	-148	-181	-217
Total	**-258**	**-341**	**-440**	**-551**	**-679**	**-827**

Evaluation of Potentially Feasible Water Management Strategies:

The multiple alternative strategies considered to meet Hickory Creek SUD's water supply shortages are listed in the table below. Advanced conservation is recommended as the gpcd associated with the projected population and demand is approximately 149 gpcd. Additionally, a water loss reduction strategy is recommended based on reported total water loss percentage of 43.8%. There are no significant current water needs that could be met by water reuse. Groundwater from the Woodbine Aquifer was considered because the SUD is currently using this aquifer as the source of supply for the system. Although the MAG indicates limited supply (206 ac-ft/yr by 2030), the existing production capacity of the Hickory Creek SUD is 810 ac-ft/yr (502 gpm as noted in the TCEQ PWS database). Full use of the existing system (up to an additional 462 ac-ft/yr) could meet projected demands through 2050; however, due to the limited availability of this groundwater source and lack of supporting available technical information, this aquifer is not projected to have sufficient supply to meet all of Hickory Creek SUD's shortage over the 2060-2080 period. Similarly, there are potentially available supplies from the Nacatoch Aquifer, however supplies are limited and insufficient considering other WUG's which may also seek to develop the supply. Additional supplies are limited from the Trinity Aquifer in Hunt County to satisfy the remainder of Hickory Creek SUD's needs.

Although the SUD has previously indicated that it would continue adding wells to meet future demands, given the aforementioned present limitations regarding groundwater source availability, surface water sources were investigated to meet long-term projected water needs for the SUD.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Conservation	**35**	**$0**	**$23,940**	**$684**	
Water Loss Reduction	**344**				**1**
Drill New Wells (Woodbine Aquifer, Trinity Basin)	**230**	**$2,295,000**	**$352,000**	**$1,530**	**1**
Greenville Tie-In Pipeline	**827**	**$14,307,000**	**$1,894,000**	**$2,290**	**2**

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (ac-ft/yr)	**18**	**20**	**22**	**26**	**29**	**35**
Water Loss Reduction (ac-ft/yr)	**179**	**204**	**233**	**264**	**301**	**344**
Unmet Need	**61**	**117**	**185**	**261**	**349**	**448**

Communications with Hickory Creek SUD have indicated that this WUG intends to meet projected water needs through the construction of additional well(s) as needed. This WUG is not currently in the regulatory area of a Groundwater Conservation District, and thus has the legal capability to pursue such a strategy.

In its' evaluation of potentially feasible strategies, the NETRWPG determined that the amounts needed would exceed the amounts identified by MAG amounts for aquifer sources proximate to the WUG. A subsequent process was then performed whereby the NETRWPG exercised its' authority to determine groundwater availability within the RWPA as established by Senate Bill 1101 (passed by the 84th Texas Legislature in 2015). Broadly, this law allows a RWPG to define all groundwater availability as long as there are no GCDs within the RWPA. As noted previously, this applies only to Region D.

Through this process, the TWDB's review identified modeled estimates of compatible groundwater availability for desired future conditions for relevant aquifers which in some instances limited the determined availability. These instances were identified by TWDB's modeling to potentially result in an impact to an adjacent area outside the RWPA that does have established DFCs.

While technically this has been identified as an unmet municipal need for the purposes of the 2026 Region D Plan, it is recognized by the NETRWPG that this WUG intends to meet its' regulatory requirements through a legally implementable WMS. This groundwater strategy is not recommended for the purposes of this 2026 Region D Plan due to the aforementioned limitations in the planning process.

To meet all applicable planning requirements, the NETRWPG considered all potentially feasible strategies including drought management, which is not recommended as they each would be insufficient to meet the projected needs while meeting TCEQ regulatory minimums. In the event of a repeat of the drought of record, the NETRWPG recognizes that the groundwater approach identified by the WUG is within their legal capability to meet projected needs in a manner that ensures public health, safety, and welfare over the planning horizon. It is further recognized that as the Joint Planning Process continues, future adjustments to availability may allow the opportunity to amend this Plan if deemed necessary in the future to address all or a portion of this unmet need. Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed. The NETRWPG supports any efforts and/or studies to further evaluate and characterize groundwater availability in Hunt County, and such efforts should be considered consistent with the purposes of the 2026 Region D Plan.

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN HUNT COUNTY

Description of Water User Group:

Irrigation in Hunt County has a demand that is projected to remain constant at 316 ac-ft/yr for the planning period. The Irrigation WUG in Hunt County is supplied by groundwater from the Nacatoch Aquifer and run-of-river diversions from the Sabine and Sulphur Rivers. A deficit of 191 ac-ft/yr is projected to occur throughout the planning period.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	316	316	316	316	316	316
Current Water Supply	125	125	125	125	125	125
Projected Supply Surplus (+)/Deficit(-)	**-191**	**-191**	**-191**	**-191**	**-191**	**-191**

Projected Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Sabine	-124	-124	-124	-124	-124	-124
Sulphur	-69	-69	-69	-69	-69	-69
Trinity	0	0	0	0	0	0
Total	**-191**	**-191**	**-191**	**-191**	**-191**	**-191**

Evaluation of Potentially Feasible Water Management Strategies:

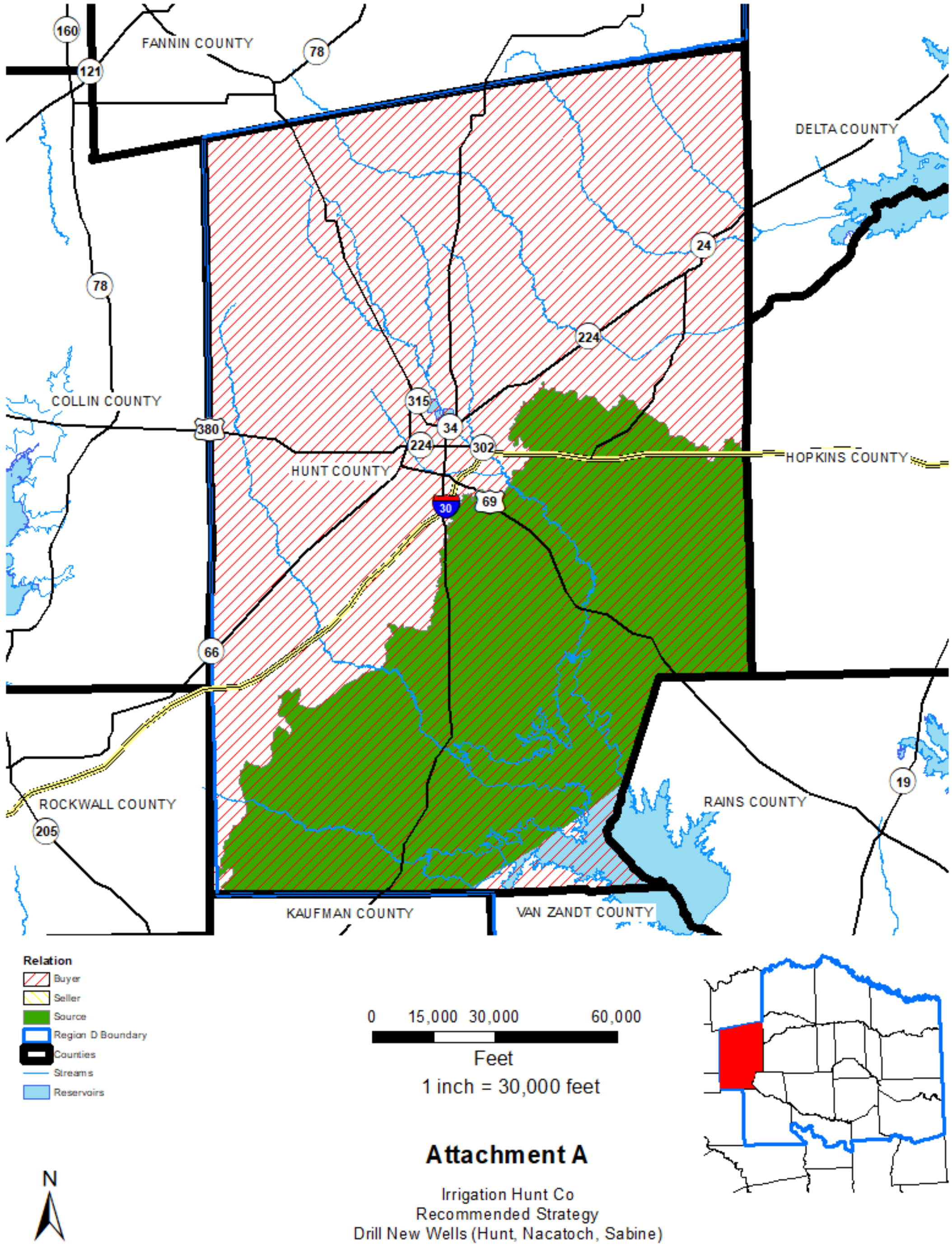
Three alternative strategies were considered to meet the Hunt County Irrigation WUG's water supply shortages. Advanced water conservation for irrigation practices were not considered in this planning effort, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to farm irrigation systems. Groundwater has been identified as a potential source of water for irrigation in Hunt County.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells (Nacatoch, Sabine)	**230**	**$2,777,000**	**$346,000**	**$1,504**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Nacatoch, Sabine; ac-ft/yr)	**230**	**230**	**230**	**230**	**230**	**230**

The recommended strategy for the Hunt County Irrigation to meet their projected deficit of 230 ac-ft/yr from 2030 to 2080 would be to construct three water wells rated at 75 gpm prior to 2030. The recommended supply source will be the Nacatoch Aquifer in Hunt County. The Nacatoch Aquifer in Hunt County, in the Sabine River Basin, is projected to have sufficient supply availability to meet the needs of the Irrigation in Hunt County for the planning period.



Attachment A

Irrigation Hunt Co
Recommended Strategy
Drill New Wells (Hunt, Nacatoch, Sabine)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Irrigation Hunt County - Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,885,000
TOTAL COST OF FACILITIES	**$1,885,000**
- Planning (3%)	$57,000
- Design (7%)	$132,000
- Construction Engineering (1%)	$19,000
Legal Assistance (2%)	$38,000
Fiscal Services (2%)	$38,000
All Other Facilities Contingency (20%)	$377,000
Environmental & Archaeology Studies and Mitigation	$88,000
Land Acquisition and Surveying (5 acres)	$55,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$88,000
TOTAL COST OF PROJECT	**$2,777,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$195,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$19,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (194358 kW-hr @ 0.09 $/kW-hr)	$17,000
Purchase of Water (230 acft/yr @ 500 $/acft)	$115,000
TOTAL ANNUAL COST	**$346,000**
Available Project Yield (acft/yr)	230
Annual Cost of Water ($ per acft), based on PF=0	$1,504
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$657
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.62
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.01

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF NORTH HUNT SUD IN HUNT COUNTY

Description of Water User Group:

North Hunt SUD provides water service in Hunt, Fannin, and Delta counties. It is projected North Hunt SUD will have a shortage in 2030. The WUG population is projected to be 2,661 in 2030 and 2,397 by the year 2080. The SUD has a contract for water supply with the City of Commerce for 663 ac-ft/yr but is projected to receive 147 ac-ft/yr, a well in Hunt County with a rating of 170 gpm, and a well in Fannin County that is rated at 318 gpm. In Hunt County, the SUD is projected to have a deficit of 172 ac-ft in 2030 decreasing to 115 ac-ft by 2080. The remainder of the SUD is projected to have a deficit of 20 ac-ft in 2030 increasing to 32 ac-ft by 2080.

Water Supply and Demand Analysis:

North Hunt SUD in Hunt County	2030	2040	2050	2060	2070	2080
Population	2,661	2,621	2,590	2,525	2,459	2,397
Projected Water Demand	388	382	377	368	358	349
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	202	202	202	202	202	202
Projected Supply Surplus (+) / Deficit (-)	**-186**	**-180**	**-175**	**-166**	**-156**	**-147**

Evaluation of Potentially Feasible Water Management Strategies:

The six alternative strategies considered to meet North Hunt SUD's water supply shortages are listed in the table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. A water loss reduction strategy is recommended based on reported total water loss percentage of 34.8%. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater from the Woodbine Aquifer was considered because North Hunt SUD is currently using this aquifer as a source of supply for the system. However, due to the limited availability of this groundwater source, this aquifer will not be able to meet all of North Hunt SUD's shortage. Additional groundwater supplies are available from the Nacatoch Aquifer has been evaluated as well.

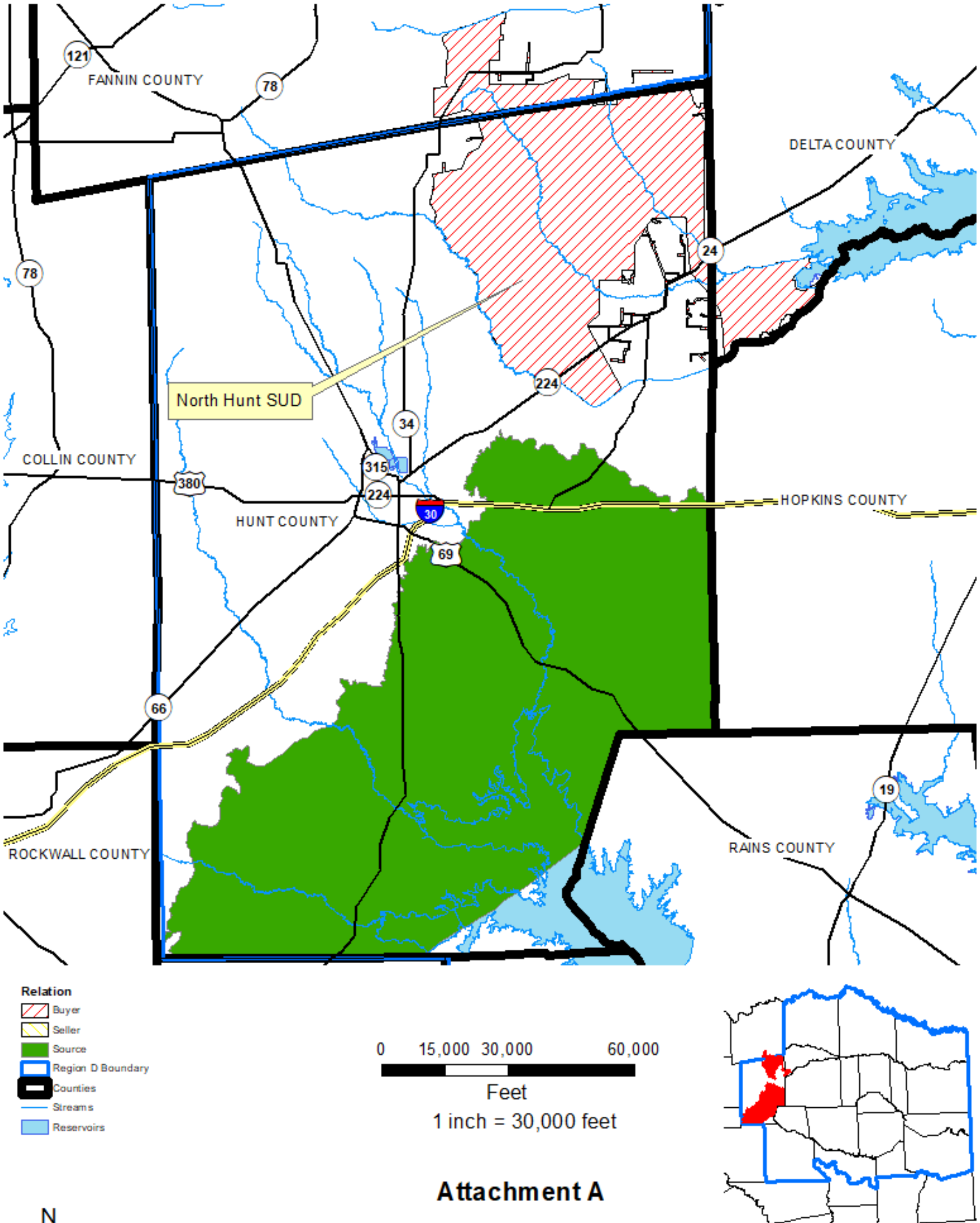
Additional purchase of water from the City of Commerce is another alternative; however, Commerce has only a limited volume, potentially available only if existing supplies to the Manufacturing WUG and the Delta County-Other WUG can be reallocated. A separate feasible strategy was considered to utilize surplus supply from Delta County MUD. The North Hunt SUD service area is contiguous with the service area for Delta County MUD, which purchases Big Creek Lake supply from the City of Cooper. North Hunt SUD could contract with the City of Cooper for water supplies from Big Creek Lake, transported via the existing connection between the City of Cooper and Delta County MUD. This strategy would require a pipeline connecting the two systems of sufficient size to provide available supplies and may require a permit amendment for additional yield potentially available from Big Creek Lake.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells (Nacatoch Aquifer, Sabine Basin)	**192**	**$2,870,000**	**$370,000**	**$1,927**	**1**
Increase Contract w/ Commerce contingent on Commerce Seller Strategy	**192**	**$0**	**$202,000**	**$1,084**	**1**
Delta County Pipeline contingent on purchase from Delta County MUD for supply from Big Creek	**100**	**$12,930,000**	**$1,102,000**	**$11,020**	**3**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Nacatoch Aquifer, Sabine Basin; ac-ft/yr)	192	192	192	192	192	192

The recommended strategy to meet North Hunt SUD's needs is to construct three (3) additional groundwater wells sufficient in capacity prior to the projected decadal need. The source of the groundwater supply is the portion of the Nacatoch Aquifer located in the Sabine Basin in Hunt County. Twenty three wells with rated capacity of 75 gpm each would provide approximately 40 acre-feet each. Availability of groundwater supplies in the Nacatoch Aquifer located in the Sabine Basin in Hunt County are projected to be adequate to meet North Hunt SUD's projected needs over the planning period.



Attachment A

North Hunt SUD
Recommended Strategy
Drill New Wells (Hunt, Nacatoch, Sabine)

Cost Estimate Summary ***Water Supply Project Option*** ***September 2023 Prices*** ***North Hunt SUD - Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)***	
Cost based on ENR CCI 13485.67 for September 2023 and ***a PPI of 278.502 for September 2023***	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,885,000
Water Treatment Plant (0.5 MGD)	$62,000
TOTAL COST OF FACILITIES	**$1,947,000**
- Planning (3%)	$58,000
- Design (7%)	$136,000
- Construction Engineering (1%)	$19,000
Legal Assistance (2%)	$39,000
Fiscal Services (2%)	$39,000
All Other Facilities Contingency (20%)	$389,000
Environmental & Archaeology Studies and Mitigation	$91,000
Land Acquisition and Surveying (5 acres)	$58,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$91,000
TOTAL COST OF PROJECT	**$2,867,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$202,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$19,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$37,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (157176 kW-hr @ 0.09 $/kW-hr)	$14,000
Purchase of Water (186 acft/yr @ 500 $/acft)	$93,000
TOTAL ANNUAL COST	**$365,000**
Available Project Yield (acft/yr)	186
Annual Cost of Water ($ per acft), based on PF=0	$1,962
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$876

Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$6.02
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.69

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF POETRY WATER SUPPLY CORPORATION

Description of Water User Group:

Poetry Water Supply Corporation (WSC) is located in southwestern Hunt County and northern Kaufman County and is situated in the Sabine and Trinity River Basins. Poetry WSC is projected to serve 3,867 people by 2030, and the population is expected to increase to 13,865 by the year 2080. The WSC's current source of supply is treated water purchased from the City of Terrell. Poetry WSC is projected to have a deficit of 39 ac-ft/yr in 2030, up to 777 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	3,867	4,698	6,403	8,868	11,937	13,865
Projected Water Demand	453	548	747	1,034	1,392	1,617
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	414	427	499	612	763	841
Projected Supply Surplus (+) / Deficit (-)	-39	-121	-248	-422	-629	-777

Evaluation of Potentially Feasible Water Management Strategies:

Listed in the table below are the five strategies that were considered to meet the water supply needs of Poetry WSC. There are no significant current water needs that could be met by water reuse. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group; however, preliminary coordination with the Region C Planning Group indicates that conservation is a potential strategy for that portion of the WUG within the Region C planning area, thus conservation amounts identified by the Region C Planning Group have been incorporated herein for this WUG. An identified feasible strategy is to increase the existing contract with Terrell via Sabine River Authority voluntary reallocation of Combined Consumers SUD surplus. The City of Terrell obtains a portion of its supply from Lake Fork via purchase from the Sabine River Authority. Combined Consumers SUD also purchases Lake Fork supply from the Sabine River Authority. A second feasible strategy is that since the City of Terrell also obtains a portion of its supply from the NTMWD reservoir system via purchase from the NTMWD, Cash SUD could increase its contract with the City of Terrell contingent upon a City of Terrell seller strategy to increase its contract with NTMWD, contingent upon recommended Region C NTMWD seller strategies. Development of groundwater supplies from the Nacatoch Aquifer, Sabine River Basin, was evaluated as a potentially cost effective approach for this entity.

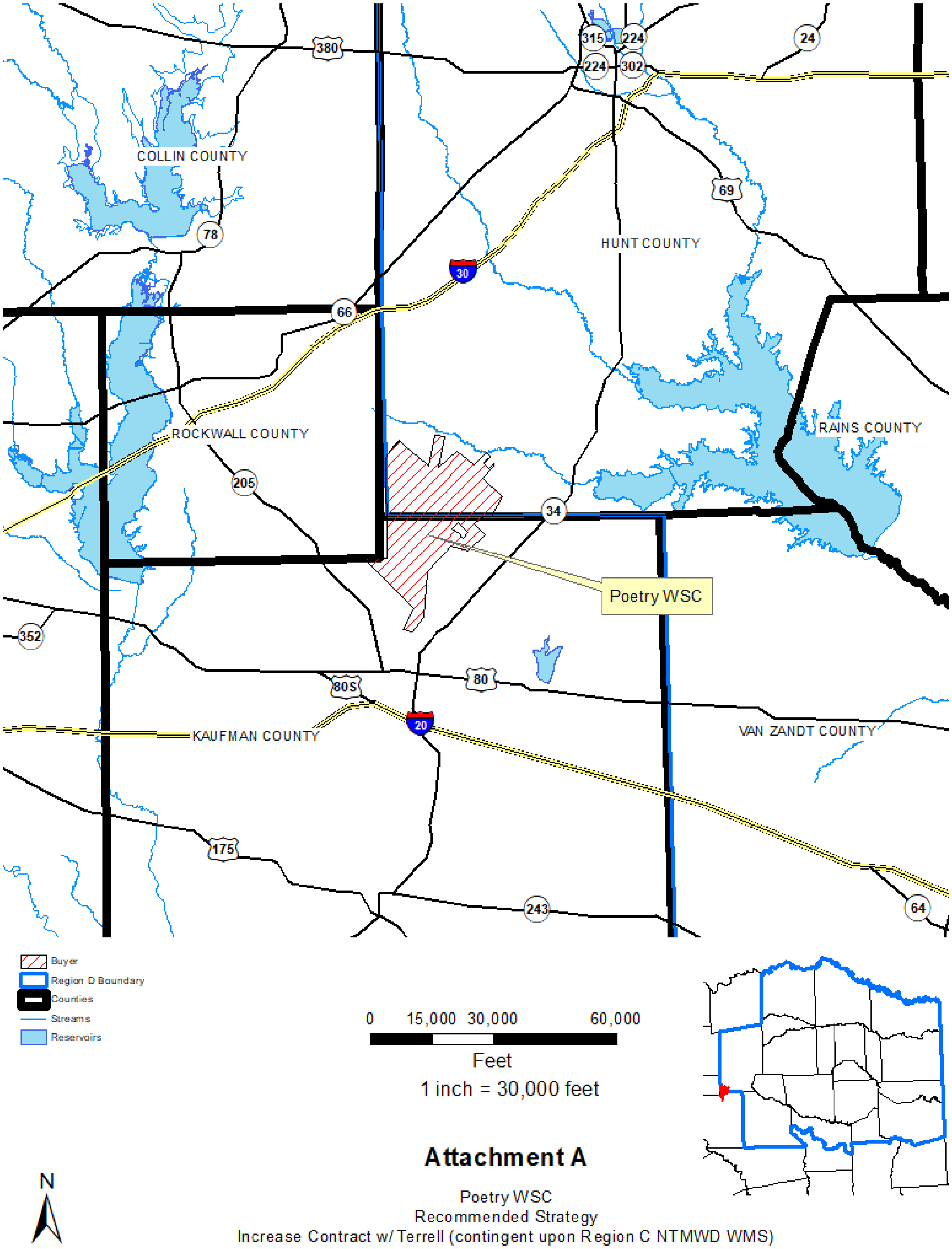
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Increase contract w/ Terrell (contingent upon Region C NTMWD WMS)	**503**		**$864,000**	**$1,718**	**1**
Increase contract w/ Terrell (contingent upon Voluntary Reallocation of Combined Consumers SUD Surplus)	**503**		**$864,000**	**$1,718**	**1**
Drill Wells (Nacatoch Aquifer, Sabine Basin)	**777**	**$7,823,000**	**$1,153,000**	**$1,484**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Increase contract w/ Terrell (contingent upon Region C NTMWD WMS)	**0**	**64**	**114**	**197**	**326**	**503**

The recommended strategy for Poetry WSC to meet their projected deficit of 39 ac-ft/yr in 2030 and 777 ac-ft/yr in 2080 would be to implement advanced water conservation at the amounts identified herein. Secondly, it is recommended that Poetry WSC increase their existing contract with the City of Terrell, contingent upon a Region C seller strategy for the City of Terrell to increase its' contract with the NTMWD for supply from the NTMWD System, which would be contingent upon recommended Region C seller strategies for the NTMWD. Preliminary communication with Region C indicates NTMWD WMS will be sufficient to meet the projected needs identified herein for Poetry WSC over the 2030-2080 planning period.

It is noted, however, that the City of Terrell (primarily located in Region C) could elect to increase its contract with SRA utilizing SRA supplies. Such an approach, if implemented by the City of Terrell and the SRA and/or recommended by Region C and/or Region I, should be considered consistent for this recommended WMS for the Poetry WSC for the purposes of the 2026 Region D Plan.



Attachment A

Poetry WSC
Recommended Strategy
Increase Contract w/ Terrell (contingent upon Region C NTMWD WMS)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF TEXAS A&M UNIVERSITY COMMERCE

Description of Water User Group:

Texas A&M University - Commerce is a small public water supply located in Hunt County. The system is projected to serve 2,125 people throughout the planning horizon. The current sources of supply are wells in the Nacatoch Aquifer with production capacities. The WUG provides water to its own customers in the Sulphur River Basin and is projected to have a water supply deficit of 275 ac-ft/yr.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	2,125	2,125	2,125	2,125	2,125	2,125
Projected Water Demand	433	432	432	432	432	432
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	157	157	157	157	157	157
Projected Supply Surplus (+) / Deficit (-)	**-276**	**-275**	**-275**	**-275**	**-275**	**-275**

Evaluation of Potentially Feasible Water Management Strategies:

Multiple alternative strategies considered to meet Texas A&M University - Commerce's water supply shortages are listed in the table below. Advanced conservation was not selected since supply versus population does not meet TCEQ 0.6 gpm per connection requirements. The purchase of surface water from the City of Commerce was identified as a potentially feasible strategy and evaluated. Additional supplies from the City of Commerce would be contingent upon City of Commerce water strategies. Pumping of additional groundwater from the Nactoch Aquifer was also considered as an alternative for this entity. There is sufficient source availability in the Nacatoch Aquifer in the Sabine basin through 2080.

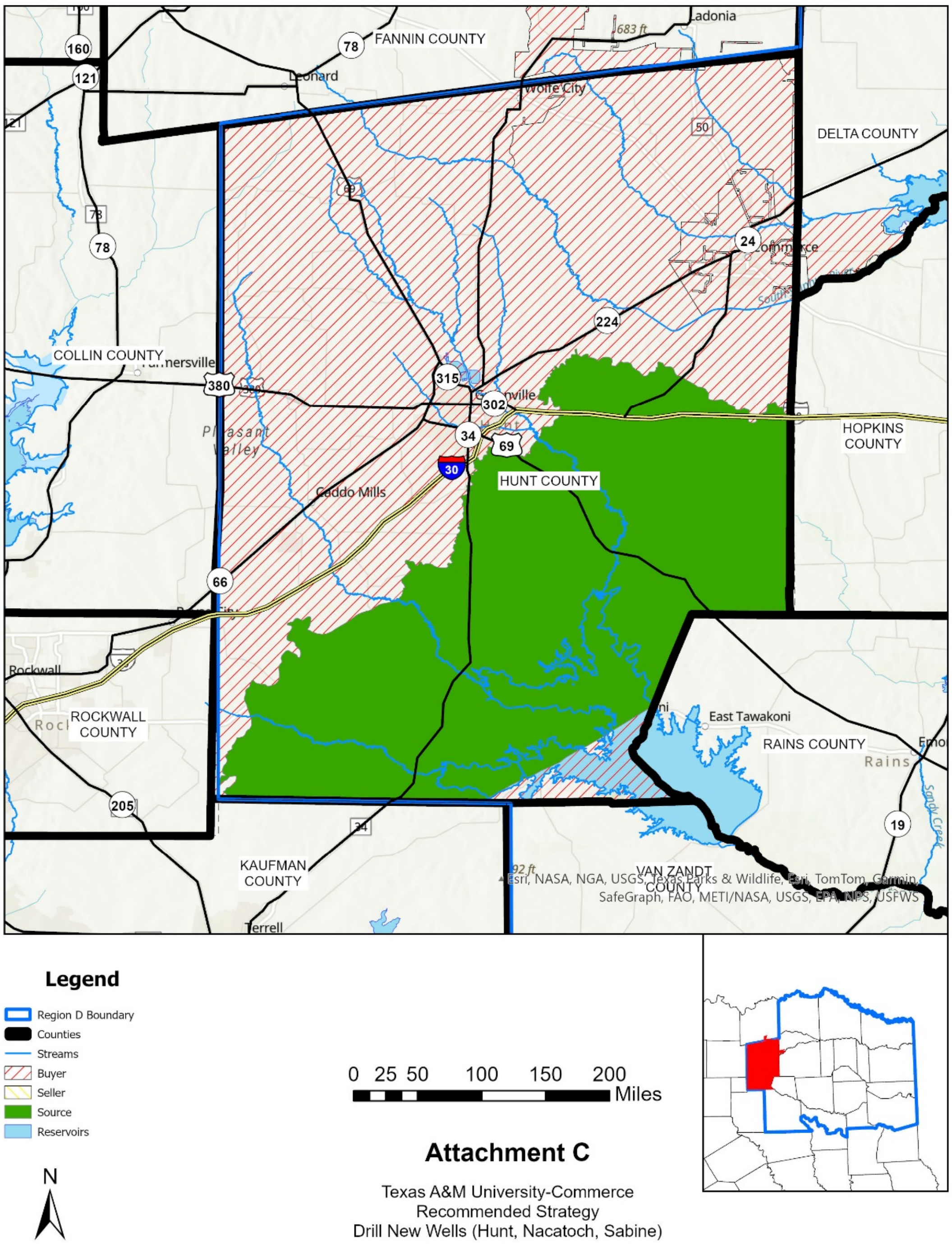
Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annual Cost**	**Unit Cost**	**Environmental Impact**
Drill New Wells (Nacatoch, Sabine Basin)	**276**	**$3,642,000**	**$487,000**	**$1,771**	**1**
New Contract (Commerce, contingent on Seller WMS)	**275**	**$0**	**$1,222,000**	**$34,914**	**1**

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Nacatoch, Sabine Basin; ac-ft/yr)	**276**	**275**	**275**	**275**	**275**	**275**

The recommended strategy for Texas A&M University - Commerce to meet their projected deficit of 276 ac-ft/yr in 2030 and 275 ac-ft/yr in 2080 would be to construct three additional water wells and a contingency well similar to their existing wells in 2030. The recommended supply source will be the Nacatoch Aquifer in the Sabine Basin in Hunt County. One well with rated capacity of 75 gpm would provide over 40 acre-feet each. The portion of the Nacatoch Aquifer in Hunt County within the Sabine River Basin is projected by Region D to have a more than ample supply availability to meet the needs of the WUG through 2080.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



Attachment C

Texas A&M University-Commerce
Recommended Strategy
Drill New Wells (Hunt, Nacatoch, Sabine)

Cost Estimate Summary Water Supply Project Option September 2023 Prices Texas A&M University - Commerce - Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$2,417,000
Water Treatment Plant (0.7 MGD)	$81,000
TOTAL COST OF FACILITIES	**$2,498,000**
- Planning (3%)	$75,000
- Design (7%)	$175,000
- Construction Engineering (1%)	$25,000
Legal Assistance (2%)	$50,000
Fiscal Services (2%)	$50,000
All Other Facilities Contingency (20%)	$500,000
Environmental & Archaeology Studies and Mitigation	$92,000
Land Acquisition and Surveying (5 acres)	$62,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$115,000
TOTAL COST OF PROJECT	**$3,642,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$256,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$24,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$49,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (226431 kW-hr @ 0.09 $/kW-hr)	$20,000
Purchase of Water (275 acft/yr @ 500 $/acft)	$138,000
TOTAL ANNUAL COST	**$487,000**
Available Project Yield (acft/yr)	275

Annual Cost of Water ($ per acft), based on PF=0	$1,771
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$840
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$5.43
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.58
JMP	*2/12/2025*

-EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF WOLFE CITY

Description of Water User Group:

The City of Wolfe City is located in northern Hunt County and is situated in the Sulphur River Basin. Wolfe City is bound on the west side by the Hickory Creek SUD, and the City of Commerce is located southeast of the City. The system is projected to serve 1,659 people by 2030, and the population is expected to increase to 1,714 by the year 2080. Wolfe City's current source of supply comes from two city lakes located on Turkey Creek in the South Sulphur River Basin. The City also has a 150 gpm well in the Woodbine formation, Sulphur River Basin, which has been brought back for use. Yield from the local lakes is calculated as 190 ac-ft/yr through 2080. Wolfe City is projected to have a supply surplus throughout the planning period.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,659	1,678	1,699	1,703	1,707	1,714
Projected Water Demand	168	169	171	171	172	173
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	263	264	263	264	263	263
Projected Supply Surplus (+) / Deficit (-)	**95**	**95**	**92**	**93**	**91**	**90**

Evaluation of Potentially Feasible Water Management Strategies:

Wolfe City is projected to have a surplus of supply thus only strategies related to water conservation were evaluated. Advanced conservation was not selected since per capita use is less than 140 gpcd. A water loss reduction strategy is recommended based on reported total water loss percentage of 38.2%.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Water Loss Reduction	**40**				**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Water Loss Reduction (ac-ft/yr)	39	39	40	39	40	40

The recommended strategy for the City of Wolfe City is to implement a water loss reduction strategy to preserve existing supplies.

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

LAMAR COUNTY

WUGs:

Lamar County-Other
Lamar County Irrigation
Lamar County Livestock

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF COUNTY-OTHER IN LAMAR COUNTY

Description of Water User Group:

Lamar County-Other is comprised of M-J-C, Pattonville and Petty WSCs. The WUG population is projected to be 2,693 in 2030 and 2,647 by the year 2080. The entities comprising this WUG are supplied by groundwater from the Trinity Aquifer, and purchased surface water from Lamar County WSD from Lake Pat Mayse. In Lamar County, the County-Other WUG is projected to have a deficit of 121 ac-ft in 2030 and decreasing to a deficit of 113 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	2,693	2,697	2,686	2,672	2,660	2,647
Projected Water Demand	402	400	398	396	395	393
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	281	286	284	282	280	280
Projected Supply Surplus (+) / Deficit (-)	**-121**	**-114**	**-114**	**-114**	**-115**	**-113**

Projected Supply Surplus (+) / Deficit (-) by Basin	2030	2040	2050	2060	2070	2080
Red	-29	-29	-28	-28	-28	-28
Sulphur	-92	-85	-86	-86	-87	-85
Total	**-121**	**-114**	**-114**	**-114**	**-115**	**-113**

Evaluation of Potentially Feasible Water Management Strategies:

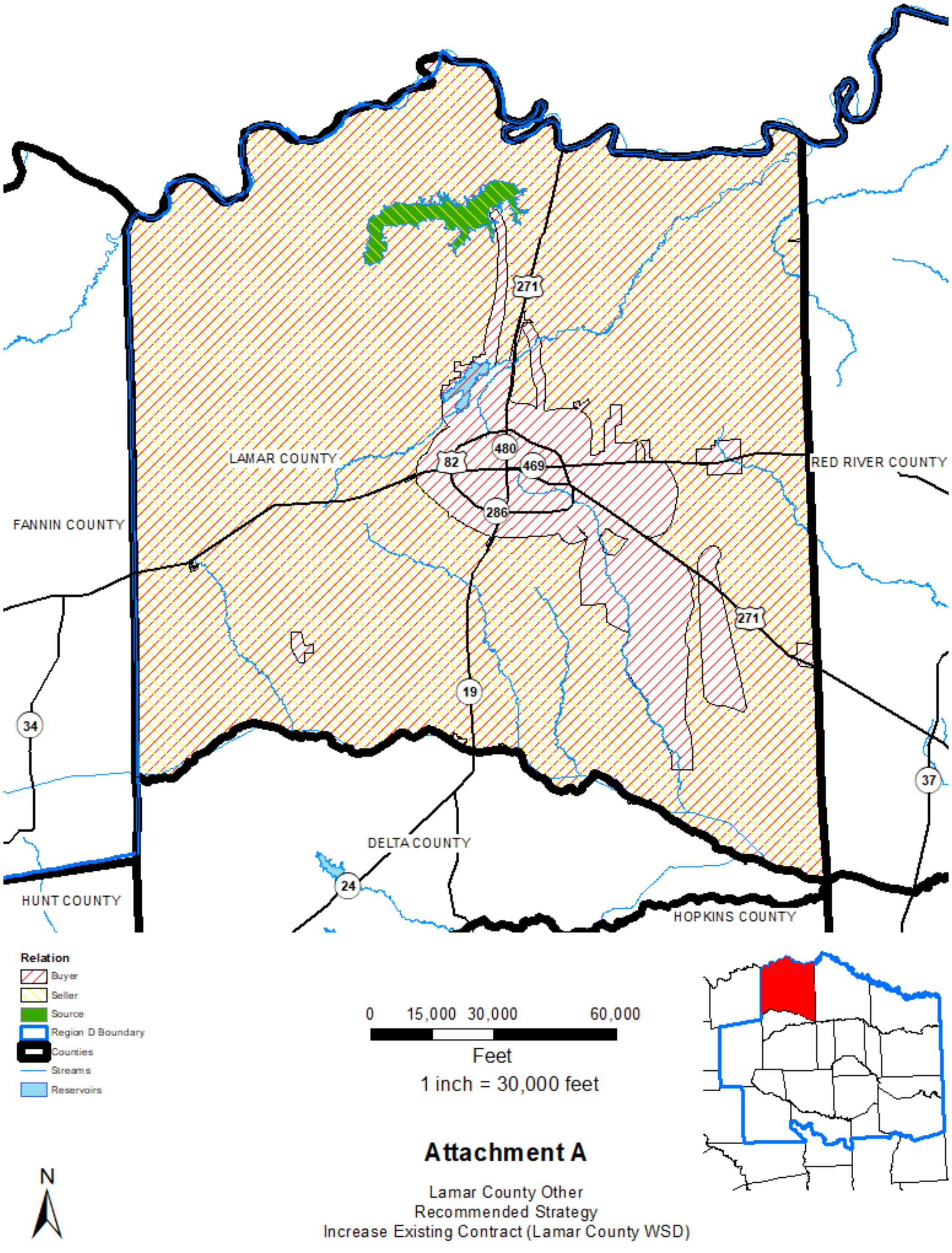
Advanced conservation was not selected because the WUG's overall supply is not projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater from the Trinity Aquifer has been identified as a potential source of water for Lamar County Other, although a local hydrogeological assessment performed by Region D did not identify sufficient available technical information to identify sufficient groundwater availability from these aquifers to meet the projected County-Other needs in Lamar County over the 2030-2080 planning period. The purchase of surface water from Pat Mayse from Lamar County WSD has also been identified as a potential water supply source.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Increase Existing Contract (Lamar County WSD)	**244**	**$0**	**$398,000**	**$1,631**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Lamar County WSD; ac-ft/yr)	204	212	224	234	244	244

The recommended strategy to meet Lamar County-Other needs is to increase the existing contract amounts with Lamar County WSD to meet projected Lamar County-Other needs over the 2030-2080 planning period.



Attachment A

Lamar County Other
Recommended Strategy
Increase Existing Contract (Lamar County WSD)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Lamar County Other - Increase Existing Contract from Lamar Co WSD

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (244 acft/yr @ 1629.14 $/acft)	$398,000
TOTAL ANNUAL COST	**$398,000**
Available Project Yield (acft/yr)	244
Annual Cost of Water ($ per acft), based on PF=1	$1,631
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$1,631
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$5.01
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$5.01

JKJ *2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN LAMAR COUNTY

Description of Water User Group:

Irrigation WUG in Lamar County is projected to be supplied by surface water from run-of-river diversions from the Red River and groundwater from wells the Trinity and Woodbine Aquifers. Irrigation in Lamar County has a demand that is projected to be a constant 8,095 ac-ft/yr for the planning period 2030 through 2080. A deficit of 4,691 ac-ft/yr is projected to occur throughout the planning period 2030-2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	8,095	8,095	8,095	8,095	8,095	8,095
Current Water Supply	3,404	3,404	3,404	3,404	3,404	3,404
Projected Supply Surplus (+)/Deficit(-)	**-4,691**	**-4,691**	**-4,691**	**-4,691**	**-4,691**	**-4,691**

Projected Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Red	-3,883	-3,883	-3,883	-3,883	-3,883	-3,883
Sulphur	-808	-808	-808	-808	-808	-808
Total	**-4,691**	**-4,691**	**-4,691**	**-4,691**	**-4,691**	**-4,691**

Evaluation of Potentially Feasible Water Management Strategies:

Advanced water conservation for irrigation practices were not considered in this planning effort, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to farm irrigation systems.

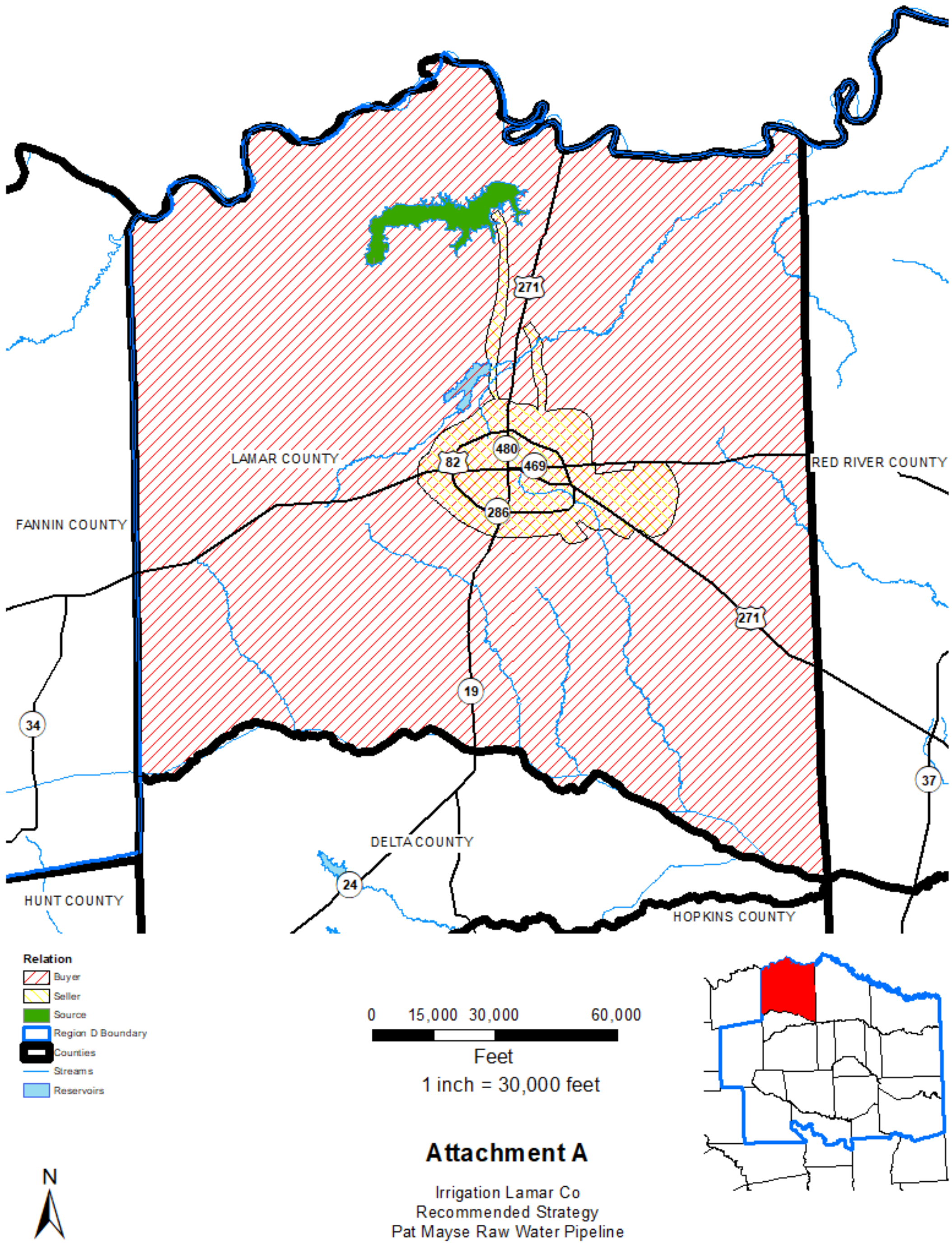
Groundwater was identified as a potential source of water for irrigation in Lamar County. Due to limitations of availability, the Woodbine and Trinity aquifers will not cover all shortages. A local hydrogeological assessment performed by Region D did not identify sufficient available technical information to determine additional groundwater source availability. New surface water rights were also evaluated as a potentially feasible strategy, however no firm supply could be identified. A purchase of raw water from the City of Paris was evaluated as a viable supplement to groundwater in order to meet projected demands. Alternatively, a purchase of all needed water from the City of Paris along with necessary construction of raw water conveyance infrastructure was evaluated as potentially feasible strategy.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
New Surface Water Right	**0**	**-**	**-**	**-**	**-**
Pat Mayse Raw Water Pipeline from Paris	**1,468**	**$31,893,000**	**$2,867,000**	**$1,953**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Pat Mayse Raw Water Pipeline from Paris (ac-ft/yr)	1,468	1,468	1,468	1,468	1,468	1,468

The recommended strategy for the Lamar County Irrigation WUG to meet projected demands during the planning period is to purchase raw water from Pat Mayse and Crook Reservoirs through the City of Paris. Given the distribution of the Irrigation WUG, the recommended raw water pipeline is an assumed 18-mile long 14 inch pipeline from The City of Paris's raw water intake line. Construction of a project for Daisy Farms in southern Lamar County is a development of water supply consistent with this recommended strategy. This WUG still has unmet needs of 3,223 ac-ft/yr from 2030-2080 after WMS.



Attachment A

Irrigation Lamar Co
Recommended Strategy
Pat Mayse Raw Water Pipeline

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Lamar County Irrigation - Raw Water Pipeline (Paris)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	*Estimated Costs for Facilities*
Intake Pump Stations (0 MGD)	$1,286,000
Transmission Pipeline (14 in. dia., 18.7 miles)	$21,601,000
TOTAL COST OF FACILITIES	**$22,887,000**
- Planning (3%)	$687,000
- Design (7%)	$1,602,000
- Construction Engineering (1%)	$229,000
Legal Assistance (2%)	$458,000
Fiscal Services (2%)	$458,000
Pipeline Contingency (15%)	$3,240,000
All Other Facilities Contingency (20%)	$257,000
Environmental & Archaeology Studies and Mitigation	$602,000
Land Acquisition and Surveying (50 acres)	$469,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$1,004,000
TOTAL COST OF PROJECT	**$31,893,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$2,244,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$216,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$32,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (445000 kW-hr @ 0.09 $/kW-hr)	$40,000
Purchase of Water (1468 acft/yr @ 228 $/acft)	$335,000
TOTAL ANNUAL COST	**$2,867,000**

Available Project Yield (acft/yr)	1,468
Annual Cost of Water ($ per acft), based on PF=1	$1,953
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$424
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$5.99
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$1.30

JKJ *2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN LAMAR COUNTY

Description of Water User Group:

Livestock WUG in Lamar County is projected to be supplied by groundwater from wells the Trinity and Woodbine Aquifers and local surface water supplies. Livestock in Lamar County has a demand that is projected to be a constant demand of 1,628 ac-ft/yr for 2030 through 2080. A deficit of 130 ac-ft/yr is projected to occur throughout the planning period in the Red and Sulphur River Basin.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	1,628	1,628	1,628	1,628	1,628	1,628
Current Water Supply	1,498	1,498	1,498	1,498	1,498	1,498
Projected Supply Surplus (+)/Deficit(-)	**-130**	**-130**	**-130**	**-130**	**-130**	**-130**

Projected Supply Surplus (+)/Deficit(-) by Basin	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Red	-47	-47	-47	-47	-47	-47
Sulphur	-83	-83	-83	-83	-83	-83
Total	**-130**	**-130**	**-130**	**-130**	**-130**	**-130**

Evaluation of Potentially Feasible Water Management Strategies:

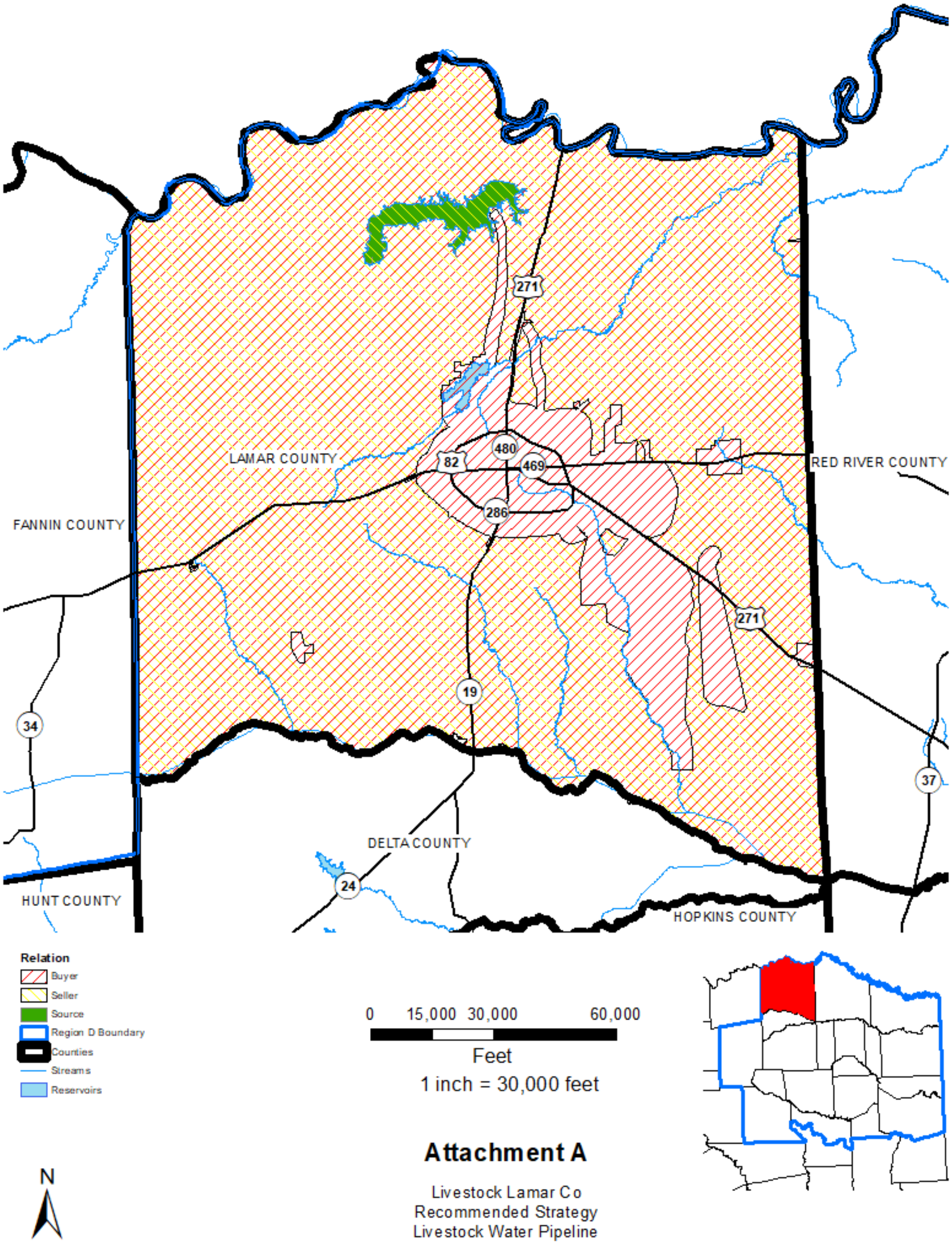
Advanced water conservation for livestock practices was not considered, as present livestock practices likely result in sale of the livestock to reduce demand and extend water supply. The use of reuse water from nearby municipalities is not considered feasible as the water may be used for livestock consumption. Groundwater was identified as a potential source of water for livestock in Lamar County; however, a local hydrogeologic assessment did not identify sufficient available information to justify additional groundwater source availability in Lamar County in adequate amounts to meet the identified projected needs in the Red River Basin. New surface water rights were also evaluated as a potentially feasible strategy but no firm run-of-river supply was identified. Purchase of raw water from the City of Paris or the Lamar County WSD were evaluated as potentially feasible strategies for the WUG.

Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Env. Impact**
New surface water rights	**0**	**-**	**-**	**-**	**1**
Raw Water Pipeline from Paris	**617**	**$32,176,000**	**$2,753,000**	**$4,462**	**1**
Water Pipeline from Lamar Co WSD	**617**	**$32,176,000**	**$3,617,000**	**$5,862**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Lamar Livestock Pipeline and Contract with Lamar Co WSD	**617**	**617**	**617**	**617**	**617**	**617**

The recommended strategy for the Lamar County Livestock WUG to meet projected needs during the planning period is to purchase water from Lamar County WSD. Given the distribution of the Livestock WUG, an assumed 18-mile long 8-inch diameter pipeline to meet the projected needs was developed using the UCM to represent a proximate raw water pipeline. If an alternative characterization of a raw water pipeline for this WUG is contemplated (e.g., alternative location, routing, sizing), it should be recognized as consistent with the 2026 Region D Plan.



Attachment A

Livestock Lamar Co
Recommended Strategy
Livestock Water Pipeline

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Lamar County Livestock - Purchase Surface Water from Lamar Co WSD

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (0.6 MGD)	$4,070,000
Transmission Pipeline (8 in. dia., 18.7 miles)	$14,955,000
Transmission Pump Station(s) & Storage Tank(s)	$3,688,000
TOTAL COST OF FACILITIES	**$22,713,000**
- Planning (3%)	$681,000
- Design (7%)	$1,590,000
- Construction Engineering (1%)	$227,000
Legal Assistance (2%)	$454,000
Fiscal Services (2%)	$454,000
Pipeline Contingency (15%)	$2,243,000
All Other Facilities Contingency (20%)	$1,552,000
Environmental & Archaeology Studies and Mitigation	$687,000
Land Acquisition and Surveying (60 acres)	$562,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$1,013,000
TOTAL COST OF PROJECT	**$32,176,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$2,264,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$171,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$141,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (401142 kW-hr @ 0.09 $/kW-hr)	$36,000
Purchase of Water (617 acft/yr @ 1629.14 $/acft)	$1,005,000
TOTAL ANNUAL COST	**$3,617,000**
Available Project Yield (acft/yr)	617
Annual Cost of Water ($ per acft), based on PF=1	$5,862
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$2,193
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$17.99
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$6.73

JKJ	2/12/2025

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Lamar County Livestock - Raw Water Pipeline (Paris)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (0.6 MGD)	$4,070,000
Transmission Pipeline (8 in. dia., 18.7 miles)	$14,955,000
Transmission Pump Station(s) & Storage Tank(s)	$3,688,000
TOTAL COST OF FACILITIES	**$22,713,000**
- Planning (3%)	$681,000
- Design (7%)	$1,590,000
- Construction Engineering (1%)	$227,000
Legal Assistance (2%)	$454,000
Fiscal Services (2%)	$454,000
Pipeline Contingency (15%)	$2,243,000
All Other Facilities Contingency (20%)	$1,552,000
Environmental & Archaeology Studies and Mitigation	$687,000
Land Acquisition and Surveying (60 acres)	$562,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$1,013,000
TOTAL COST OF PROJECT	**$32,176,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$2,264,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$171,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$141,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (401142 kW-hr @ 0.09 $/kW-hr)	$36,000
Purchase of Water (617 acft/yr @ 228 $/acft)	$141,000
TOTAL ANNUAL COST	**$2,753,000**
Available Project Yield (acft/yr)	617

Annual Cost of Water ($ per acft), based on PF=1	$4,462
Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$793
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$13.69
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$2.43

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

RAINS COUNTY

WUGs:

South Rains SUD

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

RED RIVER COUNTY

WUGs:

410 WSC
The City of Clarksville
Red River County WSC
Red River County Irrigation

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF 410 WSC

Description of Water User Group:

410 WSC provides water service in Red River County. The WSC's population is projected to be 1,356 in 2030 and 1,073 in the year 2080. The WSC has a contract for water supply with Lamar County WSD for 218 ac-ft/yr of water from Pat Mayse Lake in 2030, declining to 211 ac-ft/yr by 2060. The WSC is projected to have a deficit of 135 ac-ft in 2030 and decreasing to a deficit of 68 ac-ft by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	1,356	1,288	1,226	1,174	1,123	1,073
Projected Water Demand	353	335	318	305	292	279
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	218	213	212	211	211	211
Projected Supply Surplus (+) / Deficit (-)	-135	-122	-106	-94	-81	-68

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the WSC's water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 237 exceeds the 140 gpcd threshold established by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from Lamar County WSD.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Conservation	**121**	**$0**	**$82,764**	**$684**	

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation **(ac-ft/yr)**	**30**	**61**	**90**	**121**	**116**	**111**
Unmet Need	-105	-61	-16	**0**	0	**0**

To meet all applicable planning requirements, the NETRWPG considered all potentially feasible strategies including drought management, which is not recommended as they each would be insufficient to meet the projected needs while meeting TCEQ regulatory minimums. It is recognized that as the Joint Planning Process continues, future adjustments to availability may allow the opportunity to amend this Plan if deemed necessary in the future to address all or a portion of this unmet need.

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CLARKSVILLE

Description of Water User Group:

The City of Clarksville is located in Red River County. The system is projected to serve 2,483 people through the planning period. The current sources of supply are wells into the Blossom Aquifer. Groundwater had previously been mixed with surface water from Langford Lake, however sedimentation has hindered its use as a water supply. Water quality issues with the groundwater (TDS) and surface water (turbidity) necessitate mixing of the supplies to meet Texas drinking water standards. The groundwater has over 1,000 ppm of dissolved solids including high levels of sodium, sulfate, and chloride. The City provides water to its own customers in the Sulphur basin and is projected to have a water supply deficit of 252 ac-ft/yr in 2030, due to sedimentation issues in Langford Lake. As the surface water supply for the City diminishes, the capability to mix the surface supply with the groundwater supply commensurately diminishes as well. Thus, as surface supply diminishes, so too does the capability to utilize the City's existing groundwater supply. As noted in a 4 October, 2013, memorandum from the City's consultant, Murray, Thomas & Griffin, Inc. (MTG):

> "Clarksville has no available surface water when a water level of 417.0 (2006 low water level) and a sediment level at 415.0 (2013 lake bottom) are considered. Each of these conditions has occurred during the past ten years. The surface water is necessary to address total volume needs as well as for blending with the ground water."

For the current regional plan, the City's water supply is solely from groundwater, thus the estimated deficit is reflective of the current groundwater production and treatment capacity without mixing of surface water. The system does have a water conservation and drought management plan in place.

Water Supply and Demand Analysis:

	202020 30	**203020 40**	**204020 50**	**205020 60**	**206020 70**	**207020 80**
Population	2,483	2,198	1,906	1,677	1,442	1,206
Projected Water Demand	623	550	477	420	361	302
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	494	371	371	371	371	371
Projected Supply Surplus (+) / Deficit (-)	**-252**	**-179**	**-106**	**-49**	**10**	**69**

Evaluation of Potentially Feasible Water Management Strategies:

The various feasible strategies considered to meet Clarksville's water supply shortages are listed in the table below. Advanced conservation was not selected because Clarksville's supply would not be projected to meet TCEQ regulatory minimums. Furthermore, reduction in demand would not alleviate the aforementioned water quality issues with the City's projected supplies. There are no significant current water needs in Clarksville that could be met by water reuse. Additional groundwater pumping from the Blossom Aquifer in the Sulphur River Basin and Reverse Osmosis treatment of all of the City's existing groundwater supplies has also been considered. The City's existing surface water supply has been made unavailable due to sedimentation issues in Langford Lake, the City's sole existing surface water supply. The City has requested the consideration of multiple potential surface water strategies to meet Clarksville's water supply needs. Potentially feasible strategies evaluated include:

- Treated Water Pipeline to DeKalb - purchasing water from the City of Texarkana's available supply from Wright Patman Reservoir;
- Dredging of sediment from Langford Lake;
- Construction of a new surface water reservoir, Dimple Reservoir;
- Construction of a raw water pipeline tying in to Region C's proposed Marvin Nichols Reservoir.

- Treated Water Pipeline to Detroit - purchasing water from the City of Paris (via Lamar County WSD) from Paris available supply.

The projected amount of firm supply necessary to meet the above projected demands differ because of the need to utilize reverse osmosis treatment to reduce the total dissolved solids of groundwater supplies and the City's current practice of blending surface and groundwater supplies to reduce total dissolved solids.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost (During Debt Service)	Unit Cost (After Debt Service	Env. Impact
Drill Additional Wells with RO Treatment (Clarksville, Blossom)	**388**	**$35,555,000**	**$5,884,000**	**$15,165**	**$8,716**	**1**
Contract with Lamar County WSD	**303**	**$32,003,000**	**$3,065,000**	**$10,116**	**$2,693**	**2**
Contract with Riverbend WRD and Treated Water Pipeline to DeKalb (ac-ft/yr)	**303**	**$15,914,000**	**$1,353,000**	**$4,465**	**$1,267**	**2**
Dredge Langford Lake (ac-ft/yr)	**303**	**$45,028,000**	**$3,491,000**	**$6,713**	**$0**	**5**
Dimple Reservoir (ac-ft/yr)	**303**	**$57,324,000**	**$3,703,000**	**$12,221**	**$1,551**	**5**

Description of evaluated projects

Raw Water Pipeline to Marvin Nichols Reservoir – The City of Clarksville has requested that their top priority for consideration as a water management strategy be a pipeline tying into Region C's water management strategy for the construction of Marvin Nichols Reservoir (as it is reported in the Sulphur River Basin Feasibility Study, SRBA 2014, that 20% of the water potentially available from Marvin Nichols Reservoir would be available for local use in Region D). Preliminary communications with Region C have indicated that this strategy is currently under consideration as a Proposed or Alternative Water Management Strategy for implementation by the year 2060 in the 2026 Region C Water Plan. As Region D has identified that the City of Clarksville has needs as early as 2030, Marvin Nichols as currently envisioned by Region C would not be available to meet the City's identified needs. Furthermore, the North East Texas Regional Water Planning Group opposes the construction of any reservoir in the Sulphur River Basin, and does not recommend this as a Recommended or Alternative Water Management Strategy. However, the City of Clarksville has noted that should this source be available during the planning period, it has reserved the right to work with the Sulphur River Basin Authority and to utilize this source once available.

New Groundwater Wells and Treatment Facility – A planning level analysis was performed to evaluate a strategy including the addition of new wells into the Blossom or Nacatoch Aquifer, Sulphur River Basin, in Red River County, and additional treatment of all of the City's groundwater supplies to address the aforementioned water quality issues. The available yield from the project was determined to be 252 ac-ft/yr. This was the amount calculated to be necessary to meet the projected future demands for the City, once added to Clarksville's existing groundwater supplies. It is thus critical to note that consideration of this strategy is for the entire 620 ac-ft/yr of supply necessary to meet the City's projected demands. The planning process strictly considers the amount of supply necessary to meet the projected shortage, i.e., 252 ac-ft/yr, and uses this amount as the basis for cost estimation purposes. Nevertheless, the strategy would be for the development of sufficient groundwater sources to meet the full 620 ac-ft/yr of projected City demands. It has been assumed for this strategy that the City's existing groundwater wells are maintained.

Additional assumptions for this analysis included assuming Total Dissolved Solids (TDS) of 1,275 mg/L, and that two Reverse Osmosis (RO), Level 4 treatment plants would be located at the end of a 5-mile, 8-inch transmission line sized sufficiently to carry the full flow of pre-treated water, since when brackish water is treated, approximately 20% of the supply is lost as concentrate. An average of nearby depth (650 ft.) and head (250 ft.) of wells was utilized to calculate the potential number of wells needed (six new wells). For an assumed distance between wells of 1,500 ft., a total length of 7,500 ft. of 6-in. diameter well field piping was estimated. For the pipeline, 30 psi was assumed for the residual head at the end of the pipe, with a maximum pipeline pressure of 150 psi. Difference in elevation was assumed to be 50 ft. The treatment facilities would be of sufficient size (0.7 mgd) to treat the entirety of Clarksville's groundwater supply, both existing and proposed wells.

The TWDB's Unified Costing Model (UCM) was used to develop costs for this strategy. The total capital cost of the project is calculated to be approximately $35,555,000, with an annual cost of $5,884,000, for a unit cost during debt service of $15,165 per ac-ft ($56.53 per 1,000 gallons). After debt service, the unit cost would be approximately $8,716 per ac-ft.

Contract with Lamar County WSD and Treated Water Pipeline to Detroit - A strategy requested by the City of Clarksville is the construction of a 16" diameter pipeline from Clarksville to Detroit, and the purchase of up to 2 MGD of treated water from the Lamar County WSD. This strategy would be contingent upon the Lamar County WSD purchase of equivalent supply from the City of Paris. Cost estimates are based upon the TWDB's Unified Costing Model (UCM). The project is estimated to provide 303 ac-ft/yr by constructing a pipeline to Detroit, whereby the City of Clarksville would enter into a contract with the Lamar County WSD (contingent upon the District contracting for available supply from the City of Paris). This amount provides the surface water supply necessary for mixing with the City's existing groundwater supply, for a total project cost of $32.0 million, an annual cost of $3.1 million, and a unit cost for the additional supply of $10,116 per ac-ft. during debt service and $2,693 per ac-ft after debt service. Identifying uses for the additional production capability of the pipeline (up to 2 MGD) would likely lower the unit cost for this strategy.

Contract with Texarkana and Treated Water Pipeline to De Kalb – Another strategy previously requested by the City of Clarksville is the construction of a 16" diameter pipeline from Clarksville to De Kalb, and the purchase of up to 2 MGD of treated water from Texarkana. This project is based on a cost estimate developed by Riverbend Water Resources District, along with a similar project cost estimate from MTG Engineers. The total cost, annual cost, and unit cost of water from the project has been estimated based upon the results of these studies, as entered into the TWDB's Unified Costing Model (UCM). The project is estimated to have a total yield of 2,240 ac-ft/yr of supply by constructing a pipeline to De Kalb, whereby the City of Clarksville would enter into a contract with the City of Texarkana (or alternatively Riverbend Water Resources District) for up to 593 ac-ft/yr (0.53 MGD). The amount necessary to meet Clarksville's projected needs is 303 ac-ft/yr (0.27 MGD). This amount provides the surface water supply necessary for mixing with the City's existing groundwater supply, for a total project cost of $15.9 million, an annual cost of $1.4 million, and a unit cost for the additional supply of $4,465 per ac-ft. during debt service and $1,267 per ac-ft after debt service. Identifying uses for the additional production capability of the pipeline (up to 2 MGD) would likely lower the unit cost for this strategy.

Concerns about this strategy are with regard to present issues entailing the supply of Wright Patman Reservoir to Texarkana and the remaining Member Cities of Riverbend Water Resources District. Concerns regarding the priority of a new contract for Clarksville for treated water supply from Texarkana/Riverbend are somewhat ameliorated due to the fact that in times of drought, Texarkana's 2012 Water Conservation & Drought Contingency Plan specifies that curtailment of water deliveries to wholesale customers will be done by a pro-rata method as provided in Texas Water Code, §11.039. Furthermore, the amounts of supply considered within the 2026 North East Texas Regional Water Plan are based upon firm yields developed employing the TCEQ Water Availability Model, and reflect legal and infrastructure constraints to identify the amount of available supply. It is expected that costs associated with this strategy would be negotiated between the City of Clarksville and Texarkana/Riverbend WRD, as the City of Clarksville has expressed a potential interest in entering into a water supply relationship as a partner with these entities. This strategy, if implemented, would be contingent upon water management strategies identified for Riverbend WRD and its Member Entities.

Dredge Langford Lake – The firm yield of Langford Lake decreases over time due to sedimentation in the reservoir reducing the total volume of conservation capacity. This strategy would entail the dredging of sediment from Langford Lake to restore storage capacity within the reservoir which has been lost due to this sedimentation. This project utilizes a 24" dredge to remove an estimated 3,000 ac-ft of sediment over a one-year calendar period. The unit cost of reservoir dredging, in units of dollars per ac-ft of sediment removed, has been calculated based upon a formula from the World Bank, as presented in the TWDB Report *Dredging vs. New Reservoirs* (2004). The resultant calculated cost was entered into the UCM to determine the debt service cost. The project is estimated to yield 520 ac-ft of firm supply by dredging an estimated total of 3,000 ac-ft of sediment from Langford Lake over one year, for a total project cost of $45.0 million, an annual cost of $3.5 million, and a unit cost of $6,713 per ac-ft. during debt service and $0 per ac-ft after debt service.

Concerns with this strategy include the location and impacts from disposition of dredged material, the efficiency of removal of the dredged material, and the potential need to repeat the effort in the future since dredging does not remove the source of sedimentation issues in the contributing watershed. As noted in TWDB (2005), issues with regard to dredging fall into four general categories: removal of the sediment, transportation, disposal, and re-use.

For the removal of sediment, dredging reservoirs, particularly at the shallow headwaters and reservoir margins, can destroy habitats and affect wetland birds, etc. If the water sustains flora or fauna of particular value, or if fish issues are important, then issues exist regarding lowering the water level. Dredging may also result in a temporary loss of reservoir water quality, through removal of organic material, although there may be long-term improvements in the reservoir water quality through removal of such organic material. Downstream water quality may also be temporarily impacted due to dredging. There may also be a loss of land for containment areas to drain/treat the sediment.

Regarding transportation, reservoirs are often in remote areas. The impact of additional transportation during dredging can place pressure on local communities (e.g., noise/air pollution and physical damage to roads), although these impacts may be reduced if the sediment can be effectively dewatered at or near the reservoir site using, for example, a hydrocyclone and/or a filter bed press. The viability of disposal to land depends on the level of contaminants, whereby there may be risks to groundwater supplies from contamination by leaching.

Opportunities for the re-use of dredged material include sand/gravel/bricks for the construction industry, fertilizer, usage for filling abandoned quarry areas or mines, and usage for capping landfill sites.

Dimple Reservoir – The City has also identified a feasible strategy to meet future water supply needs as being the construction of a new 28,541 ac-ft reservoir with a projected surface area of 2,230 acres on White Oak Bayou, a tributary of Pecan Bayou, to be utilized as an interbasin transfer from the Red River Basin to the Sulphur River Basin. This reservoir project was originally described in a 1986 report from HDR to the Red River Authority and project participants, entitled *Preliminary Engineering Report for Proposed Dimple Reservoir Project on White Oak Bayou*. The 1986 report identified a potential project site, reservoir area capacity, drainage area, and estimated construction costs for the reservoir and intake structure without equipment. Intake structure equipment and water pipelines from the reservoir were not included in the report, nor was a cost estimate. This site is described in Section 8.9.5 of the 2026 Region D Plan, although it has not been recommended as a unique reservoir site by the NETRWPG for the present round of regional planning.

The reservoir construction costs from the 1986 report have been adjusted to September 2023 costs using the ENR Construction Cost Index (CCI) and entered into the UCM. Intake equipment and a raw water pipeline from the reservoir to the City of Clarksville's water treatment plant have also been preliminarily identified and included in the UCM. The raw water pipeline in the UCM is modeled to deliver the estimated firm yield with a peaking factor of 2. The project pipeline is 8" diameter, and approximately 8 miles long, following existing roadways with an elevation increase of 40 feet. The pipeline costing utilizes the UCM's assumption of 15 psi for the residual head at End of Pipe for raw water and assumes a maximum pipeline pressure of 250 psi. UCM calculations for pump and power requirements provide the cost estimate for the intake equipment. For the 2026 planning process, the reservoir has been modeled in the Red River WAM (Run 3), subject to consensus environmental criteria at a junior priority date, and modeled considering the full demand of existing water rights in the Red River Basin. The results of this WAM analysis indicate the project has a firm yield of 5,400 ac-ft per year, although Clarksville needs only 303 ac-ft/yr to have adequate supply to mix with the City's groundwater supplies to meet its projected needs beyond 2030. However, the City intends to use up to 593 ac-ft/yr to meet its full projected demands. This strategy includes constructing a new 28,541 ac-ft reservoir and 8" pipeline to Clarksville's WTP, for a total project cost of $57.3 million with an annual cost of $3.7 million and a unit cost for the needed supply of $12,221 per ac-ft. with debt service and $1,551 per ac-ft without debt service. It should be noted, however, that Dimple Reservoir, as envisioned herein, is based on existing studies (from 1986) and characterizations of the impoundment. Studies investigating alternative configurations, perhaps using a smaller footprint, are encouraged. Furthermore, needs from additional entities, if identified as willing participants to such an effort, could improve the unit costs calculated for Clarksville herein.

Concerns with this strategy include the potential need for obtaining a surface water permit for an interbasin transfer from the Red River Basin to the Sulphur River Basin. However, there is the potential that this could be waived given the project is located within the same county as the proposed use. The Texas Water Code §11.085 identifies factors to be considered in the applicable regional water plans to address the following:

(A) the availability of feasible and practicable alternative supplies in the receiving basin to the water proposed for transfer;
(B) the amount and purposes of use in the receiving basin for which water is needed;
(C) proposed methods and efforts by the receiving basin to avoid waste and implement water conservation and drought contingency measures;
(D) proposed methods and efforts by the receiving basin to put the water proposed for transfer to beneficial use;
(E) the projected economic impact that is reasonably expected to occur in each basin as a result of the transfer; and
(F) the projected impacts of the proposed transfer that are reasonably expected to occur on existing water rights, instream uses, water quality, aquatic and riparian habitat, and bays and estuaries that must be assessed under Sections 11.147, 11.150, and 11.152 of this code in each basin. If the water sought to be transferred is currently authorized to be used under an existing permit, certified filing, or certificate of adjudication, such impacts shall only be considered in relation to that portion of the permit, certified filing, or certificate of adjudication proposed for transfer and shall be based on historical uses of the permit, certified filing, or certificate of adjudication for which amendment is sought;

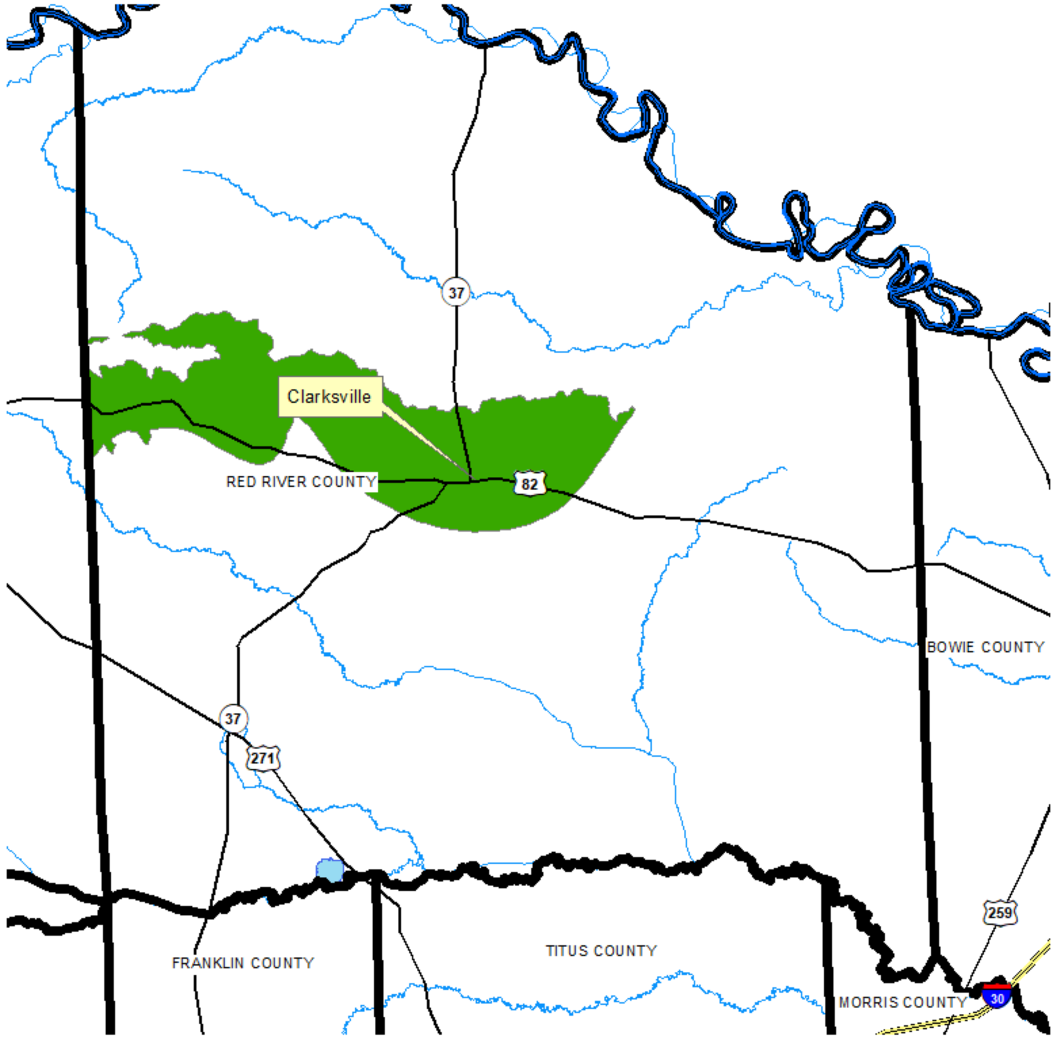
The other alternatives considered herein present available alternatives in the receiving basin to the water proposed for transfer. The water would be used for municipal purposes. The City maintains its Water Conservation and Drought Contingency Plan, implementing measures identified therein to avoid waste and conserve water during times of drought. Minimal economic impact is expected in the Red River Basin, whereas positive economic benefits may occur by maintaining the City's municipal supply. As noted above, minimal impacts are expected on existing water rights, as the WAM has been utilized to maintain priorities of these water rights. There exists significant concern with regard to potential environmental impacts of the proposed reservoir considering that the reservoir's contributing watershed represents approximately 25% of the watershed contributing to Pecan Bayou, a stream segment conditionally recognized in the 2026 Region D Plan and by the Texas Parks and Wildlife Department as being an ecologically unique stream segment in the North East Texas Region. Significant impacts to agricultural and natural resources would also be expected within the footprint of the reservoir as well. Furthermore, mitigation and compensation may be necessary to the basin of origin.

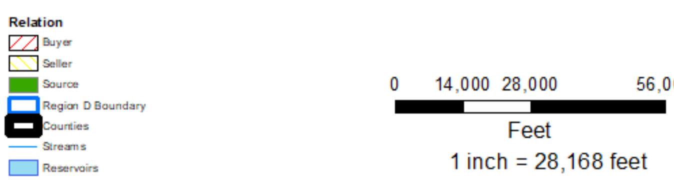
Recommendations:

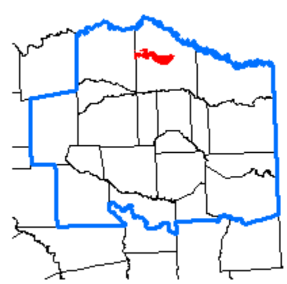
	2030	2040	2050	2060	2070	2080
Drill Additional Wells with RO Treatment (ac-ft/yr) (Clarksville, Blossom)	388	388	388	388	388	388

To meet the City's projected deficit in 2030 - 2060 it is recommended that Clarksville develop additional groundwater wells in the Blossom Aquifer and the associated water treatment capacity.

At present, considerable uncertainty exists in each of the identified feasible water management strategies for the City of Clarksville. The NETRWPG supports any efforts by the City of Clarksville to further study all potential strategies to identify the best approach for the City to meeting all of its future water supply needs, and such a study should be considered consistent with the 2026 North East Texas Regional Water Plan.







Attachment A

Clarksville
Recommended Strategy
Drill New Wells (Red River, Blossom, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Clarksville - Drill New Wells (Red River, Blossom Aquifer, Red Basin) and RO Treatment

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	*Estimated Costs for Facilities*
Intake Pump Stations (0 MGD)	$754,00
Transmission Pipeline (8 in. dia., 5 miles)	$4,353,00
Well Fields (Wells, Pumps, and Piping)	$3,706,00
Water Treatment Plant (0.7 MGD)	$16,444,00
Integration, Relocations, Backup Generator & Other	$2,00
TOTAL COST OF FACILITIES	**$25,259,00**
- Planning (3%)	$758,00
- Design (7%)	$1,768,00
- Construction Engineering (1%)	$253,00
Legal Assistance (2%)	$505,00
Fiscal Services (2%)	$505,00
Pipeline Contingency (15%)	$653,00
All Other Facilities Contingency (20%)	$4,181,00
Environmental & Archaeology Studies and Mitigation	$316,00
Land Acquisition and Surveying (25 acres)	$237,00
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$1,120,00
TOTAL COST OF PROJECT	**$35,555,00**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$2,502,00
Reservoir Debt Service (3.5 percent, 40 years)	$
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$81,00
Intakes and Pump Stations (2.5% of Cost of Facilities)	$19,00
Dam and Reservoir (1.5% of Cost of Facilities)	$
Water Treatment Plant	$3,070,00
Advanced Water Treatment Facility	$
Pumping Energy Costs (202540 kW-hr @ 0.09 $/kW-hr)	$18,00
Purchase of Water (388 acft/yr @ 500 $/acft)	$194,00

TOTAL ANNUAL COST	**$5,884,00**
Available Project Yield (acft/yr)	38
Annual Cost of Water ($ per acft), based on PF=2	$15,16
Annual Cost of Water After Debt Service ($ per acft), based on PF=2	$8,71
Annual Cost of Water ($ per 1,000 gallons), based on PF=2	$46.5
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=2	$26.7

J. Stovall *2/12/20*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN RED RIVER COUNTY

Description of Water User Group:

The Irrigation WUG in Red River County has a demand that is projected to be 3,783 ac-ft/yr in 2030 through 2080. Irrigation in Red River County is projected to be supplied by existing surface water from run-of-river diversions from the Red and Sulphur Rivers. A deficit of 2,469 ac-ft/yr is projected to occur in 2030 through 2080 in the Sulphur Basin. In the Red River Basin, a deficit of 212 ac-ft/yr is projected for the planning period of 2030 through 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	3,783	3,783	3,783	3,783	3,783	3,783
Current Water Supply	1,102	1,102	1,102	1,102	1,102	1,102
Projected Supply Surplus (+)/Deficit(-)	**-2,681**	**-2,681**	**-2,681**	**-2,681**	**-2,681**	**-2,681**

Projected Supply Surplus (+)/Deficit(-) by Basin	2030	2040	2050	2060	2070	2080
Sulphur	-2,469	2,469	2,469	2,469	2,469	2,469
Red	-212	-212	-212	-212	-212	-212
Total	**-2,681**	**-2,681**	**-2,681**	**-2,681**	**-2,681**	**-2,681**

Evaluation of Potentially Feasible Water Management Strategies:

Multiple alternative strategies were considered to meet the Red River County Irrigation WUG's water supply shortages. Advanced water conservation for irrigation practices were not considered feasible, as amounts potentially saved would not provide sufficient savings to meet the projected needs over the planning period. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to farm irrigation systems.

Groundwater was identified as a potential source of water for irrigation in Red River County. A local hydrogeologic assessment was performed by Region D to assess source groundwater availability, as there is no GCD located within the Region. The assessment is based on source availabilities identified using availabilities identified and approved by the TWDB and the NETRWPG. Based on a relatively low average annual water level decline and the potential for high-productivity wells in the portion of the Nacatoch Aquifer located in the Sulphur River Basin in Red River County, it has been determined that most of the future projected needs can likely be met with additional irrigation wells. For the portion of the Trinity Aquifer located in the Sulphur River Basin in Red River County, the local hydrogeologic assessment did not identify sufficient available data to determine potential productivity.

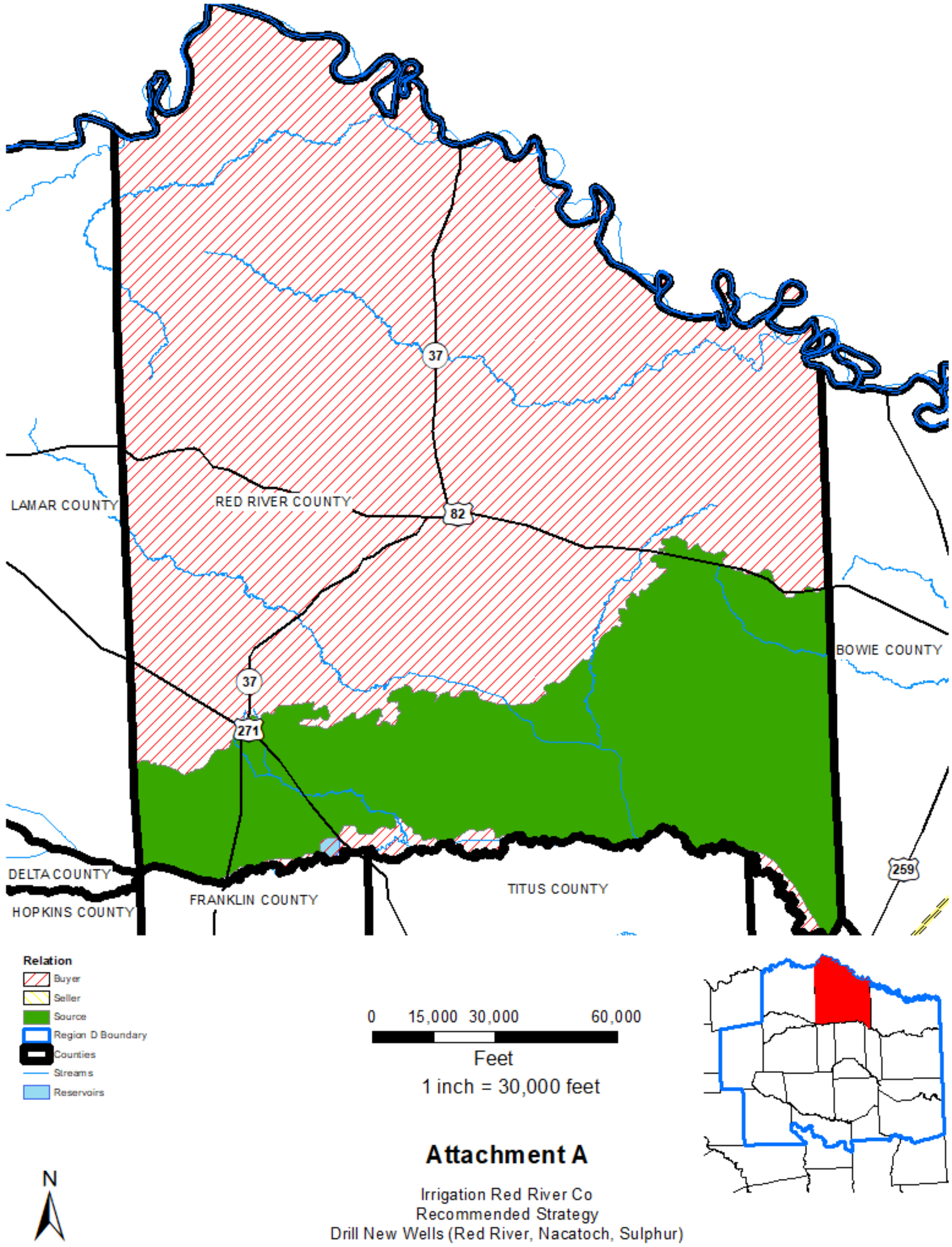
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells, (Nacatoch Aquifer, Sulphur Basin)	**1,451**	**$7,570,000**	**$1,788,000**	**$869**	**1**
Drill New Wells (Trinity Aquifer, Sulphur Basin)	**97**	**$430,000**	**$89,000**	**$918**	**1**

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur)	**1,450**	**1,450**	**1,451**	**1,451**	**1,451**	**1,451**
Unmet Need	**-1,231**	**-1,231**	**-1,230**	**-1,230**	**-1,230**	**-1,230**
Total	**2,154**	**2,154**	**2,154**	**2,154**	**2,154**	**2,154**

As no regulatory entity exists within Region D to enforce the MAG limitations, and no Groundwater Conservation District presently exists within the Region D planning area, Region D performed a local hydrogeologic assessment to determine availability. The assessment is based on source availabilities identified using availabilities identified and approved by the TWDB and the NETRWPG. Based on this assessment, it is recommended that by 2030 the Red River County Irrigation WUG drill new wells in the portions of the Nacatoch Aquifer in Red River County located in the Sulphur River Basin to meet 1,450 ac-ft/yr of projected needs for the WUG over the planning period. The Region D analysis indicates that 1,450 ac-ft/yr is available from the Nacatoch Aquifer in the Sulphur Basin in Red River County. In the Nacatoch Aquifer, it is recommended that nine wells with a rated capacity of 200 gpm each be installed to meet about two-thirds of the needs, while the remaining 1,231 ac-ft remains unmet. Construction of wells with the capability to produce these amounts would be sufficient to meet the majority of projected needs for the WUG. An alternative strategy reflecting more groundwater wells to access the additional supply beyond the source availability determined by the MAG has been developed to meet the remaining 97 ac-ft/yr for the purposes of the 2026 Region D Plan.



Attachment A

Irrigation Red River Co
Recommended Strategy
Drill New Wells (Red River, Nacatoch, Sulphur)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Irrigation Red River - Drill New Wells (Red River, Nacatoch Aquifer, Sulphur Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$5,277,00
TOTAL COST OF FACILITIES	**$5,277,00**
- Planning (3%)	$158,00
- Design (7%)	$369,00
- Construction Engineering (1%)	$53,00
Legal Assistance (2%)	$106,00
Fiscal Services (2%)	$106,00
All Other Facilities Contingency (20%)	$1,055,00
Environmental & Archaeology Studies and Mitigation	$146,00
Land Acquisition and Surveying (12 acres)	$61,00
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$239,00
TOTAL COST OF PROJECT	**$7,570,00**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$533,00
Reservoir Debt Service (3.5 percent, 40 years)	$
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$53,00
Intakes and Pump Stations (2.5% of Cost of Facilities)	$
Dam and Reservoir (1.5% of Cost of Facilities)	$
Water Treatment Plant	$
Advanced Water Treatment Facility	$
Pumping Energy Costs (1918812 kW-hr @ 0.09 $/kW-hr)	$173,00
Purchase of Water (2057 acft/yr @ 500 $/acft)	$1,029,00
TOTAL ANNUAL COST	**$1,788,00**
Available Project Yield (acft/yr)	2,05
Annual Cost of Water ($ per acft), based on PF=0	$86
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$61
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$2.6
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$1.8

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

SMITH COUNTY

WUGs:

East Texas MUD
Lindale Rural WSC
Pine Ridge WSC
The City of Winona

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF PINE RIDGE WSC

Description of Water User Group:

The Pine Ridge WSC system is located in northwestern Smith County and eastern Van Zandt County. The WSC serves the unincorporated area northeast of the City of Van and east of the City of Grand Saline. The WSC reported 611 connections. The population is projected to increase from 1,967 persons in 2030 to 3,173 persons in 2080. The WSC is included as a split WUG in Van Zandt and Smith Counties. The system's current water supply consists of four water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is approximately 669 GPM, or 360 ac-ft/yr. The system is bounded on the north by the Golden WSC, on the west by the Pruitt Sandflat WSC, on the south by the Carroll WSC and on the east by the Lindale Rural WSC. The System does have a water conservation plan. The system is projected to have a water supply surplus of 118 ac-ft/yr in 2030 decreasing to a deficit of 29 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

Pine Ridge WSC, Van Zandt, Sabine	2030	2040	2050	2060	2070	2080
Population	350	449	545	654	763	874
Projected Water Demand	43	55	67	80	94	107
Current Water Supply	89	89	89	89	89	89
Projected Supply Surplus (+)/Deficit (-)	**46**	**34**	**22**	**9**	**-5**	**-18**

Pine Ridge WSC, Smith, Sabine	2030	2040	2050	2060	2070	2080
Population	1,617	1,809	1,944	2,062	2,181	2,299
Projected Water Demand	199	222	239	253	268	282
Current Water Supply	271	271	271	271	271	271
Projected Supply Surplus (+)/Deficit (-)	**72**	**49**	**32**	**18**	**3**	**-11**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the system does not have a central sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. Groundwater wells in the Carrizo-Wilcox Aquifer (Sabine Basin) in Smith County were identified as a potentially feasible strategy for the WSC.

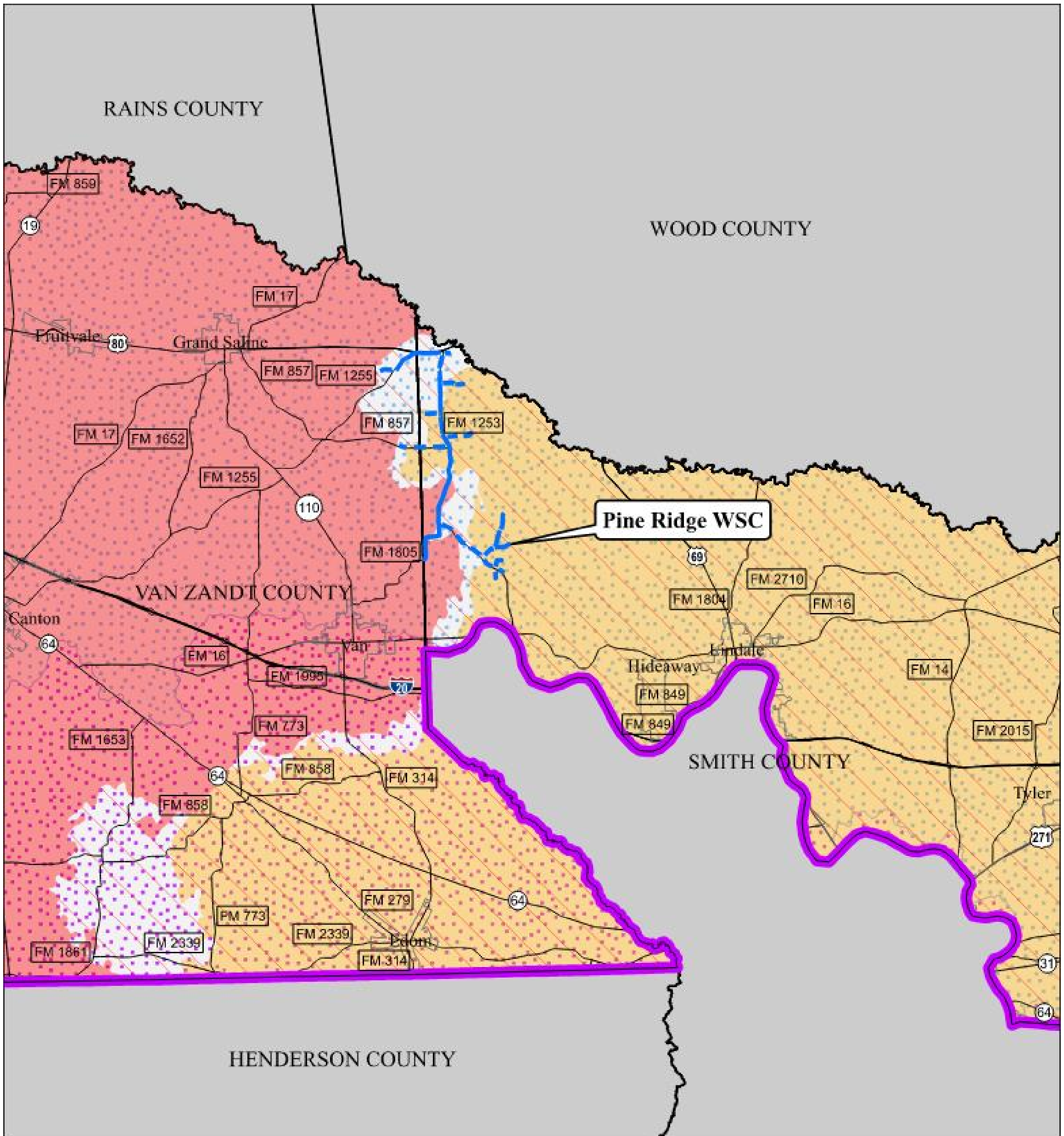
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater (Carrizo-Wilcox, Sabine Basin)	**108**	**$ 761,000**	**$ 62,000**	**$ 574**	**Minimal**
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox Aquifer, Sabine Basin; ac-ft/yr)	0	0	0	0	-2	-29

The recommended strategy for the Pine Ridge WSC to meet their projected deficit of 2 ac-ft/yr in 2070 and deficit of 29 ac-ft/yr in 2080 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo Wilcox Aquifer in Smith County. One well with rated capacity of 50 gpm would provide approximately 27 acre-feet. The Carrizo Wilcox Aquifer in Smith County is projected to have a more than ample supply availability to meet the needs of Pine Ridge WSC for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

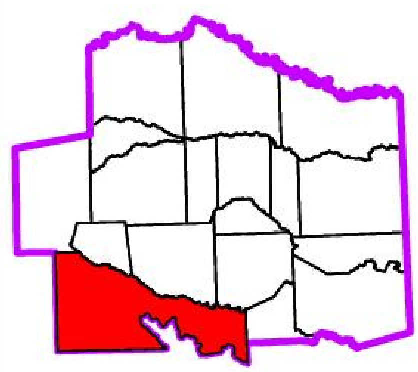


Attachment A

Pine Ridge WSC

Recommended Strategy

Drill new well



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF WINONA

Description of Water User Group:

The City of Winona system is located in northeastern Smith County and serves the incorporated area of the City. The city reported 398 residential connections. The population is projected to increase from 597 persons in 2030 to 818 persons in 2080. The City is included as a WUG. in Smith County. The system's current water supply consists of two water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is approximately 320 GPM, or 169 ac-ft/yr. The system is bounded on the north, west, and south by the Sand Flat WSC and on the east by the Star Mountain WSC. The System does not have a water conservation plan. The system is projected to have a water supply deficit of 11 ac-ft/yr in 2030 decreasing to a deficit of 77 ac-ft/yr in 200.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	597	660	704	743	781	818
Projected Water Demand	180	199	212	224	235	246
Current Water Supply	169	169	169	169	169	169
Projected Supply Surplus (+)/Deficit(-)	**-11**	**-30**	**-43**	**-55**	**-66**	**-77**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcd threshold set by the planning group. Water reuse was not considered because the system does not have a demand for non-potable water. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. Groundwater wells in the Carrizo-Wilcox Aquifer (Sabine River Basin) were identified as a potentially feasible strategy for the City.

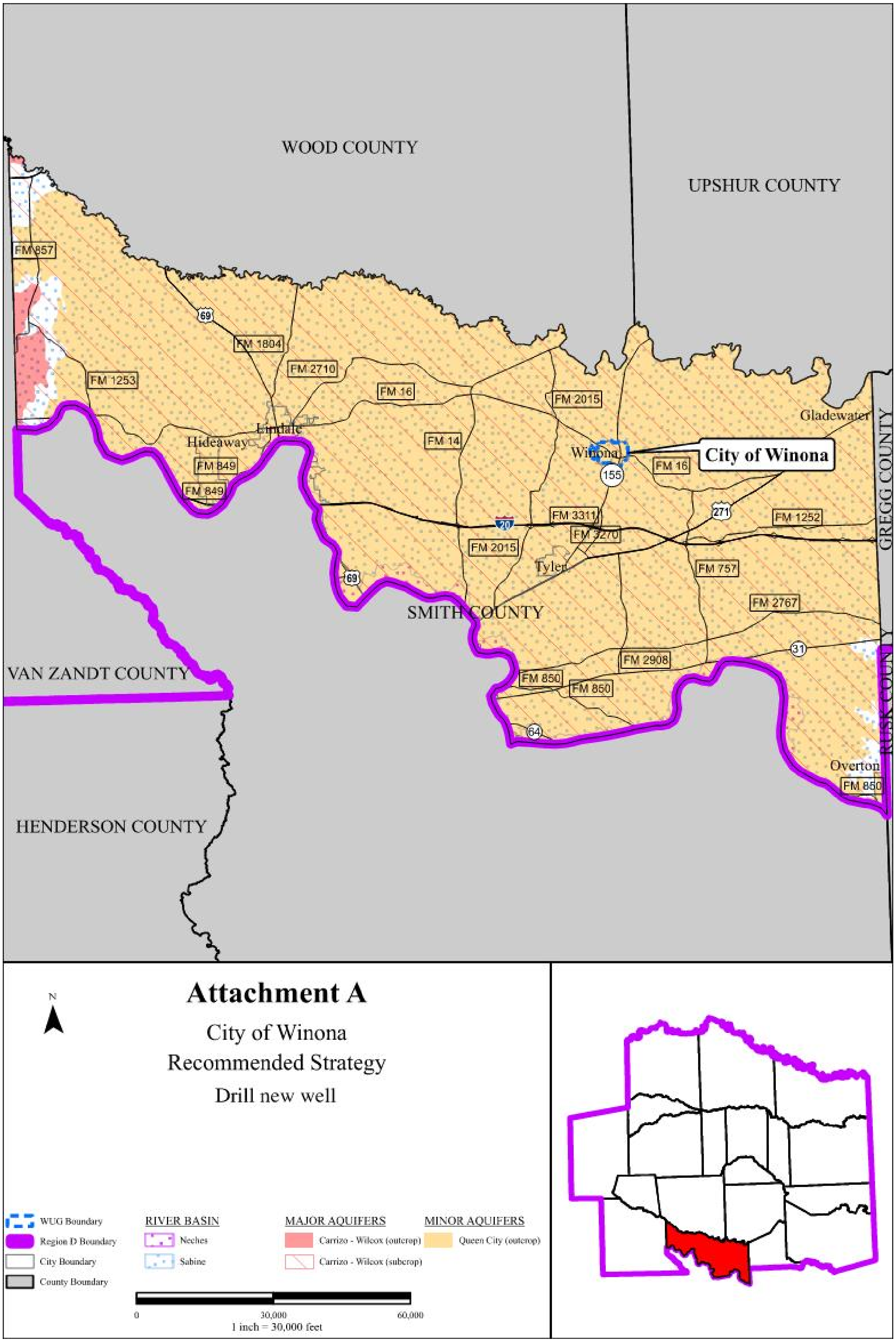
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater (Carrizo-Wilcox Aquifer, Sabine Basin)					
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox Aquifer, Sabine Basin; ac-ft/yr)	80	80	80	80	80	80

The recommended strategy for the City to meet their projected deficit of 11 ac-ft/yr in 2030 and deficit of 77 ac-ft/yr in 2080 would be to construct one additional water well similar to their existing wells just prior to 2030. The recommended supply source will be the Carrizo Wilcox Aquifer in Smith County. One well with rated capacity of 150 gpm would provide approximately 80 acre-feet. The Carrizo Wilcox Aquifer (Sabine River Basin) in Smith County is projected to have a more than ample supply availability to meet the needs of Winona for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



Attachment A

City of Winona
Recommended Strategy
Drill new well

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

TITUS COUNTY

WUGs:

Titus County Steam Electric Power Generation

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STEAM ELECTRIC POWER IN TITUS COUNTY

Description of Water User Group:

Steam Electric Power in Titus County has a demand that is projected to be a constant 29,541 ac-ft/yr for 2030 through 2080. Steam Electric Power in Titus County is currently supplied by groundwater from the Carrizo-Wilcox Aquifer, and surface water from Monticello, Lake O' the Pines, and Welsh purchased from Northeast Texas MWD and surface water from Bob Sandlin purchased from Titus County FWD #1. A deficit of 1,198 ac-ft/yr is projected to occur in 2040 and increase to 5,693 ac-ft/yr by 2080. The annual demand of 29,541 ac-ft/yr represents demand from both Welsh and Pirkey power plants. Pirkey power plant has been decommissioned and no longer operates. Thus approximately 12,679 ac-ft/yr of demand no longer exists.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	29,541	29,541	29,541	29,541	29,541	29,541
Current Water Supply	29,603	28,343	27,083	26,398	25,108	23,848
Projected Supply Surplus (+)/Deficit(-)	**62**	**-1,198**	**-2,458**	**-3,143**	**-4,433**	**-5,693**

Evaluation of Potentially Feasible Water Management Strategies:

With the Monticello and Pirkey Power Plants decommissioned reducing the demand for Titus County Steam Electric by approximately 12,679 ac-ft/yr, there is sufficient supply to meet the needs of the existing Welsh power plant with additional surplus remaining from existing contracted supplies and the firm supply of Welsh. As such it is recommended that the remaining need be left unmet for the 2026 Regional Water Plan, as these needs are associated with a facility (Monticello) that has been closed.

Recommendations:

	2030	2040	2050	2060	2070	2080
Unmet Need	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

UPSHUR COUNTY

WUGs:

The City of Big Sandy
East Mountain Water System

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF BIG SANDY

Description of Water User Group:

The City of Big Sandy is located in southwest corner of Upshur County and serves the incorporated area of the City. The City reported 788 residential connections. The population is projected to decrease from 1,124 persons in 2030 to 1,081 persons in 2080. The System is included as a W.U.G. in Upshur County. The system's current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 460 GPM, or 247 ac-ft/yr. The system is bounded on the north and east by the Pritchett WSC and on south by the Sabine River and on the west by the Fouke WSC. The System does not have a water conservation plan. The System is projected to have a water supply deficit of 19 ac-ft/yr in 2030 increasing to a deficit of 8 ac-ft/yr in 2080. A location map is included as Attachment A.

Water Supply and Demand Analysis:

Sabine River Basin

	2030	2040	2050	2060	2070	2080
Population	1,124	1,135	1,131	1,114	1,097	1,081
Projected Water Demand	266	267	267	263	259	255
Current Water Supply	247	247	247	247	247	247
Projected Supply Surplus (+)/Deficit(-)	-19	-20	-20	-16	-12	-8

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Big Sandy's water supply shortages as summarized in the following table. Advanced conservation was not considered because the city's supply does not meet TCEQ requirements. Water reuse was not considered because the system does not have a sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. A groundwater worksheet is included as Attachment B.

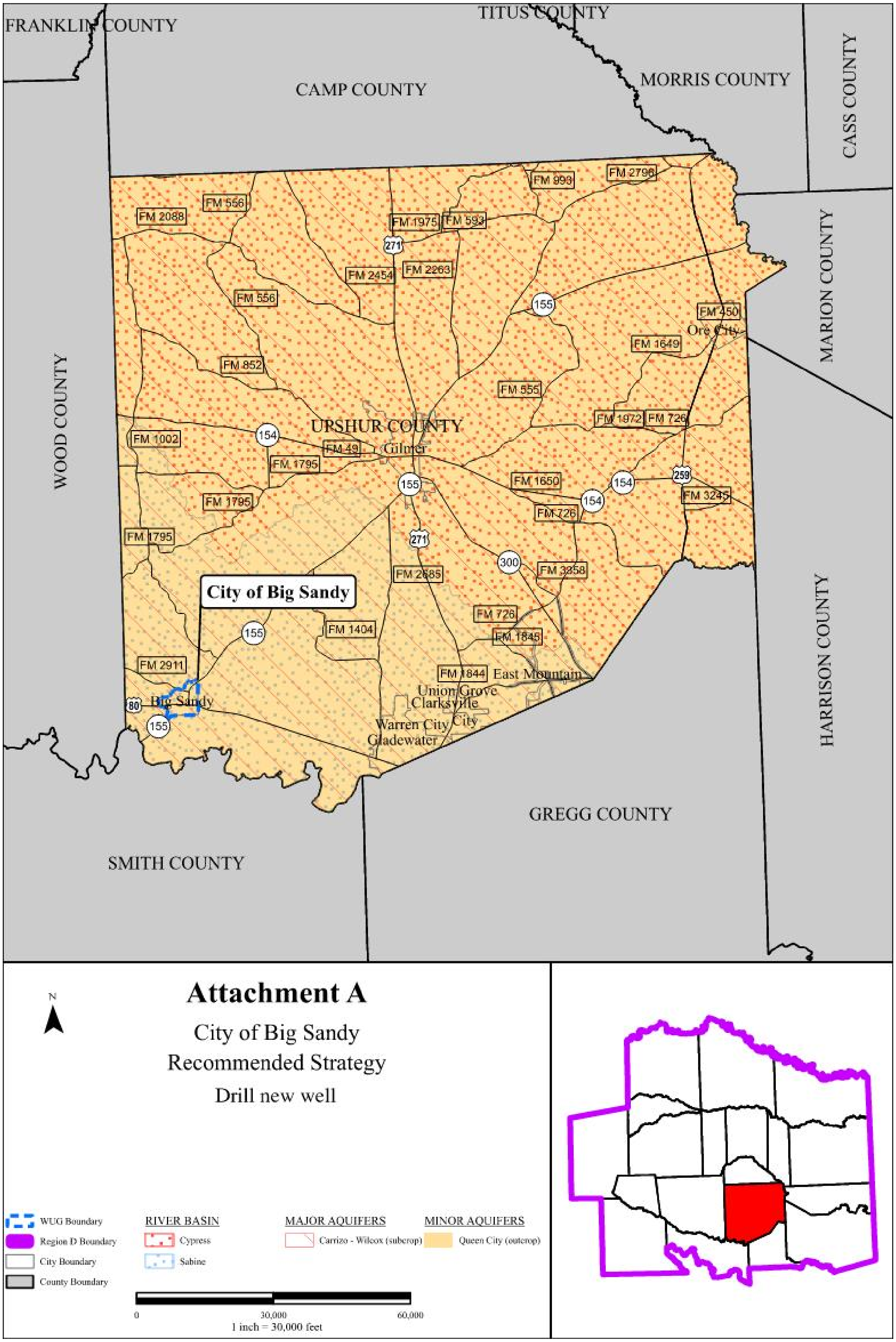
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater (Sabine)					
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Groundwater (ac-ft/yr)	43	43	43	43	43	43

The recommended strategy for the City of Big Sandy to meet their projected deficit of 20 ac-ft/yr in 2040 and 8 ac-ft/yr in 2080 would be to construct one additional water well similar to their existing wells prior to 2030. The recommended supply source will be the Carrizo Wilcox Aquifer in Upshur County. One well with a rated capacity of 80 gpm would provide approximately 43 acre-feet. The Carrizo Wilcox Aquifer in Upshur County is projected to have a more than ample supply availability to meet the needs of the City of Big Sandy for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



Attachment A

City of Big Sandy
Recommended Strategy
Drill new well

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF EAST MOUNTAIN

Description of Water User Group:

The City of East Mountain is located in southern portion Upshur County and serves the incorporated area of the City. The City reported 777 residential connections. The population is projected to decrease from 1,124 persons in 2030 to 1,081 persons in 2080. The System is included as a W.U.G. in Upshur County. The system's current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 460 GPM, or 247 ac-ft/yr. The system is bounded on the north and east by the Pritchett WSC and on south by the Sabine River and on the west by the Fouke WSC. The System does not have a water conservation plan. The System is projected to have a water supply deficit of 175 ac-ft/yr in 2030 decreasing to a deficit of 163 ac-ft/yr in 2080. A location map is included as Attachment A.

Water Supply and Demand Analysis:

Sabine River Basin

	2030	2040	2050	2060	2070	2080
Population	1,132	1,142	1,138	1,122	1,106	1,089
Projected Water Demand	297	299	298	294	289	285
Current Water Supply	122	122	122	122	122	122
Projected Supply Surplus (+)/Deficit(-)	-175	-177	-176	-172	-167	-163

Evaluation of Potentially Feasible Water Management Strategies:

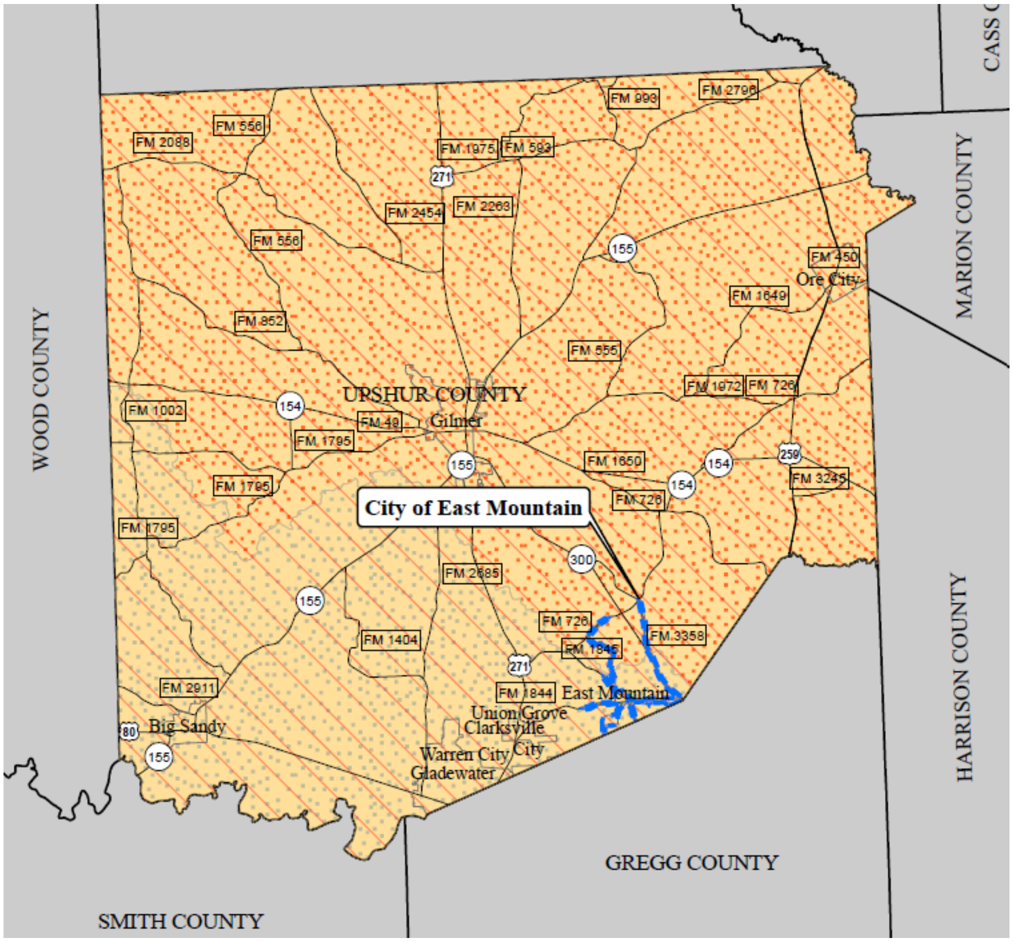
Four alternative strategies were considered to meet the City of East Mountain's water supply shortages as summarized in the following table. Advanced conservation was not considered because the city's supply does not meet TCEQ requirements. Water reuse was not considered because the system does not have a sewer collection system. A Surface water purchase contract through the City of Longview will be utilized to solve the water shortage.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater					
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Surface Water (ac-ft/yr)	175	177	176	172	167	163

The recommended strategy for the City of East Mountain to meet their projected deficit of 175 ac-ft/yr in 2030 and 163 ac-ft/yr in 2080 would be to purchase surface water from the City of Longview.



CASS C
MARION COUNTY
HARRISON COUNTY
WOOD COUNTY
GREGG COUNTY
SMITH COUNTY
UPSHUR COUNTY
Gilmer
City of East Mountain
Ore City
East Mountain
Union Grove
Clarksville City
Warren City
Gladewater
Big Sandy
FM 2088
FM 556
FM 1975
FM 593
FM 993
FM 2796
FM 2454
FM 2263
FM 450
FM 1649
FM 852
FM 555
FM 1002
FM 49
FM 1795
FM 1972
FM 726
FM 1650
FM 3245
FM 2685
FM 1404
FM 1845
FM 3358
FM 1844
FM 2911

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

VAN ZANDT COUNTY

WUGs:

The City of Canton
Edom WSC
Van Zandt County Livestock
Little Hope Moore WSC
Van Zandt County Manufacturing
R-P-M WSC
Ben Wheeler WSC
Fruitvale WSC
Grand Saline
Macbee SUD
Myrtle Springs WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CANTON

Description of Water User Group:

The City of Canton provides water service in Van Zandt County. The city's population is projected to be 5,415 by 2030 and increasing to 8,644 by 2080. The City of Canton utilizes groundwater from the Carrizo-Wilcox aquifer, and surface water from Mill Creek Reservoir and a run of river water right in the Sabine River for water supplies. The City of Canton is not projected to have a shortage during the planning period.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	5,415	6,041	6,673	7,298	7,298	8,644
Projected Water Demand	1,735	1,931	2,133	2,333	2,552	2,763
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	2,375	2,375	2,387	2,391	2,355	2,363
Projected Supply Surplus (+) / Deficit (-)	**640**	**444**	**254**	**58**	**-197**	**-400**

Evaluation of Potentially Feasible Water Management Strategies:

In 2008, the Canton City council authorized the appropriation of $70,000 to prepare a long-term water plan. The project evaluated four (4) reservoir sites in Van Zandt County. Two of the four proved to be feasible from a technical standpoint. The City spent an additional $30,000 in 2009 and 2010 to address questions and provide additional information requested by the committee members. In addition to these two long-term strategies, two additional water wells were included to satisfy short-term needs. These two additional wells have been completed. Additional groundwater supply is a potentially feasible strategy. Water reuse is a potentially feasible water supply strategy, as the City currently has a water rights application pending at the Texas Commission on Environmental Quality for the authorization of indirect reuse. At the request of the City of Canton, the construction of an additional water well by 2020 was identified as a feasible strategy because the City of Canton is planning on developing additional groundwater supply to supplement existing supplies. Also at the request of the City, a potential new reservoir on Grand Saline Creek was also considered as a feasible strategy for the City.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Indirect/Direct Reuse	**255**	**$20,194,000**	**$2,072,000**	**$8,125**	**2**
Drill New Well (Canton, Carrizo-Wilcox, Sabine Basin)	**145**	**$1,118,000**	**$203,000**	**$1,400**	**1**
New Reservoir on Grand Saline Creek	**1,440**	**$102,027,000**	**$6,555,000**	**$4,552**	**5**

New Reservoir on Grand Saline Creek – The City has identified a feasible strategy to meet future water supply needs as being the construction of a new 1,845 acre (24,980 ac-ft) reservoir on Grand Saline Creek, a tributary of Sabine River. This reservoir project was originally described in a 2008 report from Gary Burton Engineering, Inc. to the City of Canton, entitled *Long-Term Water Study Surface Water Supply.* The 2008 report identified the project site, reservoir surface area, drainage area, and estimated construction costs for the reservoir, intake structure, transmission pipeline, and water treatment plant expansion.

The construction costs associated with the new reservoir, raw water transmission line, and water treatment plant expansion are based on calculations from the UCM. For the 2026 planning process, the reservoir has been modeled in the Sabine River WAM (Run 3), subject to SB 3 environmental flow criteria at a junior priority date, and modeled considering the full demand of existing water rights in the Sabine River Basin.

The results of this WAM analysis indicate the project has a firm yield of 1,440 ac-ft per year. The project is estimated to yield 1,440 ac-ft/yr of supply by constructing a new 24,980 ac-ft reservoir and 14" pipeline to Canton's WTP and expanding the WTP, for a total project cost of $63 million with an annual cost of $3.9 million and a unit cost for the additional supply of $2,152 per ac-ft. with debt service and $265 per ac-ft without debt service.

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Sabine) (ac-ft/yr)	0	0	0	0	0	145
Indirect/Direct Reuse	0	0	0	0	255	255

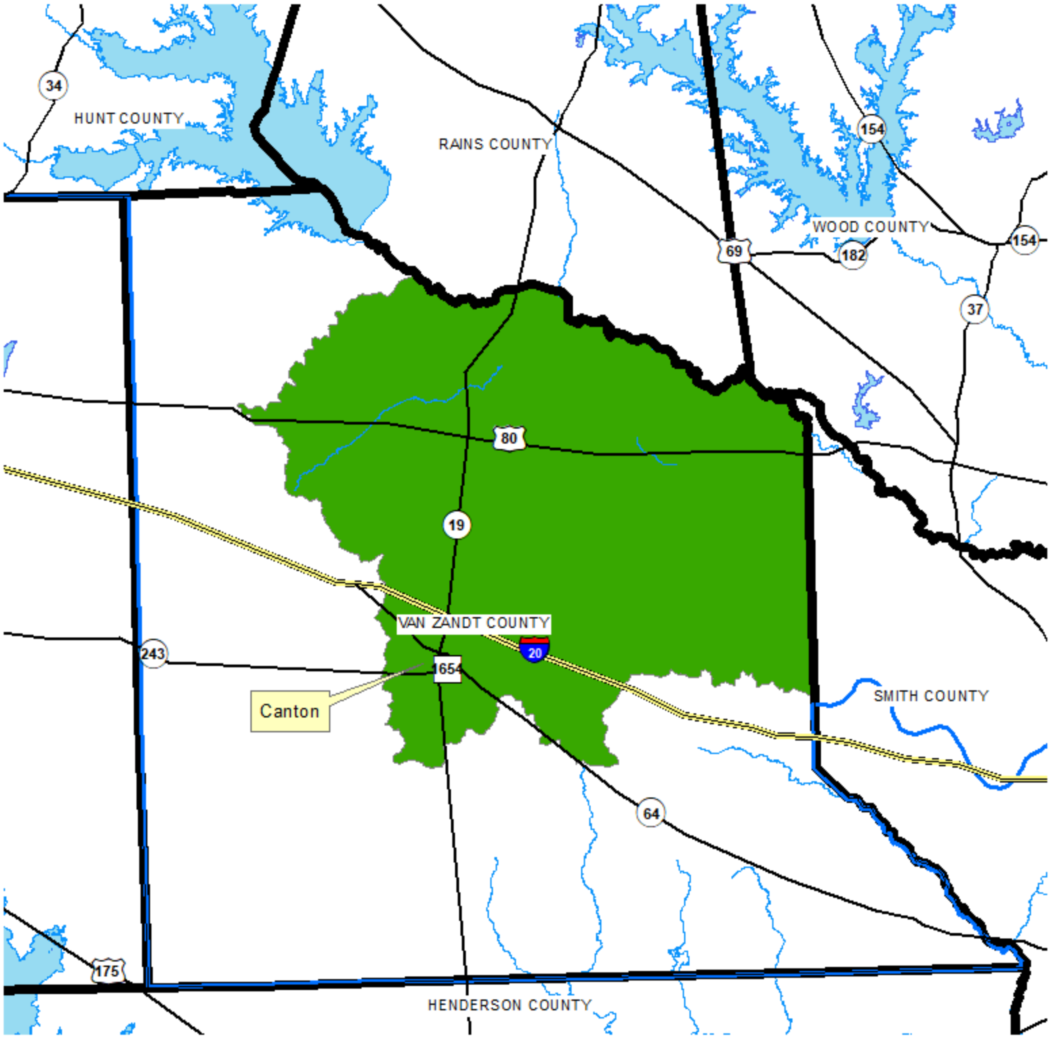
The recommended strategy for the City of Canton is to construct by 2080 an additional water well similar to existing wells in the area. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin in Van Zandt County. The Carrizo-Wilcox Aquifer in Van Zandt County is projected to have sufficient supply availability to provide this supply for the planning period.

A second recommended water strategy option is the utilization of both direct and indirect water reuse. The City of Canton has submitted an application to the TCEQ to secure a water right for indirect reuse and may also seek to secure an authorization for direct reuse. These recommendations are based upon current NETRWPG population projections for the City of Canton.

Because of substantial disagreement over future population and water demands, the City has requested the following alternate strategy:

> The strategy to meet future needs "is with surface water from a proposed reservoir on Grand Saline Creek. The City of Canton has provided to NETRWPG resolutions from three other cities in Van Zandt County supporting the reservoir project. This show of support indicates that a regional surface water reservoir could possibly replace the groundwater strategies for other Van Zandt County public water supplies with projected deficits. However, due to the time typically required to obtain the necessary permits to impound surface water, the City plans to construct one or two additional wells, or implement a reuse option in the interim to meet increasing demands due to population growth and the First Monday influence."

This alternative wording should be considered consistent with this plan in the event that population growth in the potential service area significantly exceeds current NETRWPG projections.

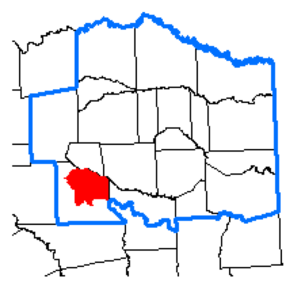


Relation
Buyer
Seller
Source
Region D Boundary
Counties
Streams
Reservoirs

0 15,000 30,000 60,000
Feet
1 inch = 30,000 feet

Attachment A

Canton
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Sabine)



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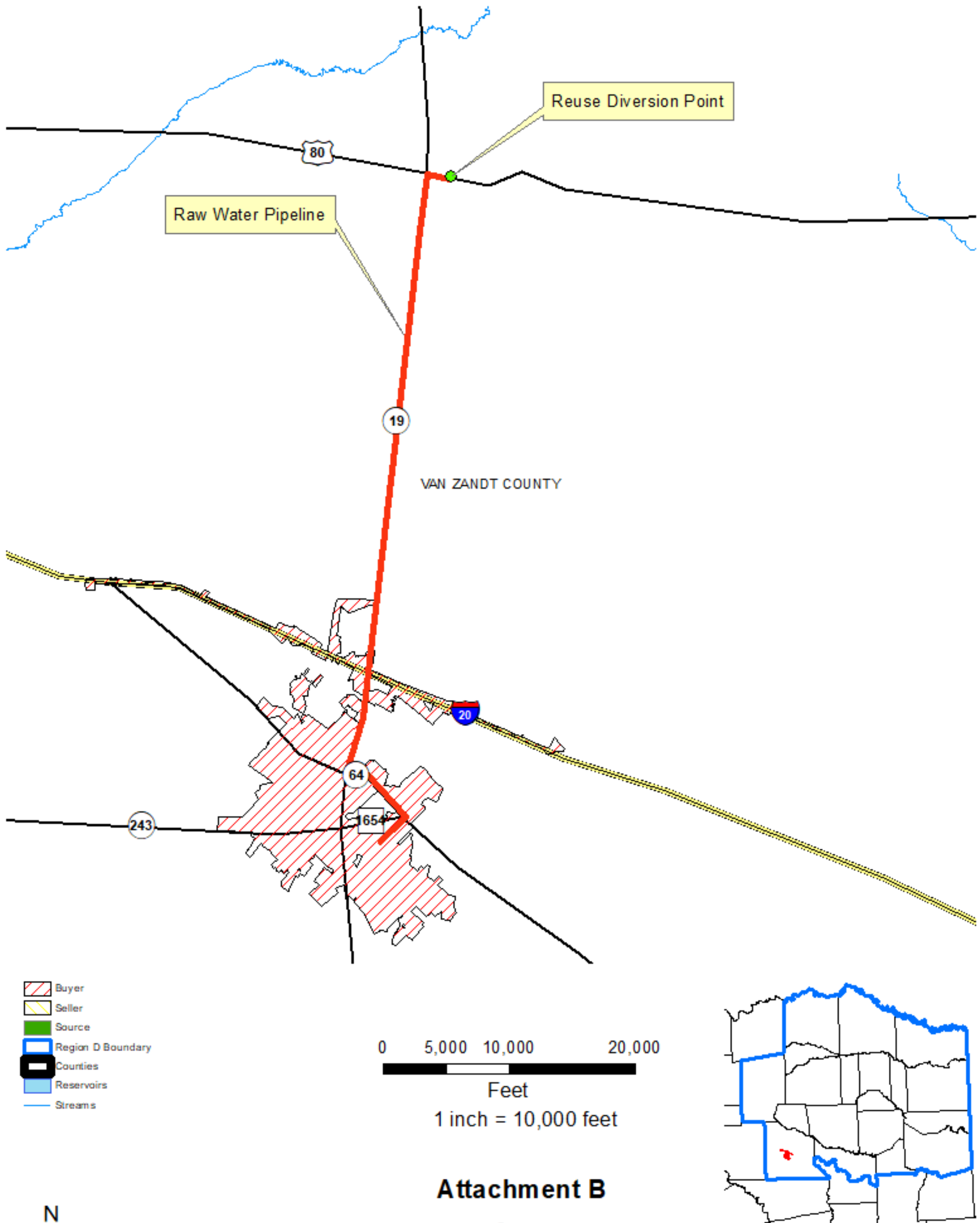
Cost Estimate Summary Water Supply Project Option September 2023 Prices Canton - Drill New Wells (Van Zandt Sabine Carrizo Wilcox)	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$728,000
Water Treatment Plant (0.4 MGD)	$54,000
TOTAL COST OF FACILITIES	**$782,000**
- Planning (3%)	$23,000
- Design (7%)	$55,000
- Construction Engineering (1%)	$8,000
Legal Assistance (2%)	$16,000
Fiscal Services (2%)	$16,000
All Other Facilities Contingency (20%)	$156,000
Environmental & Archaeology Studies and Mitigation	$15,000
Land Acquisition and Surveying (1 acres)	$11,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$36,000
TOTAL COST OF PROJECT	**$1,118,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$79,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$7,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$32,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (128893 kW-hr @ 0.09 $/kW-hr)	$12,000
Purchase of Water (145 acft/yr @ 500 $/acft)	$73,000
TOTAL ANNUAL COST	**$203,000**
Available Project Yield (acft/yr)	145
Annual Cost of Water ($ per acft), based on PF=0	$1,400
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$855

Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.30
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.62
JKJ	*2/12/2025*



Attachment B

Canton
Recommended Strategy
Reuse of Return Flows

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Canton - Indirect Reuse

Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023

Item	*Estimated Costs for Facilities*
Intake Pump Stations (0.5 MGD)	$4,619,000
Transmission Pipeline (8 in. dia., 11.2 miles)	$9,728,000
TOTAL COST OF FACILITIES	**$14,347,000**
- Planning (3%)	$430,000
- Design (7%)	$1,004,000
- Construction Engineering (1%)	$143,000
Legal Assistance (2%)	$287,000
Fiscal Services (2%)	$287,000
Pipeline Contingency (15%)	$1,459,000
All Other Facilities Contingency (20%)	$924,000
Environmental & Archaeology Studies and Mitigation	$378,000
Land Acquisition and Surveying (32 acres)	$299,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$636,000
TOTAL COST OF PROJECT	**$20,194,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$1,421,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$97,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$115,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$430,000
Pumping Energy Costs (99064 kW-hr @ 0.09 $/kW-hr)	$9,000
Purchase of Water (acft/yr @ $/acft)	$0
TOTAL ANNUAL COST	**$2,072,000**

Available Project Yield (acft/yr)	255
Annual Cost of Water ($ per acft), based on PF=1.8	$8,125
Annual Cost of Water After Debt Service ($ per acft), based on PF=1.8	$2,553
Annual Cost of Water ($ per 1,000 gallons), based on PF=1.8	$24.93
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1.8	$7.83
JKJ	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF EDOM WATER SUPPLY CORPORATION IN VAN ZANDT COUNTY

Description of Water User Group:

Edom WSC provides water service in Van Zandt and Henderson Counties. The WUG population is projected to be 1,271 by 2030 and increases to 1,346 by 2080. Edom WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County. Edom WSC is projected to have a total deficit of 67 ac-ft/yr in 2030 and increasing to a deficit of 87 ac-ft/yr by 2080; the shortage projected to occur in Van Zandt County is 46 ac-ft/yr in 2030 increasing to 60 ac-ft/yr by 2080. The shortage in Henderson County is 21 ac-ft/yr in 2030, increasing to 27 ac-ft/yr in 2080.

Water Supply and Demand Analysis:

Edom WSC	2030	2040	2050	2060	2070	2080
Population	1,271	1,311	1,323	1,330	1,337	1,346
Projected Water Demand	169	174	175	176	176	177
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	102	99	96	93	90	90
Projected Supply Surplus (+) / Deficit (-)	**-67**	**-75**	**-79**	**-83**	**-86**	**-87**

Projected Supply Surplus (+) / Deficit (-) by County	2030	2040	2050	2060	2070	2080
Van Zandt	-46	-51	-56	-59	-60	-60
Henderson	-21	-24	-23	-24	-26	-27
Total	**-67**	**-75**	**-79**	**-83**	**-86**	**-87**

Evaluation of Potentially Feasible Water Management Strategies:

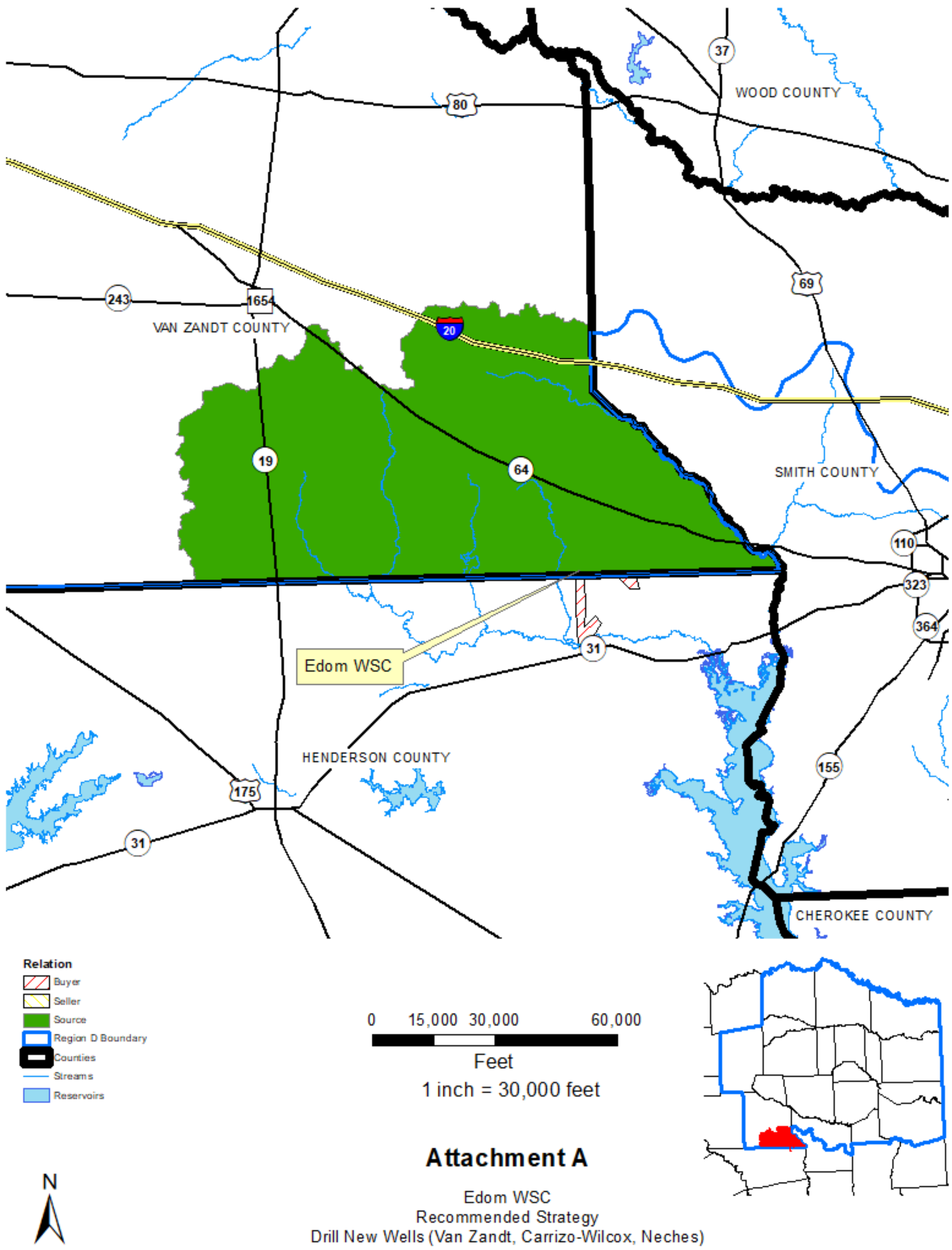
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was not considered because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for Edom WSC.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	**87**	**$2,325,000**	**$255,000**	**$2,931**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Neches Basin; ac-ft/yr)Edom WSC, Van Zandt, Carrizo, Neches)	87	87	87	87	87	87

The recommended strategy for Edom WSC to meet their projected deficit of 67 ac-ft/yr in 2030 up to 87 ac-ft/yr in 2080 would be to construct three additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Neches Basin in Van Zandt County. One well with rated capacity of 50 gpm each, pumping at an approximately depth of 560 ft., would provide approximately 27 acre-feet each.



Attachment A

Edom WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Neches)

Cost Estimate Summary *Water Supply Project Option* *September 2023 Prices* *EDOM WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Neches Basin)*	
Cost based on ENR CCI 13485.67 for September 2023 and ***a PPI of 278.502 for September 2023***	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,551,000
Water Treatment Plant (0.2 MGD)	$41,000
TOTAL COST OF FACILITIES	**$1,592,000**
- Planning (3%)	$48,000
- Design (7%)	$111,000
- Construction Engineering (1%)	$16,000
Legal Assistance (2%)	$32,000
Fiscal Services (2%)	$32,000
All Other Facilities Contingency (20%)	$319,000
Environmental & Archaeology Studies and Mitigation	$60,000
Land Acquisition and Surveying (3 acres)	$41,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$74,000
TOTAL COST OF PROJECT	**$2,325,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$164,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$16,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$25,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (71921 kW-hr @ 0.09 $/kW-hr)	$6,000
Purchase of Water (87 acft/yr @ 500 $/acft)	$44,000
TOTAL ANNUAL COST	**$255,000**
Available Project Yield (acft/yr)	87
Annual Cost of Water ($ per acft), based on PF=0	$2,931

Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$1,046
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$8.99
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$3.21

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN VAN ZANDT COUNTY

Description of Water User Group:

The Livestock WUG in Van Zandt County has a demand that is projected to remain constant at 1,934 ac-ft/yr for the planning period. The Livestock WUG in Van Zandt County is currently supplied by groundwater from the Carrizo-Wilcox Aquifer and local livestock supplies. A deficit of 158 ac-ft/yr is projected to occur by 2030 increasing to 164 ac-ft/yr by 2070.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	1,934	1,934	1,934	1,934	1,934	1,934
Current Water Supply	1,776	1,774	1,775	1,775	1,770	1,771
Projected Supply Surplus (+)/Deficit(-)	**-158**	**-160**	**-159**	**-159**	**-164**	**-163**

Evaluation of Potentially Feasible Water Management Strategies:

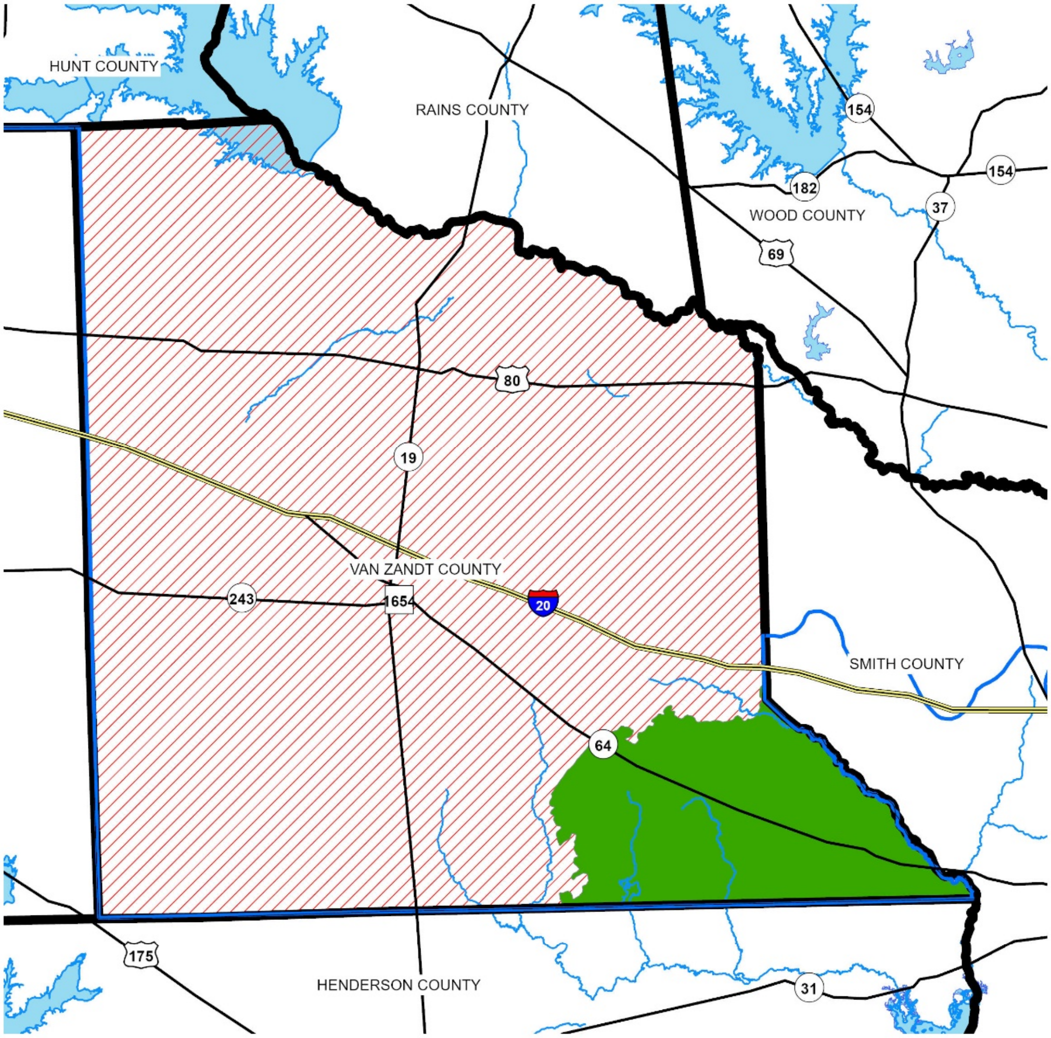
Three alternative strategies were considered to meet the Van Zandt County Livestock WUG's water supply shortages. Groundwater from the Carrizo-Wilcox and Queen City aquifers has been identified as a potential source of water for irrigation in Van Zandt. Surface water has been evaluated as a potential water source.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Queen City Aquifer, Neches Basin)	**194**	**$2,238,000**	**$269,000**	**$1,650**	**1**
New Surface Water Right in Sabine Basin	**0**	**-**	**-**	**-**	**-**
New Surface Water Right in Neches Basin	**0**	**-**	**-**	**-**	**-**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Queen City, Neches) (ac-ft/yr)	**194**	**194**	**194**	**194**	**194**	**194**

The recommended strategy for Irrigation in Van Zandt County is to construct by 2030 two additional water wells similar to existing wells in the area. The recommended supply source will be the Queen City Aquifer in the Neches River Basin in Van Zandt County. Two wells with rated capacity of 150 gpm would provide the needed 163 ac-ft/yr. The Queen City Aquifer in Van Zandt County is projected to have sufficient supply availability to provide this supply for the planning period.



Relation
- Buyer
- Seller
- Source
- Region D Boundary
- Counties
- Streams
- Reservoirs

0 15,000 30,000 60,000
Feet
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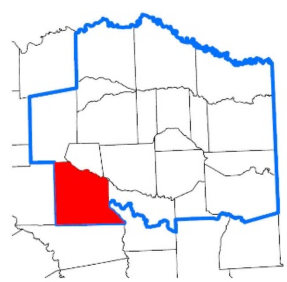

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Attachment A

Livestock Van Zandt County
Recommended Strategy
Drill New Wells (Van Zandt, Queen City, Neches)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Livestock Van Zandt - Drill New Wells (Van Zandt, Queen City Aquifer, Neches Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$1,556,000
TOTAL COST OF FACILITIES	**$1,556,000**
- Planning (3%)	$47,000
- Design (7%)	$109,000
- Construction Engineering (1%)	$16,000
Legal Assistance (2%)	$31,000
Fiscal Services (2%)	$31,000
All Other Facilities Contingency (20%)	$311,000
Environmental & Archaeology Studies and Mitigation	$42,000
Land Acquisition and Surveying (3 acres)	$24,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$71,000
TOTAL COST OF PROJECT	**$2,238,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$157,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$16,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (185760 kW-hr @ 0.09 $/kW-hr)	$17,000
Purchase of Water (194 acft/yr @ 500 $/acft)	$97,000
TOTAL ANNUAL COST	**$287,000**
Available Project Yield (acft/yr)	194
Annual Cost of Water ($ per acft), based on PF=0	$1,479
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$670
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.54
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.06

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LITTLE HOPE MOORE WATER SUPPLY CORPORATION IN VAN ZANDT COUNTY

Description of Water User Group:

Little Hope Moore WSC provides water service in Van Zandt County. The WUG population is projected to be 1,478 by 2030 and increases to 1,745 by 2080. Little Hope Moore WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer in Van Zandt County. Little Hope Moore WSC is projected to have a total deficit of 12 ac-ft/yr in 2030 and increasing to a deficit of 48 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

Little Hope Moore WSC	2030	2040	2050	2060	2070	2080
Population	1,478	1,545	1,607	1,651	1,698	1,745
Projected Water Demand	133	138	143	147	152	156
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	121	118	115	111	108	108
Projected Supply Surplus (+) / Deficit (-)	**-12**	**-20**	**-28**	**-36**	**-44**	**-48**

Evaluation of Potentially Feasible Water Management Strategies:

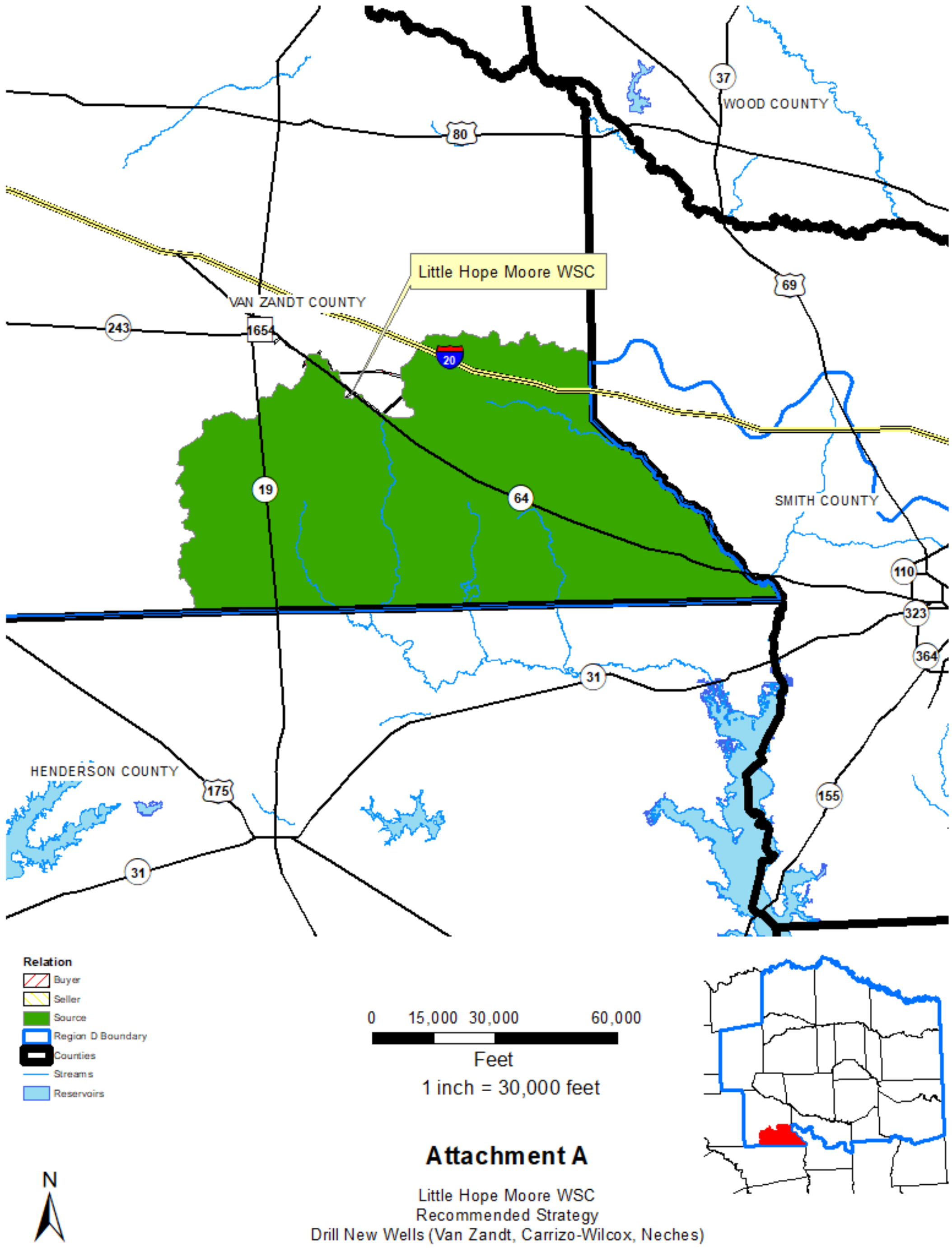
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered feasible because the WSC does not have a demand for non-potable water. Surface water was not considered cost effective because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for Little Hope Moore WSC.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox Aquifer, Neches Basin)	**17**	**$593,000**	**$56,000**	**$806**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Neches Basin; ac-ft/yr)	0	0	0	3	11	17

The recommended strategy for Little Hope Moore WSC to meet their projected deficit of 12 ac-ft/yr in 2030 and 48 ac-ft/yr in 2080 would be to construct an additional water well similar to their existing wells. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Neches Basin in Van Zandt County. One well with rated capacity of 50 gpm each, pumping at an approximately depth of 560 ft., would provide approximately 27 acre-feet each.



Attachment A

Little Hope Moore WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Neches)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices
Little Hope Moore - Drill New Wells (Van Zandt, Carrizo Wilcox Aquifer, Neches Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$399,000
Water Treatment Plant (0 MGD)	$15,000
TOTAL COST OF FACILITIES	**$414,000**
- Planning (3%)	$12,000
- Design (7%)	$29,000
- Construction Engineering (1%)	$4,000
Legal Assistance (2%)	$8,000
Fiscal Services (2%)	$8,000
All Other Facilities Contingency (20%)	$83,000
Environmental & Archaeology Studies and Mitigation	$9,000
Land Acquisition and Surveying (1 acres)	$7,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$19,000
TOTAL COST OF PROJECT	**$593,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$42,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$4,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (13530 kW-hr @ 0.09 $/kW-hr)	$1,000
Purchase of Water (17 acft/yr @ 500 $/acft)	$9,000
TOTAL ANNUAL COST	**$56,000**
Available Project Yield (acft/yr)	17

Annual Cost of Water ($ per acft), based on PF=0	$3,294
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$824
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$10.11
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.53
Note: One or more cost element has been calculated externally	
JKJ	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MANUFACTURING IN VAN ZANDT COUNTY

Description of Water User Group:

The Manufacturing WUG in Van Zandt County has a demand that is projected to increase from 556 ac-ft/yr in 2030 to 667 ac-ft/yr by 2080. Manufacturing in Van Zandt County is supplied by groundwater from the Carrizo-Wilcox Aquifer, purchased groundwater from Golden WSC and Grand Saline, and surface water from run-of-river permits on the Sabine River, a permit for diversion from Lake Tawakoni. A deficit of 344 ac-ft/yr is projected to occur in 2030, increasing to 453 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Projected Water Demand	556	577	598	620	643	667
Current Water Supply	212	212	218	220	210	214
Projected Supply Surplus (+)/Deficit(-)	**-344**	**-365**	**-380**	**-400**	**-433**	**-453**

Evaluation of Potentially Feasible Water Management Strategies:

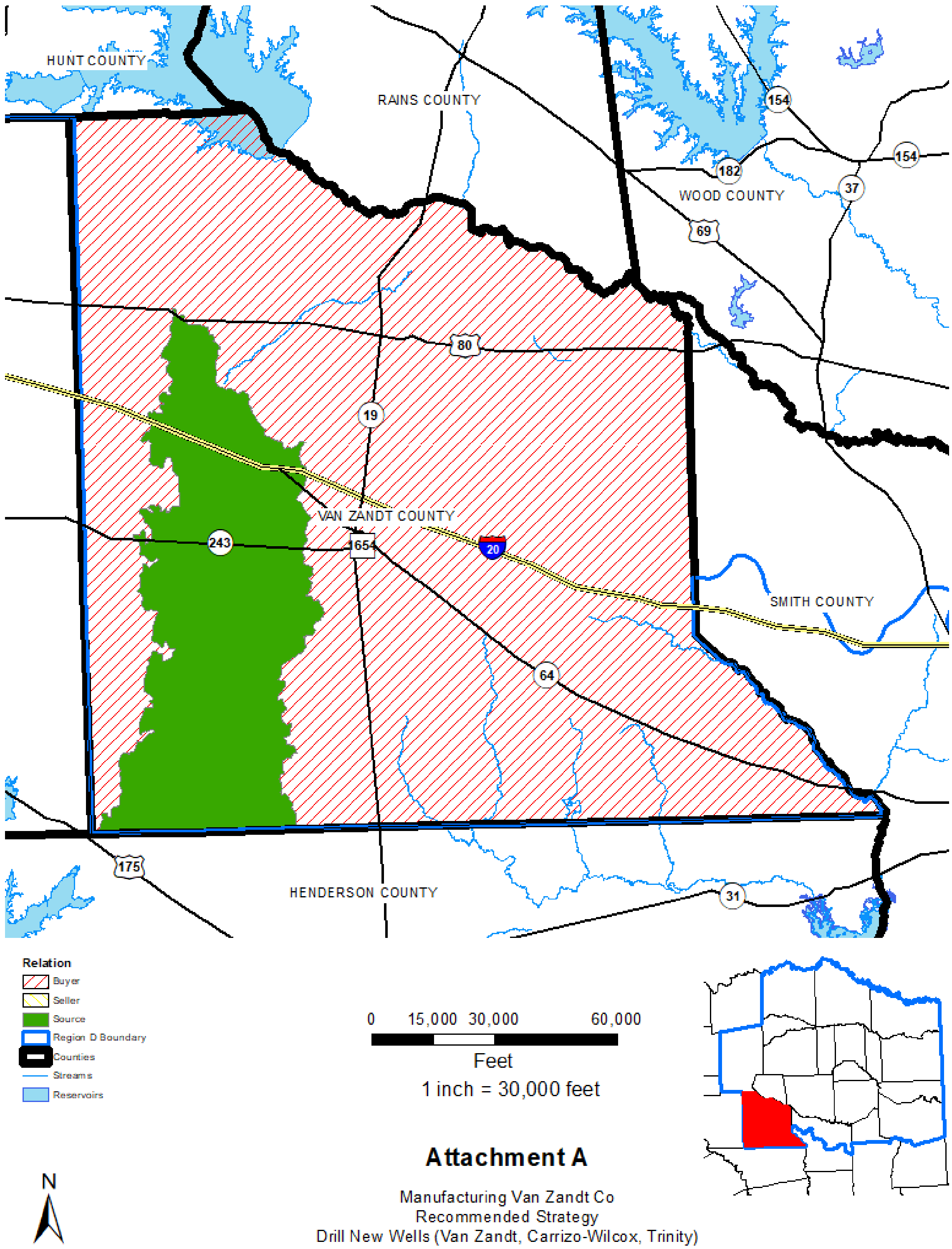
Six alternative strategies were considered to meet the Van Zandt County Manufacturing WUG's water supply shortages. Advanced water conservation for manufacturing was considered in this planning effort to reduce overall demands; however, it does not resolve all identified needs. The use of reuse water from nearby municipalities was not considered to be feasible at present. Surface water was not considered as a viable alternative to meet projected demands because no supplies are readily available in the proximity of the identified needs. Groundwater has been identified as a potential source of water for manufacturing in Van Zandt County. In addition, groundwater supplies can be contracted from the City of Grand Saline.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**67**	**$0**	**$0**	**$0**	**1**
Drill New Wells (Carrizo-Wilcox Aquifer; Trinity Basin)	**386**	**$4,857,000**	**$598,000**	**$1,549**	**1**
Increase Existing Contract for Carrizo-Wilcox from Grand Saline	**72**	**$0**	**$202,000**	**$2,806**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Advanced Water Conservation (ac-ft/yr)	56	58	60	62	64	67
Drill New Wells (Carrizo-Wilcox, Trinity) (ac-ft/yr)	242	504	504	356	238	143

The recommended strategy for Manufacturing in Van Zandt County is implementation of advanced water conservation (via industrial water audits) by 2030. Implementation of this water management strategy is estimated to conserve up to 67 ac-ft/yr (i.e. 10% of projected demand). Additionally, it is recommended that by 2030 the Manufacturing WUG in Van Zandt County construct an additional six water wells. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Trinity River Basin in Van Zandt County. Six wells with rated capacities of 75 gpm each would provide up to approximately 504 ac-ft/yr. The Carrizo-Wilcox Aquifer in Van Zandt County is not projected to have sufficient supply availability to provide this supply throughout the planning period.



Attachment A

Manufacturing Van Zandt Co
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Trinity)

Cost Estimate Summary ***Water Supply Project Option*** ***September 2023 Prices*** ***Manufacturing Van Zandt - Drill New Wells (Van Zandt, Carrizo Wilcox Aquifer, Trinity Basin)***	
Cost based on ENR CCI 13485.67 for September 2023 and ***a PPI of 278.502 for September 2023***	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$3,350,000
TOTAL COST OF FACILITIES	**$3,350,000**
- Planning (3%)	$101,000
- Design (7%)	$235,000
- Construction Engineering (1%)	$34,000
Legal Assistance (2%)	$67,000
Fiscal Services (2%)	$67,000
All Other Facilities Contingency (20%)	$670,000
Environmental & Archaeology Studies and Mitigation	$115,000
Land Acquisition and Surveying (7 acres)	$65,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$153,000
TOTAL COST OF PROJECT	**$4,857,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$342,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$34,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (319409 kW-hr @ 0.09 $/kW-hr)	$29,000
Purchase of Water (386 acft/yr @ 500 $/acft)	$193,000
TOTAL ANNUAL COST	**$598,000**
Available Project Yield (acft/yr)	386
Annual Cost of Water ($ per acft), based on PF=0	$1,549
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$663

Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.75
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.04
JKJ	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RPM WATER SUPPLY CORPORATION IN VAN ZANDT COUNTY

Description of Water User Group:

R-P-M WSC provides water service in Van Zandt, Henderson and Smith Counties. The WUG population is projected to be 2,099 by 2030 and decreases to 1,951 by 2080. R-P-M WSC supplies its customers with groundwater from the Carrizo-Wilcox and Queen City aquifers with five water wells in Van Zandt County. R-P-M WSC is projected to have a total deficit of 21 ac-ft/yr in 2030 decreasing to a deficit of 14 ac-ft/yr by 2080; the shortage projected to occur in Van Zandt County is 21 ac-ft/yr in 2030 decreasing to 14 ac-ft/yr by 2080. The shortages in Henderson County and Smith County are 0 ac-ft/yr from 2030 to 2080.

Water Supply and Demand Analysis:

RPM WSC	2030	2040	2050	2060	2070	2080
Population	2,099	2,117	2,085	2,037	1,992	1,951
Projected Water Demand	318	319	314	308	301	295
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	297	293	290	285	282	281
Projected Supply Surplus (+) / Deficit (-)	**-21**	**-26**	**-24**	**-23**	**-19**	**-14**

Projected Supply Surplus (+) / Deficit (-) by County	2030	2040	2050	2060	2070	2080
Van Zandt	-21	-26	-24	-23	-19	-14
Henderson	0	0	0	0	0	0
Smith	0	0	0	0	0	0
Total	**-21**	**-26**	**-24**	**-23**	**-19**	**-14**

Evaluation of Potentially Feasible Water Management Strategies:

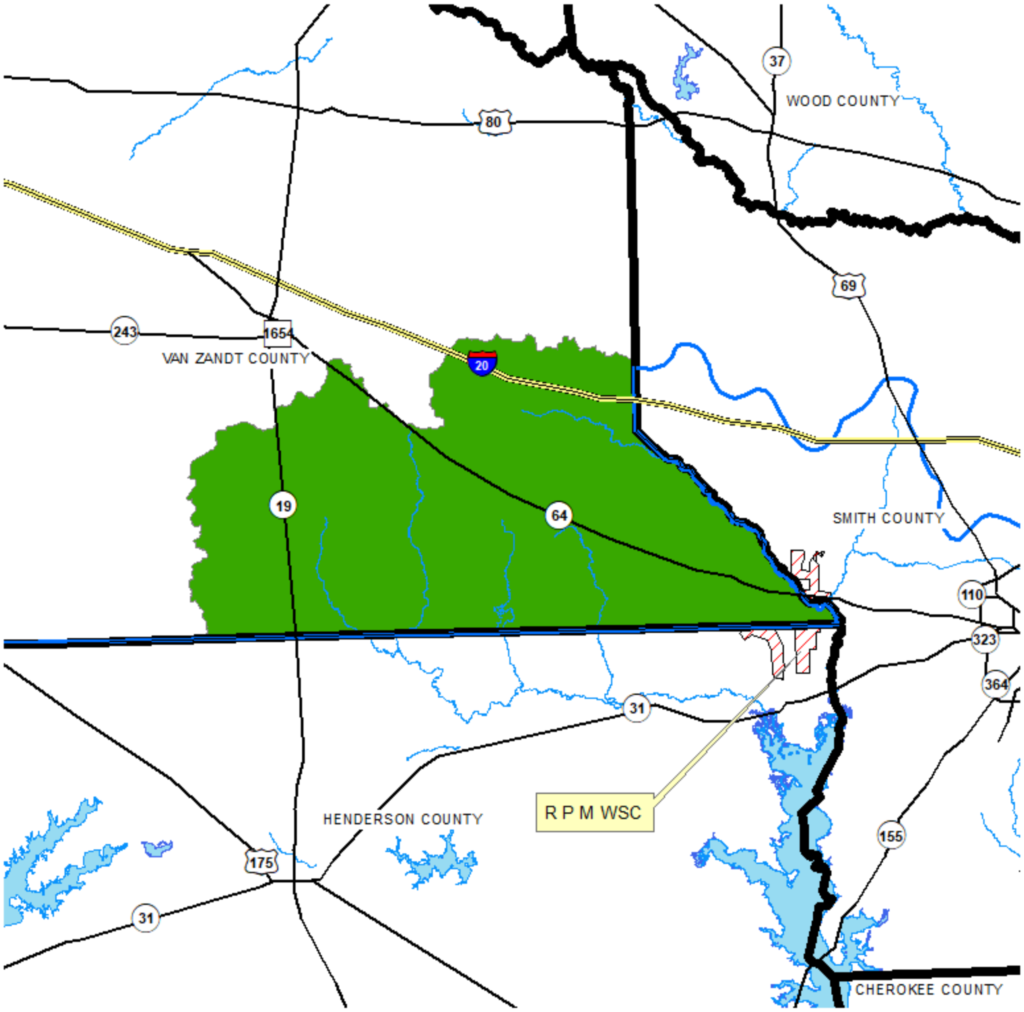
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was not considered because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for R-P-M WSC.

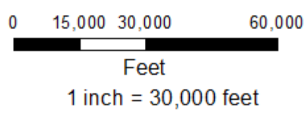
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox Aquifer, Neches Basin)	**217**	**$7,310,000**	**$727,000**	**$981**	**1**

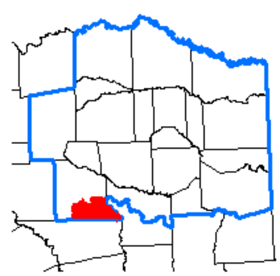
Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Carrizo-Wilcox, Neches Basin; ac-ft/yr)	0	34	79	131	175	217

The recommended strategy for R-P-M WSC to meet their projected deficit of 21 ac-ft/yr in 2030 and 14 ac-ft/yr in 2080 would be to construct nine additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Neches Basin in Van Zandt County. Nine wells with rated capacity of 50 gpm each, pumping at an approximately depth of 560 ft., would provide approximately 27 acre-feet each.







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Attachment A

R P M WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Neches)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

R P M WSC - Drill New Wells (Van Zandt, Carrizo Wilcox Aquifer, Neches Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$4,941,000
Water Treatment Plant (0.6 MGD)	$71,000
TOTAL COST OF FACILITIES	**$5,012,000**
- Planning (3%)	$150,000
- Design (7%)	$351,000
- Construction Engineering (1%)	$50,000
Legal Assistance (2%)	$100,000
Fiscal Services (2%)	$100,000
All Other Facilities Contingency (20%)	$1,002,000
Environmental & Archaeology Studies and Mitigation	$199,000
Land Acquisition and Surveying (12 acres)	$115,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$231,000
TOTAL COST OF PROJECT	**$7,310,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$514,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$49,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$42,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (139565 kW-hr @ 0.09 $/kW-hr)	$13,000
Purchase of Water (217 acft/yr @ 500 $/acft)	$109,000
TOTAL ANNUAL COST	**$727,000**
Available Project Yield (acft/yr)	217
Annual Cost of Water ($ per acft), based on PF=0	$3,350

Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$982
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$10.28
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$3.01
JKJ	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BEN WHEELER WSC IN VAN ZANDT COUNTY

Description of Water User Group:

Ben Wheeler WSC provides water service in Van Zandt County. The WUG population is projected to be 2,864 by 2030 and increases to 4,909 by 2080. Ben Wheeler WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County. Ben Wheeler WSC is projected to have a total deficit of 36 ac-ft/yr in 2040 and increasing to a deficit of 230 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

Ben Wheeler WSC	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Population	2,864	3,271	3,658	4,071	4,489	4,909
Projected Water Demand	294	333	373	415	458	501
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	307	297	290	281	272	271
Projected Supply Surplus (+) / Deficit (-)	**13**	**-36**	**-83**	**-134**	**-186**	**-230**

Evaluation of Potentially Feasible Water Management Strategies:

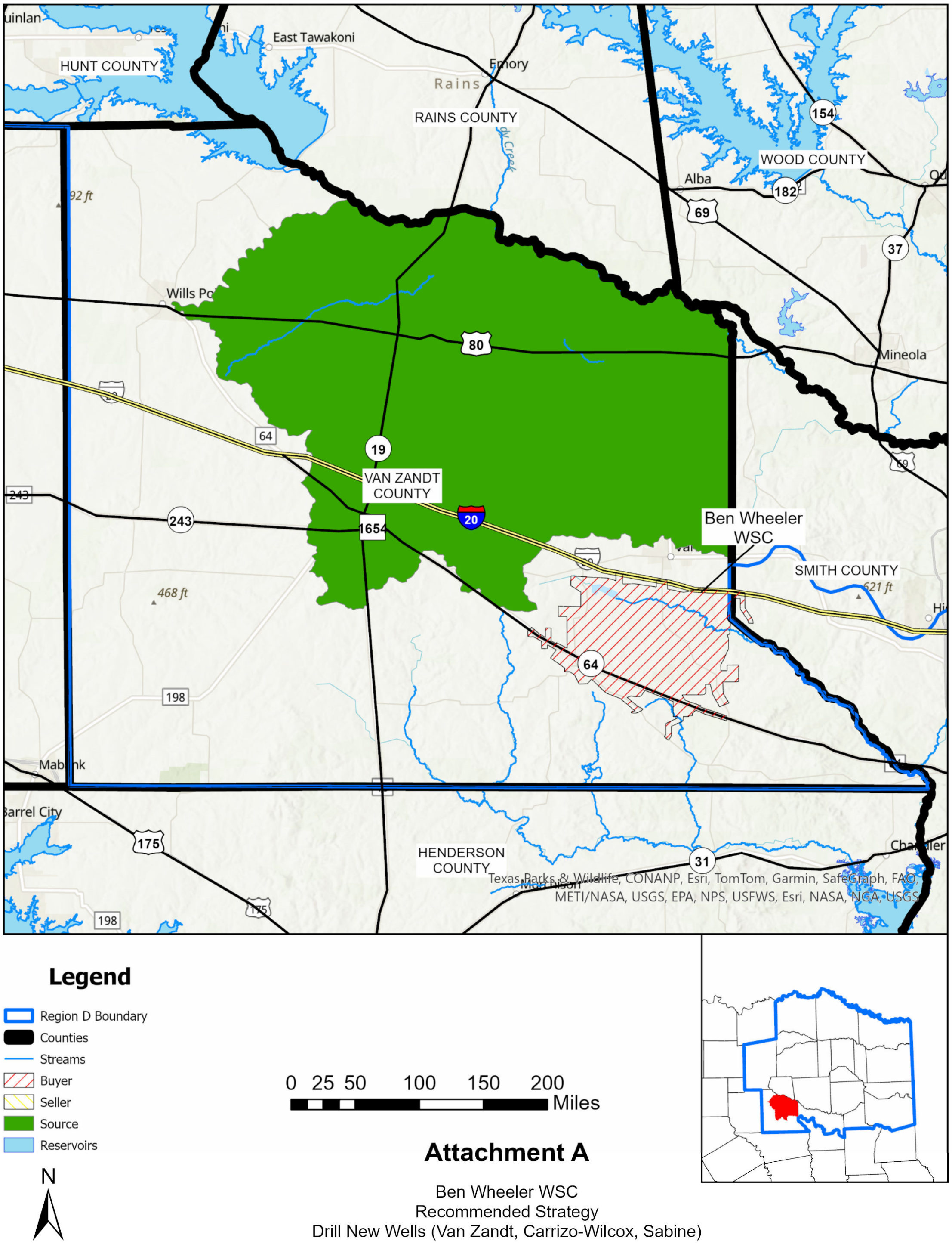
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was not considered because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for Ben Wheeler WSC.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	**230**	**$3,611,000**	**$541,000**	**$1,524**	**1**

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	0	36	83	134	186	230

The recommended strategy for Ben Wheeler WSC is to meet their projected deficit of 36 ac-ft/yr in 2040 and 230 ac-ft/yr in 2080 would be to construct four additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin in Van Zandt County.



Attachment A

Ben Wheeler WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Sabine)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices
Ben Wheeler WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Sabine Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$2,417,000
Water Treatment Plant (1 MGD)	$98,000
TOTAL COST OF FACILITIES	**$2,515,000**
- Planning (3%)	$75,000
- Design (7%)	$176,000
- Construction Engineering (1%)	$25,000
Legal Assistance (2%)	$50,000
Fiscal Services (2%)	$50,000
All Other Facilities Contingency (20%)	$503,000
Environmental & Archaeology Studies and Mitigation	$68,000
Land Acquisition and Surveying (5 acres)	$35,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$114,000
TOTAL COST OF PROJECT	**$3,611,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$254,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$24,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$59,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (292302 kW-hr @ 0.09 $/kW-hr)	$26,000
Purchase of Water (355 acft/yr @ 500 $/acft)	$178,000
TOTAL ANNUAL COST	**$541,000**
Available Project Yield (acft/yr)	355

Annual Cost of Water ($ per acft), based on PF=0	$1,524
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$808
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.68
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.48
JMP	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF FRUITVALE WSC IN VAN ZANDT COUNTY

Description of Water User Group:

Fruitvale WSC provides water service in Van Zandt County. The WUG population is projected to be 3,467 by 2030 and increases to 5,049 by 2080. Fruitvale WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County. Fruitvale WSC is projected to have a total deficit of 3 ac-ft/yr in 2040 and increasing to a deficit of 95 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

Fruitvale WSC	2030	2040	2050	2060	2070	2080
Population	3,467	3,794	4,107	4,416	4,730	5,049
Projected Water Demand	332	361	391	421	451	481
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	358	358	373	378	375	386
Projected Supply Surplus (+) / Deficit (-)	**26**	**-3**	**-18**	**-43**	**-76**	**-95**

Evaluation of Potentially Feasible Water Management Strategies:

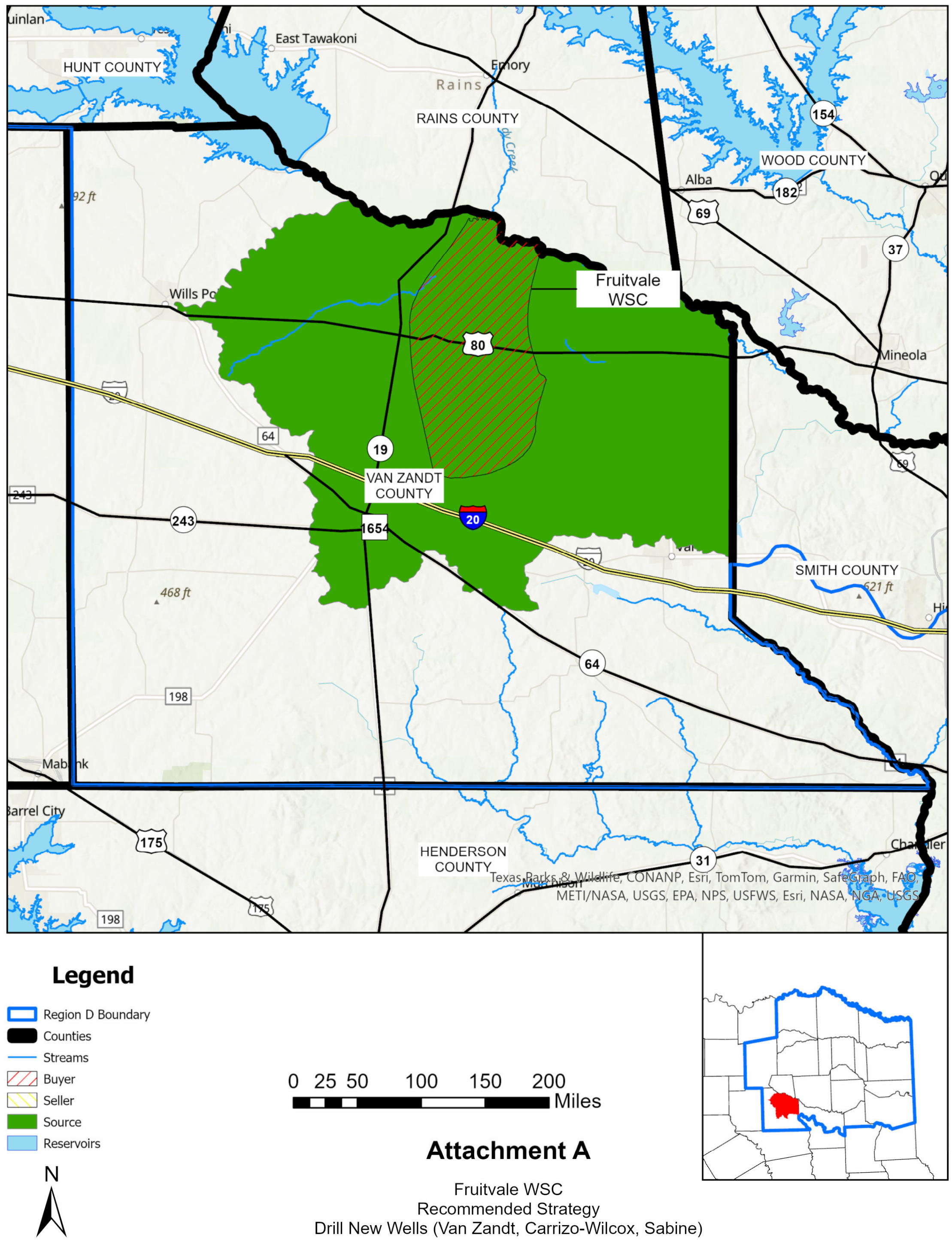
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was not considered because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for Fruitvale WSC.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	**95**	**$3,611,000**	**$541,000**	**$1,524**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	0	3	18	43	76	95

The recommended strategy for Fruitvale WSC is to meet their projected deficit of 3 ac-ft/yr in 2040 and 95 ac-ft/yr in 2080 would be to construct four additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin in Van Zandt County.



Attachment A

Fruitvale WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Sabine)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices
Fruitvale WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Sabine Basin)

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$2,417,000
Water Treatment Plant (1 MGD)	$98,000
TOTAL COST OF FACILITIES	**$2,515,000**
- Planning (3%)	$75,000
- Design (7%)	$176,000
- Construction Engineering (1%)	$25,000
Legal Assistance (2%)	$50,000
Fiscal Services (2%)	$50,000
All Other Facilities Contingency (20%)	$503,000
Environmental & Archaeology Studies and Mitigation	$68,000
Land Acquisition and Surveying (5 acres)	$35,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$114,000
TOTAL COST OF PROJECT	**$3,611,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$254,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$24,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$59,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (292302 kW-hr @ 0.09 $/kW-hr)	$26,000
Purchase of Water (355 acft/yr @ 500 $/acft)	$178,000
TOTAL ANNUAL COST	**$541,000**
Available Project Yield (acft/yr)	355
Annual Cost of Water ($ per acft), based on PF=0	$1,524
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$808

Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.68
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.48

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF GRAND SALINE WSC IN VAN ZANDT COUNTY

Description of Water User Group:

Grand Saline WSC provides water service in Van Zandt County. The WUG population is projected to be 3,404 by 2030 and increases to 3,541 by 2080. Grand Saline WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County and a run of river water right on the Sabine River. Grand Saline WSC is projected to have a total deficit of 121 ac-ft/yr in 2030 and decreasing to a deficit of 109 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

Grand Saline WSC	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Population	3,404	3,469	3,530	3,529	3,533	3,541
Projected Water Demand	481	488	496	496	496	497
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	472	472	486	491	488	500
Projected Supply Surplus (+) / Deficit (-)	**-121**	**-128**	**-122**	**-117**	**-120**	**-109**

Evaluation of Potentially Feasible Water Management Strategies:

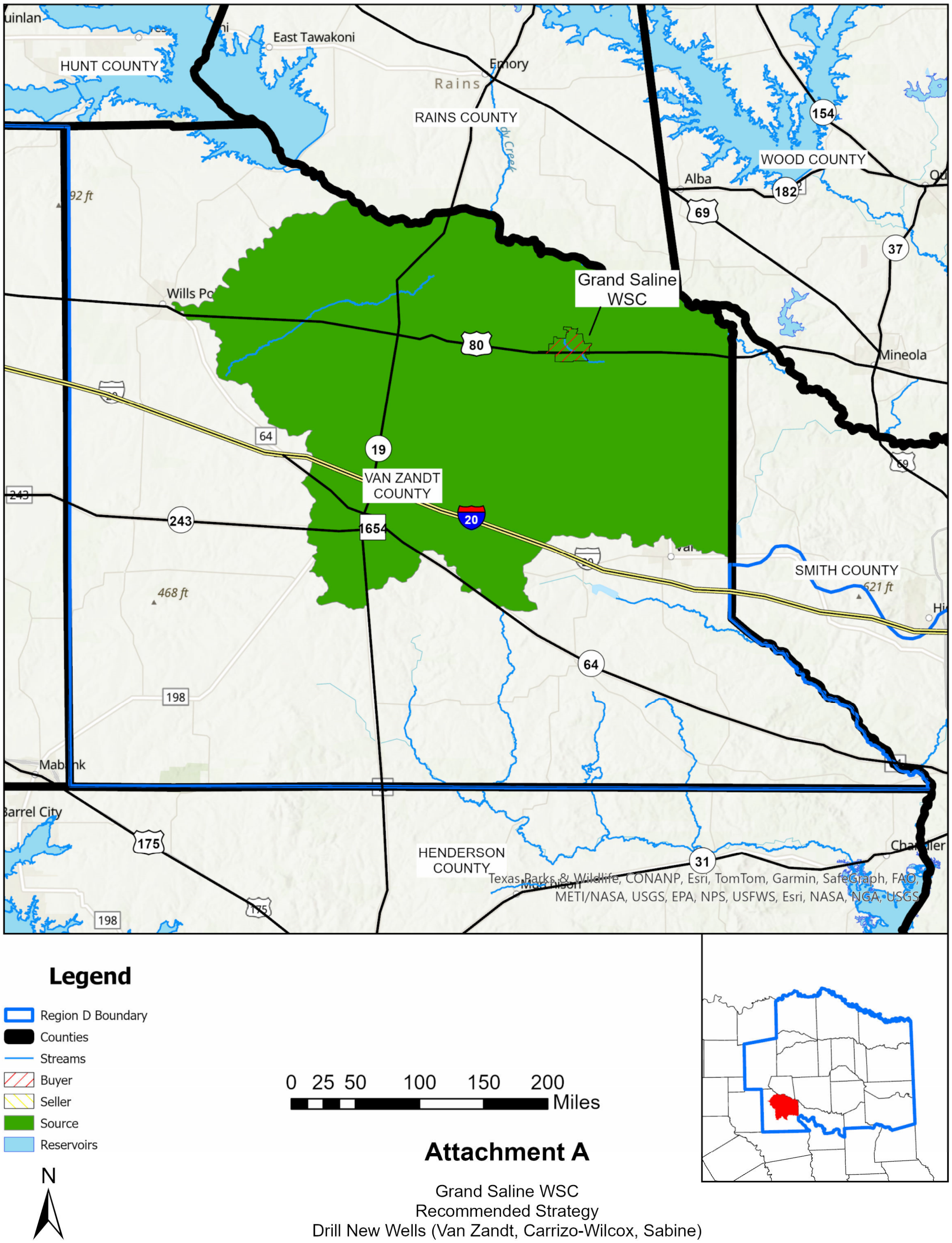
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was considered because the WSC has a run of river water right on the Sabine River, however, it was not selected because the WSC does not have the infrastructure for it. Groundwater has been identified as a potential strategy for Grand Saline WSC.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Conservation	**60**	**-**	**-**	**-**	**-**
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	**69**	**$3,611,000**	**$541,000**	**$1,524**	**1**

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	63	69	62	57	60	49

The recommended strategy for Grand Saline WSC is to meet their projected deficit of 63 ac-ft/yr in 2030 after conservation up to 49 ac-ft/yr in 2080 after conservation would be to construct four additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin in Van Zandt County.



Attachment A

Grand Saline WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Sabine)

Cost Estimate Summary Water Supply Project Option September 2023 Prices Grand Saline WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Sabine Basin)	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$2,417,000
Water Treatment Plant (1 MGD)	$98,000
TOTAL COST OF FACILITIES	**$2,515,000**
- Planning (3%)	$75,000
- Design (7%)	$176,000
- Construction Engineering (1%)	$25,000
Legal Assistance (2%)	$50,000
Fiscal Services (2%)	$50,000
All Other Facilities Contingency (20%)	$503,000
Environmental & Archaeology Studies and Mitigation	$68,000
Land Acquisition and Surveying (5 acres)	$35,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$114,000
TOTAL COST OF PROJECT	**$3,611,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$254,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$24,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$59,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (292302 kW-hr @ 0.09 $/kW-hr)	$26,000
Purchase of Water (355 acft/yr @ 500 $/acft)	$178,000
TOTAL ANNUAL COST	**$541,000**
Available Project Yield (acft/yr)	355

Annual Cost of Water ($ per acft), based on PF=0	$1,524
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$808
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.68
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.48
JMP	*2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MACBEE SUD IN VAN ZANDT COUNTY

Description of Water User Group:

MacBee SUD provides water service in Van Zandt County. The WUG population is projected to be 8,974 by 2030 and increases to 25,367 by 2080. MacBee SUD supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County and a surface water contract for 2,240 ac-ft/yr from the Sabine River Authority which is delivering 2,006 ac-ft/yr by 2030 decreasing to 1,897 ac-ft/yr by 2080. MacBee SUD is projected to have a total deficit of 421 ac-ft/yr in 2070 and increasing to a deficit of 996 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

MacBee SUD	2030	2040	2050	2060	2070	2080
Population	8,974	11,037	13,584	16,724	20,594	25,367
Projected Water Demand	1,045	1,285	1,583	1,948	2,399	2,955
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	2,072	2,042	2,022	2,001	1,978	1,959
Projected Supply Surplus (+) / Deficit (-)	**1,027**	**757**	**439**	**53**	**-421**	**-996**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet MacBee SUD's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because MacBee SUD does not have a demand for non-potable water. A Surface water contract increase with the Sabine River Authority is potentially feasible. Groundwater has been identified as a potential strategy for Myrtle Springs WSC.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	**996**	**$3,611,000**	**$541,000**	**$1,524**	**1**
Increase Contract with Sabine River Authority	**996**	**$0**	**$1,493,000**	**$1,500**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Increase Contract with Sabine River Authority ac-ft/yr	0	0	0	0	996	996

The recommended strategy for MacBee SUD to meet their projected deficit of 421 ac-ft/yr by 2040 up to 996 ac-ft/yr by 2080 would be to increase the water supply contract with the Sabine River Authority. Contract supply unit cost has been assumed.

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

MacBee SUD - Increase Contract with Sabine River Authority

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$0
TOTAL COST OF PROJECT	**$0**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$0
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (0 kW-hr @ 0.09 $/kW-hr)	$0
Purchase of Water (995 acft/yr @ 1500 $/acft)	$1,493,000
TOTAL ANNUAL COST	**$1,493,000**
Available Project Yield (acft/yr)	995
Annual Cost of Water ($ per acft), based on PF=0	$1,501
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$1,501
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.60
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$4.60

JMP *2/12/2025*

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MYRTLE SPRINGS WSC IN VAN ZANDT COUNTY

Description of Water User Group:

Myrtle Springs WSC provides water service in Van Zandt County. The WUG population is projected to be 3,375 by 2030 and increases to 7,479 by 2080. Myrtle Springs WSC supplies its customers with groundwater from the Carrizo-Wilcox aquifer with water wells in Van Zandt County. Myrtle Springs WSC is projected to have a total deficit of 24 ac-ft/yr in 2030 and increasing to a deficit of 355 ac-ft/yr by 2080.

Water Supply and Demand Analysis:

Myrtle Springs WSC	2030	2040	2050	2060	2070	2080
Population	3,375	4,159	4,908	5,763	6,619	7,479
Projected Water Demand	275	337	397	467	536	606
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	251	251	251	251	251	251
Projected Supply Surplus (+) / Deficit (-)	**-24**	**-86**	**-146**	**-216**	**-285**	**-355**

Evaluation of Potentially Feasible Water Management Strategies:

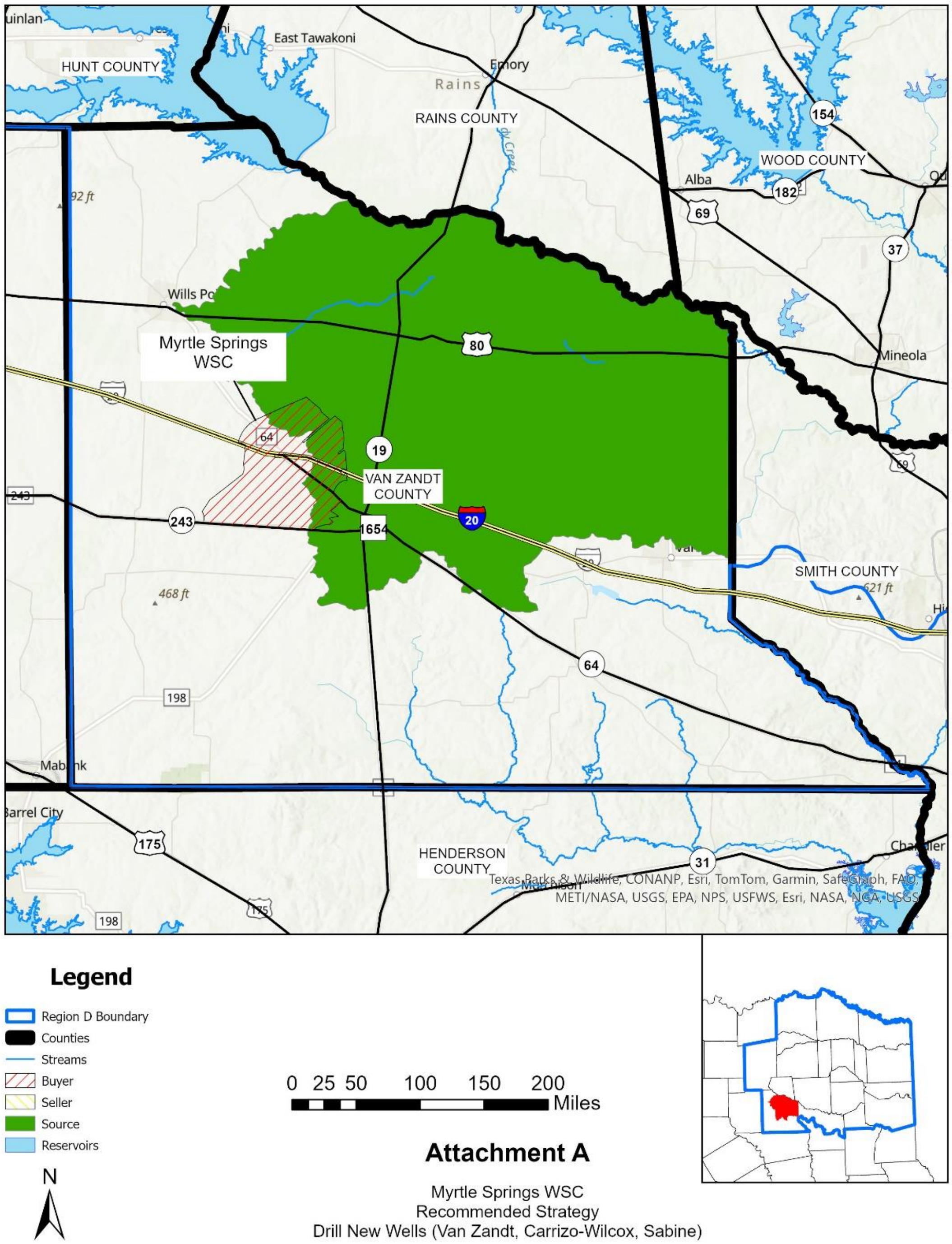
Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Water reuse was not considered because the WSC does not have a demand for non-potable water. Surface water was not considered because the WSC does not currently have surface water treatment. Groundwater has been identified as a potential strategy for Myrtle Springs WSC.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	**355**	**$3,611,000**	**$541,000**	**$1,524**	**1**

Recommendations:

	2030	2040	2050	2060	2070	2080
Drill New Wells (Van, Van Zandt, Carrizo, Sabine)	355	355	355	355	355	355

The recommended strategy for Myrtle Springs WSC to meet their projected deficit of 24 ac-ft/yr in 2030 up to 355 ac-ft/yr in 2080 would be to construct four additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin in Van Zandt County.



Attachment A

Myrtle Springs WSC
Recommended Strategy
Drill New Wells (Van Zandt, Carrizo-Wilcox, Sabine)

Cost Estimate Summary *Water Supply Project Option* *September 2023 Prices* *Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer, Sabine Basin)*	
Cost based on ENR CCI 13485.67 for September 2023 and a PPI of 278.502 for September 2023	
Item	***Estimated Costs for Facilities***
Well Fields (Wells, Pumps, and Piping)	$2,417,000
Water Treatment Plant (1 MGD)	$98,000
TOTAL COST OF FACILITIES	**$2,515,000**
- Planning (3%)	$75,000
- Design (7%)	$176,000
- Construction Engineering (1%)	$25,000
Legal Assistance (2%)	$50,000
Fiscal Services (2%)	$50,000
All Other Facilities Contingency (20%)	$503,000
Environmental & Archaeology Studies and Mitigation	$68,000
Land Acquisition and Surveying (5 acres)	$35,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$114,000
TOTAL COST OF PROJECT	**$3,611,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$254,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$24,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$0
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$59,000
Advanced Water Treatment Facility	$0
Pumping Energy Costs (292302 kW-hr @ 0.09 $/kW-hr)	$26,000
Purchase of Water (355 acft/yr @ 500 $/acft)	$178,000
TOTAL ANNUAL COST	**$541,000**
Available Project Yield (acft/yr)	355

Annual Cost of Water ($ per acft), based on PF=0	$1,524
Annual Cost of Water After Debt Service ($ per acft), based on PF=0	$808
Annual Cost of Water ($ per 1,000 gallons), based on PF=0	$4.68
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=0	$2.48
JMP	*2/12/2025*

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2080

WOOD COUNTY

WUGs:

Liberty Utilities Silverleaf Water

New Hope SUD

Ramey WSC

Sabine River Authority Strategy

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF NEW HOPE SUD

Description of Water User Group:

The New Hope SUD system is located in the southern portion of Wood County and serves the unincorporated area of the County east of the City of Mineola. The SUD reported 924 connections. The population is projected to decrease from 2,984 persons in 2030 to 2,644 persons in 2080. The SUD is included as a W.U.G. in Wood County. The system's current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is approximately 681 GPM, or 366 ac-ft/yr. The system is bounded on the south by the Sabine River, on the west by the City of Mineola, on the north by the Ramey WSC and on the east by the Fouke WSC. The System does not have a water conservation plan. The System has a demand that is projected to be decreasing from 533 ac-ft/yr in 2030 to 471 ac-ft/year in 2080. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Population	2,984	2,966	2,954	2,847	2068	2269
Projected Water Demand	533	528	526	507	488	471
Current Water Supply	366	366	366	366	366	366
Projected Supply Surplus (+)/Deficit(-)	**-167**	**-162**	**-160**	**-141**	**-122**	**-105**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the SUD's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the system does not have a central sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. A groundwater worksheet is included as Attachment B.

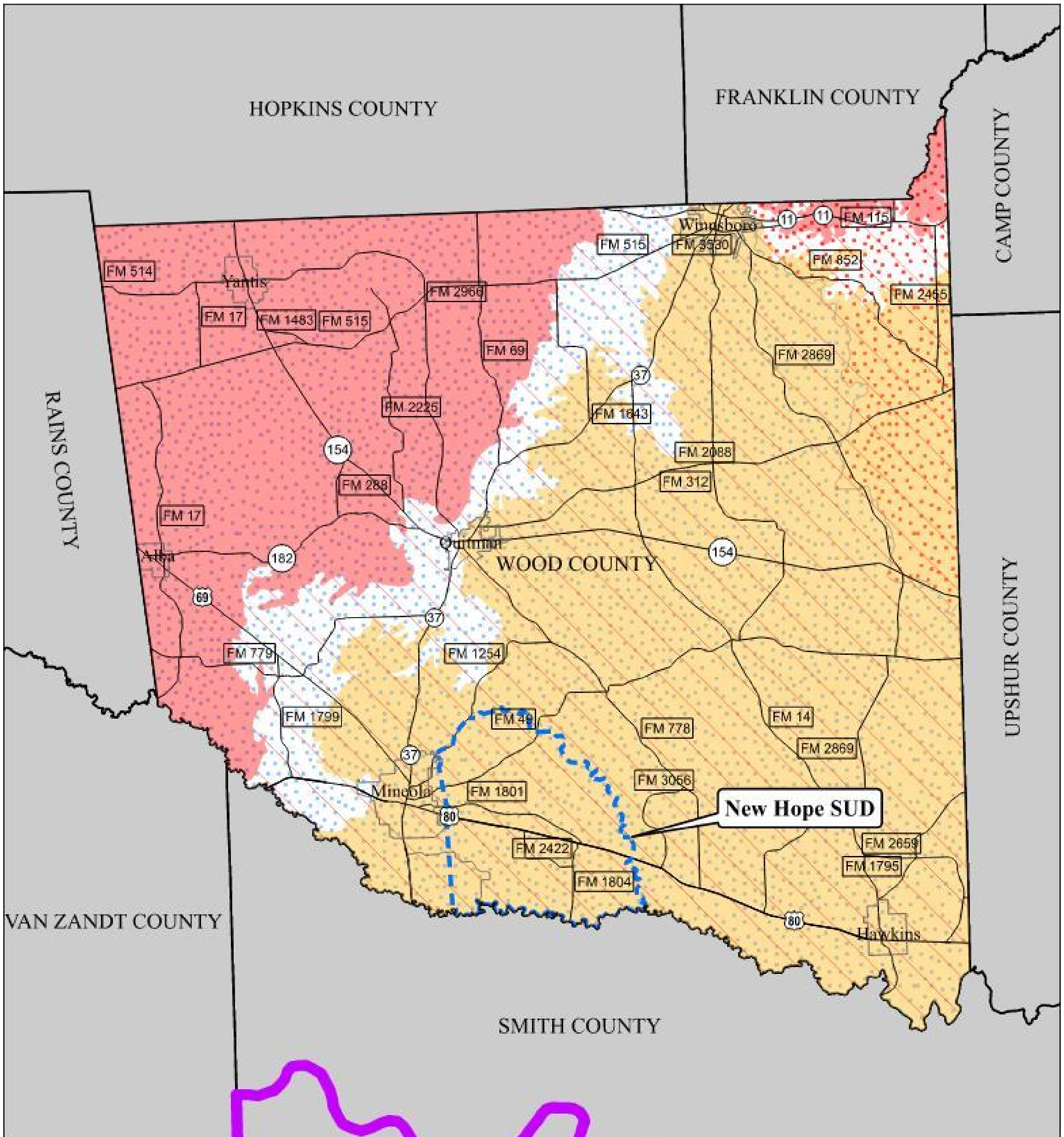
Strategy	**Firm Yield (AF)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Groundwater	**167**	**$ 1,521,000**	**$ 132,000**	**$ 611**	**Minimal**
Surface Water					

Recommendations:

	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Groundwater (ac-ft/yr)	167	167	167	167	167	167

The recommended strategy for the New Hope SUD to meet their projected deficit of 167 ac-ft/yr in 2030 and deficit of 105 ac-ft/yr in 2080 would be to construct two additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Wood County. One well with rated capacity of 200 gpm each would provide approximately 108 acre-feet each. The Queen City Aquifer in Wood County is projected to have a more than ample supply availability to meet the needs of New Hope SUD for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

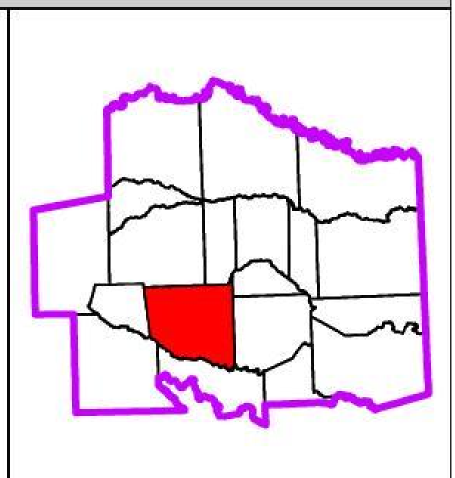


Attachment A

New Hope SUD

Recommended Strategy

Drill 2 new wells / Queen City Aquifer



EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RAMEY WSC

Description of Water User Group:

The Ramey WSC system is located in the south central portion of Wood County and serves the unincorporated area of the County north of the City of Mineola. The WSC reported 1,633 connections. The population is projected to increase from 3,637 persons in 2030 to 7,259 persons in 2080. The WSC is included as a W.U.G. in Wood County. The system's current water supply consists of ten water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is approximately 1,173 GPM, or 631 ac-ft/yr. The system is bounded on the south by the City of Mineola, on the west by the Golden WSC, on the north by the City of Quitman and on the east by the Fouke WSC. The System does not have a water conservation plan. The System has a demand that is projected to be decreasing from 581 ac-ft/yr in 2030 to 1,155 ac-ft/year in 2080. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2030	2040	2050	2060	2070	2080
Population	3,637	4,176	4,795	5,506	6,322	7,259
Projected Water Demand	581	664	763	876	1,006	1,155
Current Water Supply	631	631	631	631	631	631
Projected Supply Surplus (+)/Deficit(-)	**50**	**-33**	**-132**	**-245**	**-375**	**-524**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the WSC's water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the system does not have a central sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. A groundwater worksheet is included as Attachment B.

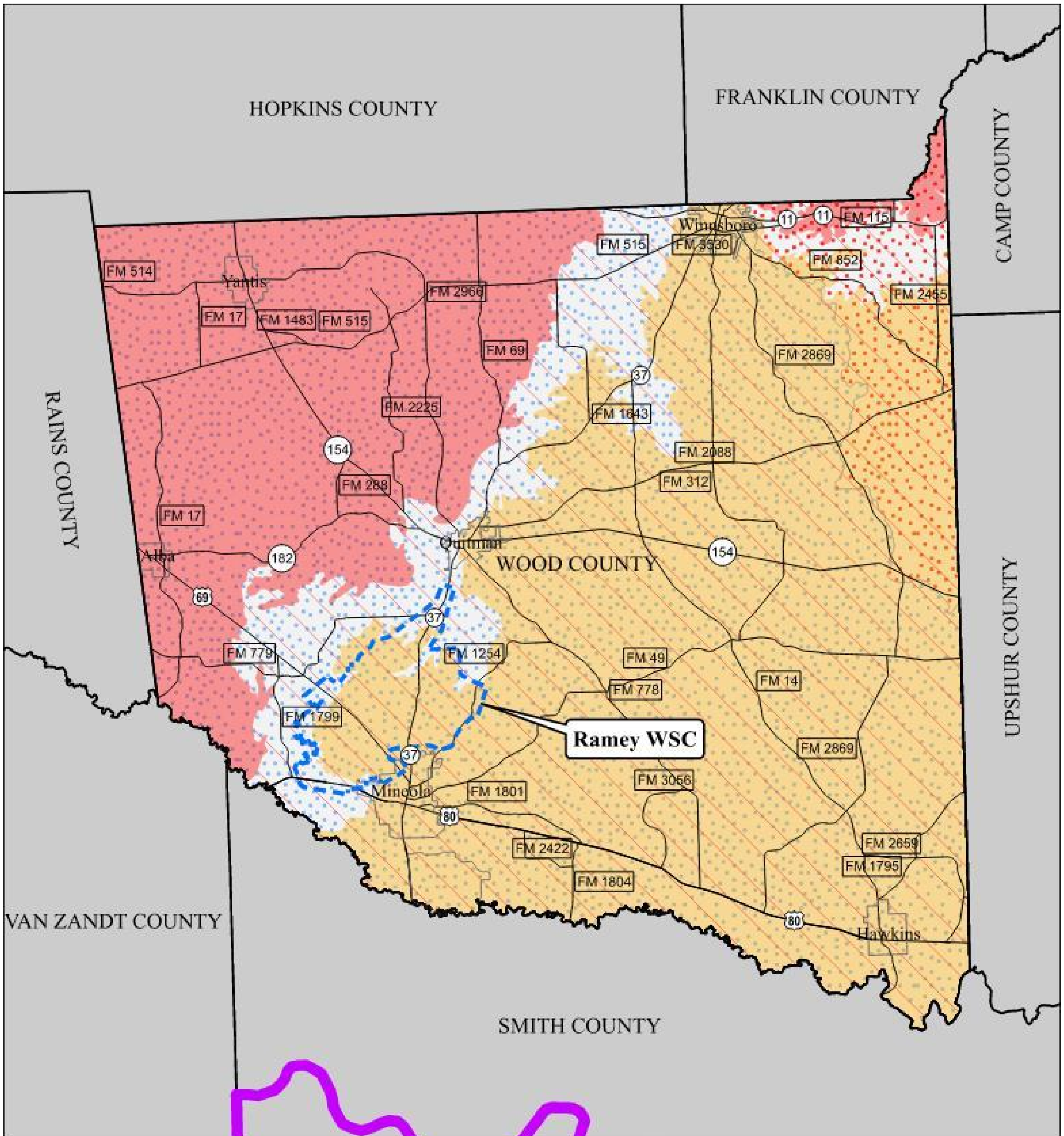
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater	**216**	**$ 1,521,000**	**$ 132,000**	**$ 611**	**Minimal**
Surface Water					

Recommendations:

	2030	2040	2050	2060	2070	2080
Groundwater (ac-ft/yr)	0	269	269	269	538	538

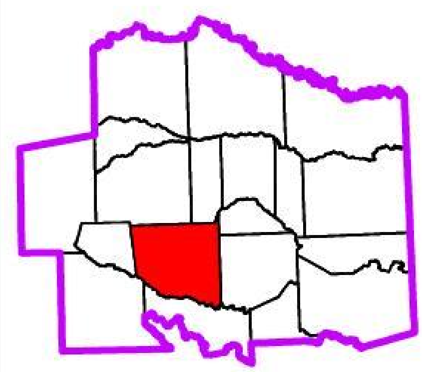
The recommended strategy for the Ramey WSC to meet their projected deficit of -33 ac-ft/yr in 2040 and deficit of 524 ac-ft/yr in 2080 would be to construct two additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Wood County. One well with rated capacity of 500 gpm each would provide approximately 269 acre-feet each. The Queen City Aquifer in Wood County is projected to have a more than ample supply availability to meet the needs of Ramey WSC for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



Attachment A

Ramey WSC
Recommended Strategy
Drill new well



EVALUATION OF SABINE RIVER AUTHORITY STRATEGY

Description of Regional Strategy:

An identified potentially feasible water management strategy by the Sabine River Authority (SRA) seeks to augment available surface water supplies for SRA customers downstream of Lake Fork with groundwater so that upstream surface water supplies can be utilized for upstream customer demands. This strategy entails the development and construction of a 18,500 ac-ft/yr well field in Wood County and transmission pipe from the well field to the Sabine River for discharge and bed and banks transport and pickup by downstream SRA customers such as Henderson, Kilgore and Longview, utilizing potentially available supply from the Carrizo-Wilcox Aquifer, Sabine River Basin. The Carrizo-Wilcox Aquifer, Sabine River Basin is MAG limited with approximately 2,900 ac-ft/yr remaining available source supply for water management strategies. Multiple large-scale strategies are evaluating the use of groundwater in Wood county as well as Smith and Upshur counties.

Identified WMS:

The Wood County Well Field would be designed to provide up to 18,500 ac-ft of water per year from the Carrizo-Wilcox Aquifer by an estimated total of 20 wells with peak production capacity of 600 gpm. A single well with a peak capacity of 600 gpm could provide up to 968 ac-ft per year of water per well, with three (3) contingency wells for a total of 23 wells. The Carrizo-Wilcox Aquifer in Wood County, in the Sabine River Basin, is projected to be MAG limited with a MAG limited supply of approximately 2,900 ac-ft/yr. Water from the well field would be pumped to a 6,000,000 gallon ground storage tank before being pumped to the Sabine River via a 36” diameter pipeline and discharged into the sabine river for bed and banks transport to downstream customers.

Costs for the WMS have been developed at the planning level utilizing the TWDB’s UCM. The project is estimated to yield 18,500 ac-ft/yr of supply. The estimated total capital cost for the well field, collection lines, and major transmission lines to the Sabine River in Wood County is approximately $94.2 million. The estimated annual cost is approximately $18.1 million, with a unit cost for the additional supply of $979 per ac-ft ($3.00/1,000 gal) with debt service, and $621 per ac-ft ($1.90/1,000 gal) without debt service.

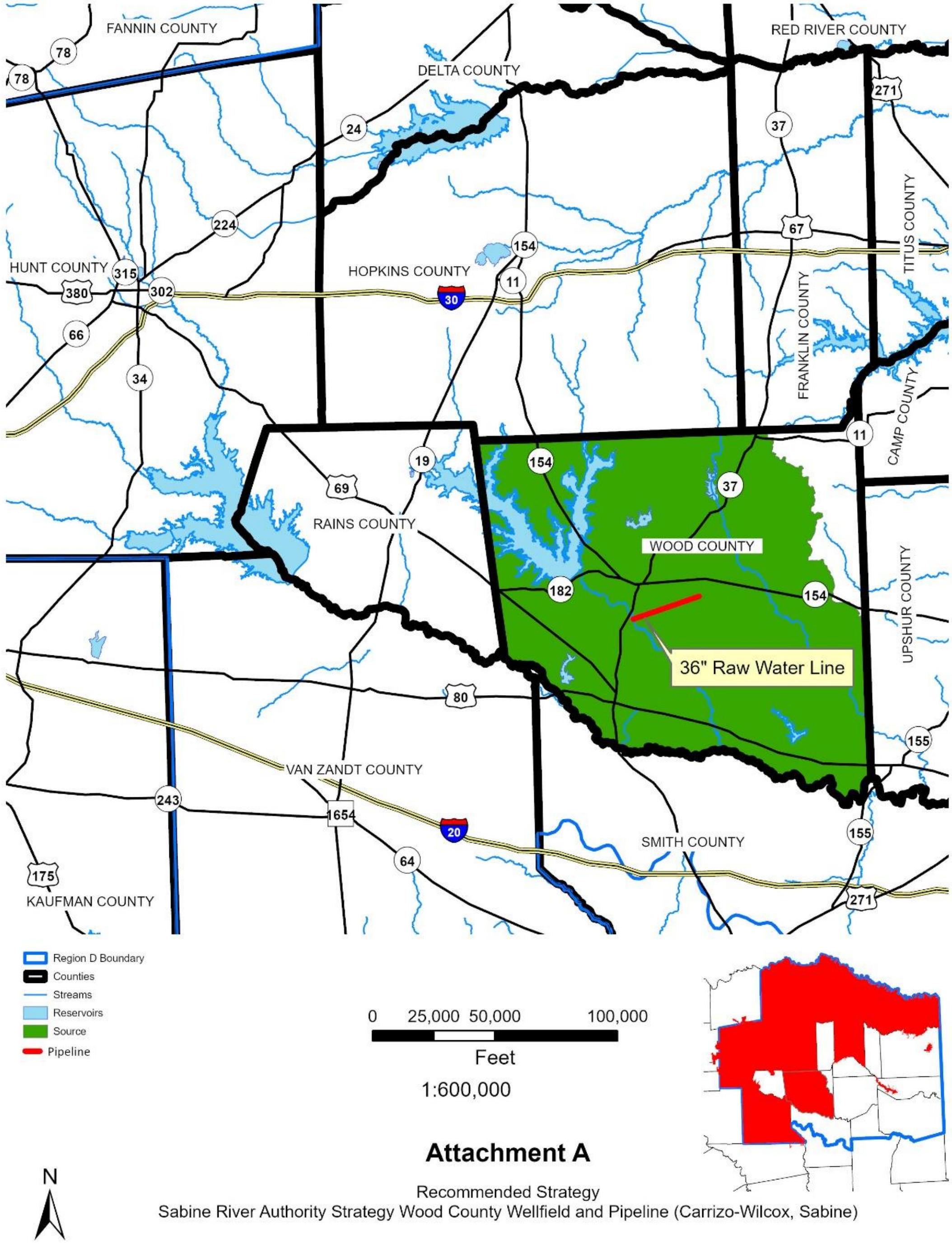
Recommended WMS representation:

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells and Raw Water Pipeline (Carrizo-Wilcox, Sabine)	1,450	$94,255,000	$18,113,000	$12,492	2

Alternative WMS representation:

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells and Raw Water Pipeline (Carrizo-Wilcox, Sabine)	18,500	$94,255,000	$18,113,000	$979	2

Given significant present uncertainty regarding the extent of participation in this strategy and lack of details regarding the specific infrastructure necessary to meet actual participant water demands, it should be recognized that the strategy as represented herein is a planning-level characterization. Variations as to the specific developers and users of this project, as well as variations in the characteristics of the project’s infrastructure, should be considered consistent with this water management strategy for the purposes of the 2026 Region D Plan. The NETRWPG supports additional study of this regionalization water management strategy, and such studies or technical evaluations should also be considered consistent for the purposes of the 2026 Region D Plan. Participation in this strategy would be on a voluntary basis.



Attachment A

Recommended Strategy
Sabine River Authority Strategy Wood County Wellfield and Pipeline (Carrizo-Wilcox, Sabine)

Cost Estimate Summary
Water Supply Project Option
September 2023 Prices

Sabine River Authority - Sabine River Authority Strategy

Cost based on ENR CCI 13485.67 for September 2023 and
a PPI of 278.502 for September 2023

Item	***Estimated Costs for Facilities***
Intake Pump Stations (0 MGD)	$2,493,000
Transmission Pipeline (36 in. dia., 9.5 miles)	$29,520,000
Well Fields (Wells, Pumps, and Piping)	$30,167,000
Storage Tanks (Other Than at Booster Pump Stations)	$5,589,000
Integration, Relocations, Backup Generator & Other	$50,000
TOTAL COST OF FACILITIES	**$67,819,000**
- Planning (3%)	$2,035,000
- Design (7%)	$4,747,000
- Construction Engineering (1%)	$678,000
Legal Assistance (2%)	$1,356,000
Fiscal Services (2%)	$1,356,000
Pipeline Contingency (15%)	$4,428,000
All Other Facilities Contingency (20%)	$7,660,000
Environmental & Archaeology Studies and Mitigation	$789,000
Land Acquisition and Surveying (63 acres)	$421,000
Interest During Construction (3.5% for 1 years with a 0.5% ROI)	$2,966,000
TOTAL COST OF PROJECT	**$94,255,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$6,628,000
Reservoir Debt Service (3.5 percent, 40 years)	$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$653,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	$62,000
Dam and Reservoir (1.5% of Cost of Facilities)	$0
Water Treatment Plant	$0
Advanced Water Treatment Facility	$0
Pumping Energy Costs (16890385 kW-hr @ 0.09 $/kW-hr)	$1,520,000
Purchase of Water (18500 acft/yr @ 500 $/acft)	$9,250,000
TOTAL ANNUAL COST	**$18,113,000**
Available Project Yield (acft/yr)	18,500
Annual Cost of Water ($ per acft), based on PF=1	$979

Annual Cost of Water After Debt Service ($ per acft), based on PF=1	$621
Annual Cost of Water ($ per 1,000 gallons), based on PF=1	$3.00
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=1	$1.90
JMP	*2/12/2025*

County	Entity	Strategy Supply (ac-ft/yr) by Decade 2030	2040	2050	2060	2070	2080	Strategy	Source	Source Type	Sponsor/Seller	Source Reliability	Total Capital Cost
Hopkins	Brinker WSC	97	122	130	143	157	171	Alt Drill New Wells (Brinker WSC)	Carrizo-Wilcox Aquifer	Groundwater	Brinker WSC	High	$2,726,000
Red River	Clarksville	303	303	303	303	303	303	Riverbend Strategy	Wright Patman Lake/Reservoir	Surface Water	Riverbend Water Resources District	High	$11,702,000
Red River	Clarksville	303	303	303	303	303	303	Alt Clarksville Treated Pipeline Pat Mayse Water	Pat Mayse Lake/Reservoir	Surface Water	Lamar County WSD	High	$12,255,000
Red River	Clarksville	303	303	303	303	303	303	Dimple Reservoir	Dimple Lake/Reservoir	Surface Water	Clarksville	High	$38,489,000
Red River	Irrigation, Red River	97	97	97	97	97	97	Alt Drill New Wells (Irrigation Red River, Trinity Aquifer, Sulphur)	Trinity Aquifer	Groundwater	Irrigation, Red River	High	$425,000
Van Zandt	Canton	1,440	1,440	1,440	1,440	1,440	1,440	Alt Canton Grand Saline Reservoir	Grand Saline Lake/Reservoir	Surface Water	Canton	High	$45,373,000

DRAFT Region D Alternative Projects Associated with Water Management Strategies

Sponsor Name	Sponsor is WWP?	Online Decade	Project Name	Project Description	Capital Cost
Canton	No	2020	Alt Canton Grand Saline Reservoir	New water supply reservoir	$45,373,000
Clarksville	No	2020	Alt Clarksville Treated Pipeline Pat Mayse Water		$12,255,000
Irrigation, Red River	No	2020	Alt Drill New Wells (Irrigation Red River, Trinity Aquifer, Sulphur)		$425,000
Clarksville	No	2020	Contract with Texarkana and Treated Water Pipeline to DeKalb (Clarksville, Sulphur)		$11,702,000
Clarksville	No	2020	Dimple Reservoir		$38,489,000
Brinker WSC	No	2030	Drill New Wells (Brinker WSC, Carrizo-Wilcox, Sulphur)	New conventional well; New conventional WTP	$2,726,000
				Region D Alternative Capital Cost Total	**$110,970,000**

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DRAFT Region D Alternative Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Brinker WSC					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alt Drill New Wells (Brinker WSC)	D	D | Carrizo-Wilcox Aquifer | Hopkins County	$1942	$819	97	122	130	143	157	171
Brinker WSC Total					**97**	**122**	**130**	**143**	**157**	**171**

WUG Name: Canton					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alt Canton Grand Saline Reservoir	D	D | Grand Saline Lake/Reservoir	$3087	$1264	1,440	1,440	1,440	1,440	1,440	1,440
Canton Total					**1,440**	**1,440**	**1,440**	**1,440**	**1,440**	**1,440**

WUG Name: Celeste					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
New Contract with Greenville and Pipeline to Celeste	D	D | Tawakoni Lake/Reservoir	N/A	$3920	0	0	0	0	87	87
Celeste Total					**0**	**0**	**0**	**0**	**87**	**87**

WUG Name: Clarksville					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alt Clarksville Treated Pipeline Pat Mayse Water	D	D | Pat Mayse Lake/Reservoir	$5010	$2165	303	303	303	303	303	303
Dimple Reservoir	D	D | Dimple Lake/Reservoir	$8399	$5789	303	303	303	303	303	303
Riverbend Strategy	D	D | Wright Patman Lake/Reservoir	$3865	$1149	303	303	303	303	303	303
Clarksville Total					**909**	**909**	**909**	**909**	**909**	**909**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Alternative Water User Group (WUG) Water Management Strategies (WMS)

WUG Name: Irrigation, Red River					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alt Drill New Wells (Irrigation Red River, Trinity Aquifer, Sulphur)	D	D | Trinity Aquifer | Red River County	$845	$536	97	97	97	97	97	97
Irrigation, Red River Total					**97**	**97**	**97**	**97**	**97**	**97**

WUG Name: Kilgore*					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alternative Sabine River Authority Strategy - Wood County GW	D	D | Carrizo-Wilcox Aquifer | Wood County	$979	$621	4,595	4,641	4,690	4,738	4,788	4,842
Kilgore* Total					**4,595**	**4,641**	**4,690**	**4,738**	**4,788**	**4,842**

WUG Name: Longview					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alternative Sabine River Authority Strategy - Wood County GW	D	D | Carrizo-Wilcox Aquifer | Wood County	$979	$621	6,166	6,166	6,166	6,166	6,166	6,166
Longview Total					**6,166**	**6,166**	**6,166**	**6,166**	**6,166**	**6,166**

WUG Name: Manufacturing, Van Zandt					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Increase Existing Contract (Manufacturing Van Zandt from Grand Saline Surplus)	D	D | Carrizo-Wilcox Aquifer | Van Zandt County	N/A	$2803	0	0	0	0	0	72
Manufacturing, Van Zandt Total					**0**	**0**	**0**	**0**	**0**	**72**

WUG Name: Queen City					Water Management Strategy Supply (acre-feet per year)					
WMS Name	WMS Sponsor Region	Source Name	Unit Cost 2030	Unit Cost 2080	2030	2040	2050	2060	2070	2080
Alt Riverbend Strategy Cass	D	D | Wright Patman Lake/Reservoir	$483	$483	251	244	243	243	243	243
Queen City Total					**251**	**244**	**243**	**243**	**243**	**243**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Alternative Water User Group (WUG) Water Management Strategies (WMS)

Region D Alternative WMS Supply Total	**13,555**	**13,619**	**13,675**	**13,736**	**13,887**	**14,027**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

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Source	Source Type	County	Basin	Entity	2030	2040	2050	2060	2070	2080	Stragey	Contingency	Seller (if applicable)	Reliability of Source
	Demand Reduction	Hunt	Sabine	Caddo Basin SUD	1	2	3	5	9	15	Advanced Water Conservation (Caddo Basin SUD)			High
	Demand Reduction	Hunt	Sabine	Cash SUD	0	1	1	0	0	0	Advanced Water Conservation (Cash SUD)			High
	Demand Reduction	Hunt	Sabine	Greenville	1,668	4,040	6,716	9,517	12,562	13,572	Advanced Water Conservation (Greenville)			High
	Demand Reduction	Hunt	Sabine	Greenville	631	709	754	792	831	869	Greenville Water Loss Reduction			High
	Demand Reduction	Bowie	Sulphur	Manufacturing, Bowie	161	204	204	204	204	204	Advanced Water Conservation (Manufacturing Bowie)			High
	Demand Reduction	Titus	Cypress	Manufacturing, Titus	0	415	415	415	415	415	Advanced Water Conservation (Manufacturing Titus, Cypress)			High
	Demand Reduction	Van Zandt	Sabine	Manufacturing, Van Zandt	50	75	75	75	75	75	Advanced Water Conservation (Manufacturing Van Zandt)			High
	Demand Reduction	Wood	Sabine	Manufacturing, Wood	291	302	313	325	337	349	Advanced Conservation - Manufacturing Wood Co			High
	Demand Reduction	Hunt	Sabine	Poetry WSC	1	2	1	3	4	7	Advanced Water Conservation (Poetry WSC)			High
Blossom Aquifer	Groundwater	Red River	Sulphur	Clarksville	388	388	388	388	388	388	Drill New Wells with RO Treatment (Clarksville, Blossom)			High
Blossom Aquifer	Groundwater	Red River	Red	Livestock, Red River	11	10	11	10	11	11	Drill New Wells (Livestock, Red River, Blossom, Red)			High
Carrizo-Wilcox Aquifer	Groundwater	Upshur	Sabine	Big Sandy	85	85	85	85	85	85	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Sabine	Canton	0	0	0	0	0	145	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Cass	Cypress	County-Other, Cass	323	323	323	323	323	323	Drill New Wells (County Other, Cass, Carrizo, Cypress)			High
Carrizo-Wilcox Aquifer	Groundwater	Cass	Sulphur	County-Other, Cass	216	216	216	216	216	216	Drill New Wells (County Other, Cass, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Neches	Crystal Systems Texas	0	0	0	0	0	0	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Sabine	Crystal Systems Texas	0	31	0	0	0	0	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Henderson	Neches	Edom WSC	27	27	27	27	27	27	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Neches	Edom WSC	60	60	60	60	60	60	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Upshur	Cypress	Gilmer	0	42	41	59	84	110	Drill New Wells (Gilmer, Carrizo, Cypress)			High
Carrizo-Wilcox Aquifer	Groundwater	Rusk	Neches	Henderson	0	0	0	0	0	0	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Rusk	Sabine	Henderson	0	0	0	0	0	0	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Bowie	Red	Irrigation, Bowie	1,102	1,102	1,102	1,102	1,102	1,102	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Bowie	Sulphur	Irrigation, Bowie	3,032	3,032	3,032	3,032	3,032	3,032	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Hopkins	Sulphur	Irrigation, Hopkins	0	111	387	420	423	423	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Hopkins	Sulphur	Irrigation, Hopkins	43	42	41	41	39	39	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Gregg	Sabine	Kilgore	360	364	367	371	375	379	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Rusk	Sabine	Kilgore	123	119	116	112	108	104	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Neches	Lindale	0	0	0	0	0	0	Drill New Wells (Lindale, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Sabine	Lindale	0	0	0	0	0	0	Drill New Wells (Lindale, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Neches	Little Hope Moore WSC	0	0	0	0	0	0	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Sabine	Little Hope Moore WSC	0	0	0	0	0	0	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Franklin	Cypress	Livestock, Franklin	805	805	805	805	805	805	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)			High

Source	Source Type	County	Basin	Entity	2030	2040	2050	2060	2070	2080	Stragey	Contingency	Seller (if applicable)	Reliability of Source
Carrizo-Wilcox Aquifer	Groundwater	Franklin	Sulphur	Livestock, Franklin	37	27	27	27	27	27	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Hopkins	Sulphur	Livestock, Hopkins	10	11	11	12	13	13	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Titus	Cypress	Livestock, Titus	334	379	425	517	560	560	Drill New Wells (Livestock, Titus, Carrizo, Cypress)			High
Carrizo-Wilcox Aquifer	Groundwater	Titus	Cypress	Livestock, Titus	459	429	397	332	302	302	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Titus	Sulphur	Livestock, Titus	793	801	810	852	882	882	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Gregg	Sabine	Longview	467	466	465	463	460	458	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Harrison	Sabine	Longview	16	17	18	20	23	25	Sabine River Authority Strategy - Wood County GW			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Sabine	Manufacturing, Van Zandt	386	386	386	386	386	386	Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity)			High
Carrizo-Wilcox Aquifer	Groundwater	Hopkins	Sabine	Miller Grove WSC	67	66	66	65	65	64	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Rains	Sabine	Miller Grove WSC	13	14	14	15	15	16	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Gregg	Sabine	Mining, Gregg	27	27	27	27	17	10	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Hopkins	Sabine	Mining, Hopkins	1	1	1	2	2	2	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Sabine	Myrtle Springs WSC	102	102	102	102	102	102	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer,			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Trinity	Myrtle Springs WSC	253	253	253	253	253	253	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-Wilcox Aquifer,			High
Carrizo-Wilcox Aquifer	Groundwater	Henderson	Neches	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Neches	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Van Zandt	Neches	R P M WSC	0	0	0	0	0	0	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)			High
Carrizo-Wilcox Aquifer	Groundwater	Gregg	Sabine	Starrville-Friendship WSC	0	0	0	31	19	12	Drill New Wells (Starrville Friendship, Carrizo, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Sabine	Starrville-Friendship WSC	0	0	0	77	48	30	Drill New Wells (Starrville Friendship, Carrizo, Sabine)			High
Carrizo-Wilcox Aquifer	Groundwater	Smith	Sabine	Winona	0	0	0	0	0	0	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)			High
Nacatoch Aquifer	Groundwater	Hopkins	Sabine	Cumby	27	41	54	71	81	81	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)			High
Nacatoch Aquifer	Groundwater	Hopkins	Sulphur	Cumby	2	3	4	6	7	7	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)			High
Nacatoch Aquifer	Groundwater	Bowie	Red	Irrigation, Bowie	1,882	1,882	1,882	1,882	1,882	1,882	Drill New Wells (Irrigation Bowie, Nacatoch, Red)			High
Nacatoch Aquifer	Groundwater	Hunt	Sabine	Irrigation, Hunt	151	151	151	151	151	151	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)			High
Nacatoch Aquifer	Groundwater	Hunt	Sulphur	Irrigation, Hunt	79	79	79	79	79	79	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)			High
Nacatoch Aquifer	Groundwater	Red River	Sulphur	Irrigation, Red River	1,450	1,450	1,451	1,451	1,451	1,451	Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur) Existing Availability			High
Nacatoch Aquifer	Groundwater	Delta	Sulphur	Livestock, Delta	250	243	238	238	226	226	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)			High
Nacatoch Aquifer	Groundwater	Delta	Sulphur	North Hunt SUD	20	22	25	25	25	25	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)			High
Nacatoch Aquifer	Groundwater	Fannin	Sulphur	North Hunt SUD	0	8	8	8	8	8	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)			High
Nacatoch Aquifer	Groundwater	Hunt	Sulphur	North Hunt SUD	172	162	159	159	159	159	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)			High
Nacatoch Aquifer	Groundwater	Hunt	Sulphur	Texas A&M University Commerce	276	275	275	275	275	275	Texas A&M University - Commerce - Drill New Wells (Hunt, Nacatoch Aquifer,			High
Queen City Aquifer	Groundwater	Smith	Sabine	East Texas MUD	0	108	216	432	648	648	Drill New Wells (Smith County MUD 1, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Irrigation, Harrison	484	484	484	484	484	484	Drill New Wells (Irrigation Harrison, Queen City, Cypress)			High

Source	Source Type	County	Basin	Entity	2030	2040	2050	2060	2070	2080	Stragey	Contingency	Seller (if applicable)	Reliability of Source
Queen City Aquifer	Groundwater	Harrison	Sabine	Irrigation, Harrison	41	35	30	19	13	7	Drill New Wells (Irrigation Harrison, Queen City , Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Leigh WSC	0	44	89	89	133	133	Drill New Wells (Leigh, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Camp	Cypress	Livestock, Camp	594	594	594	594	594	594	Drill New Wells (Livestock, Camp, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Cass	Cypress	Livestock, Cass	968	968	968	968	968	968	Drill New Wells (Livestock, Cass, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Cass	Sulphur	Livestock, Cass	280	267	254	243	230	217	Drill New Wells (Livestock, Cass, Queen City, Sulphur)			High
Queen City Aquifer	Groundwater	Morris	Cypress	Livestock, Morris	3	3	3	3	3	3	Drill New Wells (Livestock, Morris, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Morris	Sulphur	Livestock, Morris	2	2	2	2	2	2	Drill New Wells (Livestock, Morris, Queen City, Sulphur)			High
Queen City Aquifer	Groundwater	Upshur	Cypress	Livestock, Upshur	161	161	161	161	161	161	Drill New Wells (Livestock, Upshur, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Upshur	Sabine	Livestock, Upshur	161	161	161	161	161	161	Drill New Wells (Livestock, Upshur, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Van Zandt	Neches	Livestock, Van Zandt	89	89	89	89	89	90	Drill New Wells (Livestock Van Zandt, Queen City, Neches)			High
Queen City Aquifer	Groundwater	Van Zandt	Sabine	Livestock, Van Zandt	105	105	105	105	105	104	Drill New Wells (Livestock Van Zandt, Queen City, Neches)			High
Queen City Aquifer	Groundwater	Wood	Sabine	Livestock, Wood	1,129	1,129	1,129	1,129	1,129	1,129	Drill New Wells (Livestock, Wood, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Upshur	Cypress	Manufacturing, Upshur	161	161	161	161	161	161	Drill New Wells (Manufacturing Upshur, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Wood	Sabine	Manufacturing, Wood	1,991	1,991	1,991	1,991	1,991	1,991	Drill New Wells (Manufacturing, Wood, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Mining, Harrison	332	332	332	332	332	332	Drill New Wells (Mining Harrison, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Harrison	Sabine	Mining, Harrison	0	0	0	0	0	0	Drill New Wells (Mining Harrison, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Harrison	Sabine	Mining, Harrison	369	319	268	167	117	67	Drill New Wells (Mining Harrison, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Marion	Cypress	Mining, Marion	645	645	645	645	645	645	Drill New Wells (Mining Marion, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Wood	Sabine	Mining, Wood	38	38	38	38	38	38	Drill New Wells (Mining, Wood, Queen City Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	North Harrison WSC	0	0	0	54	54	54	Drill New Wells (North Harrison, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Panola-Bethany WSC	0	5	9	21	26	31	Drill New Wells (Panola Bethany, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Sabine	Panola-Bethany WSC	0	47	103	189	250	304	Drill New Wells (Panola Bethany, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Panola	Sabine	Panola-Bethany WSC	0	4	0	14	4	1	Drill New Wells (Panola Bethany, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Scottsville	18	35	35	53	53	53	Drill New Wells (Scottsville, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Harrison	Sabine	Scottsville	36	73	73	109	109	109	Drill New Wells (Scottsville, Queen City, Cypress)			High
Queen City Aquifer	Groundwater	Smith	Sabine	Star Mountain WSC	108	108	108	216	216	216	Drill New Wells (Star Mountain, Queen City, Sabine)			High
Queen City Aquifer	Groundwater	Harrison	Cypress	Waskom	162	162	216	270	324	324	Drill New Wells (Waskom, Queen City, Cypress)			High
Trinity Aquifer	Groundwater	Hunt	Trinity	Livestock, Hunt	0	0	0	0	0	0	Drill New Well (Livestock, Hunt, Trinity, Sabine)			High
Trinity Aquifer	Groundwater	Red River	Red	Livestock, Red River	65	65	65	65	65	65	Drill New Wells (Livestock, Red River, Trinity Aquifer, Sulphur) Existing			High
Woodbine Aquifer	Groundwater	Hunt	Sabine	Celeste	35	35	35	35	35	35	Drill New Wells (Celeste, Woodbine, Trinity)			High
Indirect Reuse	Reuse	Van Zandt	Sabine	Canton	255	255	255	255	255	255	Canton Reuse			High
Bob Sandlin Lake/Reservoir	Surface Water	Titus	Cypress	Manufacturing, Titus	1,003	880	890	1,149	1,279	1,279	Increase Existing Contract (Manufacturing Titus from Mt Pleasant Surplus)		Mount Pleasant	High
Chapman/Cooper Lake/Reservoir No	Surface Water	Hopkins	Sulphur	Brinker WSC	97	122	130	143	157	171	Increase Existing Contract (Brinker WSC, Sulphur)		Sulpur Springs	High

Source	Source Type	County	Basin	Entity	2030	2040	2050	2060	2070	2080	Stragey	Contingency	Seller (if applicable)	Reliability of Source
Chapman/Cooper Lake/Reservoir No	Surface Water	Hopkins	Sabine	Martin Springs WSC	0	0	0	0	27	27	Increase Existing Contract (Martin Springs)		Sulpur Springs	High
Chapman/Cooper Lake/Reservoir No	Surface Water	Hopkins	Sulphur	Martin Springs WSC	0	0	0	0	2	2	Increase Existing Contract (Martin Springs)		Sulpur Springs	High
Fork Lake/Reservoir	Surface Water	Hunt	Sabine	MacBee SUD	0	0	0	0	17	14	Increase Contract - MacBee SUD to SRA		Sabine River Authority	High
Fork Lake/Reservoir	Surface Water	Kaufman	Sabine	MacBee SUD	0	0	0	0	19	19	Increase Contract - MacBee SUD to SRA		Sabine River Authority	High
Fork Lake/Reservoir	Surface Water	Kaufman	Trinity	MacBee SUD	0	0	0	0	10	9	Increase Contract - MacBee SUD to SRA		Sabine River Authority	High
Fork Lake/Reservoir	Surface Water	Van Zandt	Sabine	MacBee SUD	0	0	0	0	374	376	Increase Contract - MacBee SUD to SRA		Sabine River Authority	High
Fork Lake/Reservoir	Surface Water	Van Zandt	Trinity	MacBee SUD	0	0	0	0	576	578	Increase Contract - MacBee SUD to SRA		Sabine River Authority	High
North Texas MWD Lake/Reservoir Sy	Surface Water	Hunt	Sabine	Cash SUD	416	568	642	471	337	337	Increase Existing Contract (Cash SUD)	REGION C NTMWD	NTMWD	High
O' the Pines Lake/Reservoir	Surface Water	Harrison	Cypress	Harleton WSC	56	69	96	131	174	174	Increase Existing Contract (Harleton, Cypress)		NETMWD	High
O' the Pines Lake/Reservoir	Surface Water	Marion	Cypress	Harleton WSC	18	22	31	42	56	56	Increase Existing Contract (Harleton, Cypress)		NETMWD	High
O' the Pines Lake/Reservoir	Surface Water	Cass	Cypress	Holly Springs WSC	50	50	50	50	50	50	Increase Existing Contract (Holly Springs, Cypress)		NETMWD	High
O' the Pines Lake/Reservoir	Surface Water	Morris	Cypress	Holly Springs WSC	30	30	30	30	30	30	Increase Existing Contract (Holly Springs, Cypress)		NETMWD	High
Pat Mayse Lake/Reservoir	Surface Water	Lamar	Red	County-Other, Lamar	121	124	127	129	131	131	Increase Existing Contract (County-Other Lamar)		LAMAR COUNTY WSD	High
Pat Mayse Lake/Reservoir	Surface Water	Lamar	Sulphur	County-Other, Lamar	83	88	97	105	113	113	Increase Existing Contract (County-Other Lamar)		LAMAR COUNTY WSD	High
Pat Mayse Lake/Reservoir	Surface Water	Lamar	Red	Irrigation, Lamar	1,140	1,140	1,140	1,140	1,140	1,140	Pat Mayse Raw Water Pipeline (Irrigation Lamar)		Paris	High
Pat Mayse Lake/Reservoir	Surface Water	Lamar	Sulphur	Irrigation, Lamar	328	328	328	328	328	328	Pat Mayse Raw Water Pipeline (Irrigation Lamar)		Paris	High
Pat Mayse Lake/Reservoir	Surface Water	Lamar	Red	Livestock, Lamar	617	617	617	617	617	617	Lamar Livestock Pipeline and Contract with Lamar Co WSD		LAMAR COUNTY WSD	High
Tawakoni Lake/Reservoir	Surface Water	Hunt	Sabine	Greenville	12,571	12,571	12,571	12,571	12,571	12,571	New WTP Greenville			High
Tawakoni Lake/Reservoir	Surface Water	Hunt	Sabine	Greenville	455	455	455	455	455	455	Voluntary Reallocation of Hunt Manufacturing Surplus (Greenville,			High
Wright Patman Lake/Reservoir	Surface Water	Cass	Cypress	Atlanta	1,074	1,134	1,208	1,205	1,205	1,205	Riverbend Strategy Cass County		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Cass	Sulphur	Atlanta	1	1	1	1	1	1	Riverbend Strategy Cass County		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Burns Redbank WSC	260	274	291	310	329	349	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Central Bowie County WSC	118	118	119	120	121	122	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Central Bowie County WSC	651	651	657	663	669	675	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Cass	Sulphur	County-Other, Cass	44	44	44	44	44	44	Riverbend Strategy Cass County		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	De Kalb	48	48	47	47	46	45	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	De Kalb	218	215	214	210	208	205	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Hooks	317	313	310	305	301	296	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Macedonia Eylau MUD 1	710	705	698	688	677	666	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Manufacturing, Bowie	289	300	311	323	335	348	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Manufacturing, Bowie	33,256	59,567	66,135	74,346	82,558	84,318	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Maud	164	162	161	158	156	153	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Nash	314	309	306	302	297	292	Riverbend Strategy		RIVERBEND WATER RESOU	High

Source	Source Type	County	Basin	Entity	2030	2040	2050	2060	2070	2080	Stragey	Contingency	Seller (if applicable)	Reliability of Source
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	New Boston	428	399	396	389	383	377	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	New Boston	962	898	889	876	862	848	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Redwater	337	333	329	323	317	311	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Riverbend Water Resources District	211	209	206	203	200	196	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Riverbend Water Resources District	169	166	165	162	159	157	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Red	Texarkana	840	832	825	813	802	790	Riverbend Strategy		RIVERBEND WATER RESOU	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Texarkana	5,929	5,870	5,824	5,741	5,657	5,572	Riverbend Strategy		City of Hooks	High
Wright Patman Lake/Reservoir	Surface Water	Bowie	Sulphur	Wake Village	649	641	635	625	615	605	Riverbend Strategy		RIVERBEND WATER RESOU	High

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DRAFT Region D Water User Group (WUG) Management Supply Factor

WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. To calculate the Management Supply Factor for each WUG as a whole, not split by region-county-basin, the combined total of existing and future supply is divided by the total projected demand. If a WUG is split by more than one planning region, the whole WUG's management supply factor will show up in each of its planning region's management supply factor reports.

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
410 WSC	0.6	0.6	0.7	0.7	0.7	0.8
Ables Springs SUD*	0.9	0.8	0.7	0.6	0.6	0.6
Atlanta	2.2	1.3	1.4	1.4	1.5	1.6
Avinger	3.0	3.2	3.4	3.5	3.7	3.9
B H P WSC	1.0	1.0	0.9	1.0	1.1	1.0
Ben Wheeler WSC*	1.0	0.9	0.8	0.7	0.6	0.5
Bethel Ash WSC*	1.0	1.0	1.0	1.0	1.0	1.0
Bi County WSC	1.5	1.5	1.5	1.5	1.5	1.5
Big Sandy	1.2	1.2	1.2	1.3	1.3	1.3
Blocker Crossroads WSC	1.4	1.4	1.4	1.4	1.4	1.3
Blossom	1.7	1.8	1.8	1.8	1.8	1.8
Bogata	3.0	3.2	3.4	3.6	3.8	4.0
Bois D Arc MUD*	1.0	0.9	0.8	0.7	0.6	0.5
Brashear WSC	1.0	1.0	1.0	1.0	1.0	1.0
Bright Star Salem SUD	2.0	1.9	1.8	1.6	1.5	1.4
Brinker WSC	1.0	1.0	1.0	1.0	1.0	1.0
Burns Redbank WSC	1.0	1.0	1.0	1.0	1.0	1.0
Caddo Basin SUD*	0.9	0.8	0.8	0.8	0.8	0.8
Caddo Mills	1.7	1.7	2.0	2.3	2.4	2.3

*A single asterisk next to a WUG's name denotes that the WUG is split by more than one planning region.

DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Canton	1.5	1.4	1.2	1.1	1.0	1.0
Carroll WSC*	1.3	1.3	1.2	1.2	1.2	1.2
Cash SUD*	1.3	1.4	1.5	1.4	1.2	1.1
Celeste	1.2	1.1	1.1	1.1	1.0	1.0
Central Bowie County WSC	1.0	1.0	1.0	1.0	1.0	1.0
Chalk Hill SUD*	1.0	1.0	1.0	1.0	1.0	1.0
Clarksville	1.2	1.4	1.6	1.8	2.1	2.5
Clarksville City	1.9	1.9	1.9	2.0	2.0	2.0
Combined Consumers SUD	2.3	2.2	2.1	2.0	1.9	1.9
Commerce	1.3	1.4	1.4	1.5	1.5	1.6
Como	1.1	1.1	1.1	1.1	1.1	1.1
Cooper	1.0	1.0	1.0	1.0	1.0	1.0
Cornersville WSC	2.0	1.9	1.9	1.8	1.7	1.7
Cross Roads SUD*	1.8	1.9	1.9	1.9	2.0	2.0
Crystal Systems Texas*	1.3	1.3	1.3	1.4	1.4	1.4
Cumby	1.5	1.7	1.8	2.0	2.1	2.1
Cypress Springs SUD	2.7	2.6	2.4	2.3	2.1	1.9
Cypress Valley WSC	2.0	1.9	1.9	1.9	1.9	1.9
Daingerfield	3.5	3.4	3.3	3.2	3.2	3.1
De Kalb	1.0	1.0	1.0	1.0	1.0	1.0
Delta County MUD*	1.0	1.0	1.0	1.0	1.0	1.0

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Diana SUD	2.1	2.0	1.8	1.7	1.6	1.4
E M C WSC	1.8	2.0	2.3	2.5	2.8	3.1
East Mountain Water System	0.4	0.4	0.4	0.4	0.5	0.5
East Tawakoni	1.3	1.3	1.3	1.3	1.3	1.3
East Texas MUD	1.2	1.1	1.0	1.1	1.1	1.0
Eastern Cass WSC	2.0	2.0	1.9	1.8	1.7	1.6
Edgewood	1.7	1.7	1.6	1.6	1.6	1.6
Edom WSC*	1.1	1.1	1.0	1.0	1.0	1.0
Elderville WSC*	1.3	1.3	1.3	1.4	1.4	1.4
Elysian Fields WSC*	1.0	1.0	1.0	1.0	1.0	1.0
Emory	3.4	3.3	3.2	3.2	3.1	3.0
Fouke WSC	1.3	1.2	1.2	1.2	1.1	1.1
Frognot WSC*	1.0	1.0	1.0	1.0	1.0	1.0
Fruitvale WSC	1.1	1.0	1.0	0.9	0.8	0.8
Gafford Chapel WSC	1.3	1.3	1.3	1.3	1.3	1.3
Gill WSC*	1.6	1.7	1.7	1.8	1.9	2.0
Gilmer	1.3	1.3	1.3	1.4	1.4	1.5
Gladewater	1.1	1.1	1.1	1.2	1.2	1.0
Glenwood WSC	1.1	1.1	1.1	1.1	1.1	1.1
Golden WSC	1.6	1.6	1.5	1.3	1.0	0.9
Grand Saline	0.7	0.7	0.7	0.8	0.8	0.8

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Greenville	1.1	1.1	1.1	1.2	1.2	1.2
Gum Springs WSC	2.0	1.9	1.8	1.7	1.6	1.5
Hallsville	1.5	1.4	1.4	1.3	1.2	1.2
Harleton WSC	1.3	1.4	1.6	1.7	1.9	1.9
Hawkins	2.5	2.5	2.4	2.4	2.4	2.4
Hickory Creek SUD*	0.6	0.5	0.5	0.4	0.4	0.3
Holly Springs WSC	1.4	1.5	1.6	1.7	1.8	2.0
Hooks	1.0	1.0	1.0	1.0	1.0	1.0
Hughes Springs	1.5	1.6	1.6	1.7	1.8	1.9
Jackson WSC*	1.0	2.7	2.6	2.6	2.5	1.3
Jefferson	5.1	5.5	6.0	6.3	6.8	7.2
Jones WSC	1.6	1.5	1.5	1.2	1.3	1.2
Josephine*	0.9	0.8	0.7	0.6	0.6	0.6
Kellyville-Berea WSC	1.2	1.2	1.2	1.3	1.3	1.3
Kilgore*	1.7	1.6	1.6	1.6	1.6	1.7
Lake Fork WSC	2.3	2.2	2.1	2.0	1.9	1.8
Lamar County WSD	2.7	2.7	2.7	2.7	2.7	2.7
Leigh WSC	1.3	1.6	1.7	2.1	2.9	3.8
Liberty City WSC	1.6	1.5	1.6	1.6	1.6	1.6
Liberty Utilities Silverleaf Water*	1.2	1.1	1.0	1.0	1.0	0.9
Lindale Rural WSC*	1.1	1.0	0.9	0.9	0.8	0.8

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Lindale*	1.6	1.7	1.8	1.9	2.0	2.0
Linden	1.3	1.3	1.4	1.5	1.5	1.6
Little Hope Moore WSC	0.9	0.9	0.8	0.8	0.7	0.7
Lone Star	3.6	3.9	4.3	4.7	5.0	5.5
Longview	2.2	2.2	2.2	2.2	2.2	2.1
Mabank*	0.9	0.9	0.8	0.8	0.7	0.7
MacBee SUD*	2.0	1.6	1.3	1.0	1.2	1.0
Macedonia Eylau MUD 1	1.0	1.0	1.0	1.0	1.0	1.0
Marshall	3.0	3.0	3.0	3.2	3.4	3.7
Martin Springs WSC	1.4	1.4	1.3	1.3	1.3	1.3
Maud	1.0	1.0	1.0	1.0	1.0	1.0
Miller Grove WSC	1.2	1.1	1.1	1.1	1.0	1.0
Mims WSC	6.5	6.3	6.0	5.9	5.8	5.6
Mineola	1.9	1.8	1.7	1.6	1.6	1.5
Mount Pleasant	4.2	3.8	3.6	3.5	3.3	3.2
Mount Vernon	5.4	5.2	5.0	4.8	4.5	4.2
Myrtle Springs WSC	2.2	1.8	1.5	1.3	1.1	1.0
Naples	1.2	1.3	1.3	1.3	1.3	1.3
Nash	1.0	1.0	1.0	1.0	1.0	1.0
New Boston	1.1	1.1	1.1	1.1	1.1	1.1
New Hope SUD	0.7	0.7	0.7	0.7	0.8	0.8

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	2030	2040	2050	2060	2070	2080
North Harrison WSC	1.6	1.5	1.5	1.8	1.7	1.7
North Hopkins WSC	0.8	0.8	0.8	0.7	0.7	0.7
North Hunt SUD*	1.0	1.0	1.0	1.1	1.1	1.1
Omaha	1.9	1.9	2.0	2.0	2.1	2.1
Ore City	8.3	8.1	7.9	7.9	7.8	7.8
Overton*	1.0	1.3	1.4	1.6	1.8	2.1
Panola-Bethany WSC*	1.0	1.3	1.7	2.6	3.2	4.0
Paris	0.7	0.6	0.6	0.6	0.6	0.6
Pine Ridge WSC	1.5	1.3	1.2	1.1	1.0	0.9
Pittsburg	1.5	1.5	1.5	1.5	1.5	1.5
Poetry WSC*	0.9	0.9	0.9	0.8	0.8	0.8
Point	1.8	1.7	1.6	1.6	1.6	1.6
Pritchett WSC	2.1	2.1	2.1	2.2	2.2	2.2
Pruitt Sandflat WSC	1.8	1.8	1.9	2.0	2.0	2.1
Queen City	2.1	2.2	2.2	2.2	2.3	2.3
Quinlan	1.0	1.0	1.0	1.0	1.0	1.0
Quitman	2.9	2.9	2.9	2.9	2.9	3.0
R P M WSC*	0.9	0.9	0.9	0.9	0.9	1.0
Ramey WSC	1.5	1.4	1.2	1.0	0.9	0.8
Red River County WSC	1.2	1.3	1.4	1.4	1.4	1.4
Redwater	1.0	1.0	1.0	1.0	1.0	1.0

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Reno (Lamar)	1.7	1.9	2.0	2.2	2.4	2.4
Riverbend Water Resources District	1.0	1.0	1.0	1.0	1.0	1.0
Royse City*	1.0	0.9	0.8	0.7	0.6	0.6
Sand Flat WSC	1.7	1.6	1.6	1.6	1.6	1.6
Scottsville	0.8	0.9	0.9	0.9	0.8	0.8
Shady Grove No 2 WSC	1.0	1.0	1.0	1.0	1.0	1.0
Shady Grove SUD	1.0	1.0	1.0	1.0	1.0	1.0
Sharon WSC	1.3	1.3	1.3	1.2	1.2	1.1
Shirley WSC	1.4	1.3	1.3	1.2	1.2	1.1
South Rains SUD	1.0	1.0	0.9	0.8	0.8	0.8
South Tawakoni WSC	5.1	6.3	7.7	9.6	12.1	15.0
Southern Utilities*	1.1	1.1	1.1	1.0	1.0	1.0
Star Mountain WSC	1.8	1.8	1.7	2.1	2.0	2.0
Starrville-Friendship WSC	1.5	1.5	1.5	2.1	1.9	1.8
Sulphur Springs	1.0	1.0	1.0	1.0	1.0	1.0
Talco	3.9	3.9	4.1	4.2	4.3	4.4
Talley WSC	1.5	1.5	1.5	1.5	1.5	1.5
Texarkana	1.0	1.0	1.0	1.0	1.0	1.0
Texas A&M University Commerce	1.0	1.0	1.0	1.0	1.0	1.0
Tri SUD	1.0	1.0	1.0	1.0	1.0	1.0
Tryon Road SUD	1.7	1.6	1.6	1.5	1.5	1.4

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Tyler*	1.0	1.0	1.0	1.0	1.0	1.0
Union Grove WSC	1.6	1.6	1.6	1.6	1.7	1.7
Van	1.4	1.4	1.4	1.4	1.4	1.4
Wake Village	1.0	1.0	1.0	1.0	1.0	1.0
Waskom	1.7	1.9	2.1	2.6	3.3	3.9
West Gregg SUD*	1.5	1.4	1.3	1.3	1.2	1.1
West Harrison WSC	1.8	1.6	1.6	1.4	1.3	1.2
West Leonard WSC*	1.0	1.0	1.0	1.0	1.0	1.0
West Tawakoni	2.5	2.3	1.9	1.9	1.8	1.7
Western Cass WSC	3.6	3.8	4.0	4.2	4.4	4.6
White Oak	1.0	1.0	1.0	1.0	1.0	1.0
Wills Point	1.0	1.0	1.0	1.0	1.0	1.0
Winnsboro	2.6	2.4	2.3	2.1	2.0	1.8
Winona	0.9	0.8	0.8	0.8	0.7	0.7
Wolfe City*	1.6	1.6	1.5	1.5	1.5	1.5
County-Other, Bowie	2.2	2.3	2.4	2.4	2.5	2.7
County-Other, Camp	4.6	4.7	4.8	4.8	4.8	4.8
County-Other, Cass	1.3	1.4	1.6	1.8	2.1	2.6
County-Other, Delta	2.5	2.6	2.7	2.9	3.0	3.2
County-Other, Franklin	3.5	3.9	3.9	3.9	3.9	4.0
County-Other, Gregg	3.3	3.6	4.1	4.9	5.7	6.5

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
County-Other, Harrison	1.6	1.8	1.8	2.1	2.4	2.7
County-Other, Hopkins	4.3	4.2	3.9	3.7	3.6	3.5
County-Other, Hunt	1.6	1.6	1.6	1.6	1.8	2.0
County-Other, Lamar	1.2	1.2	1.3	1.3	1.3	1.3
County-Other, Marion	6.2	7.2	9.0	10.6	13.1	18.2
County-Other, Morris	2.0	2.1	2.1	2.1	2.2	2.2
County-Other, Rains	1.6	1.5	1.5	1.4	1.3	1.2
County-Other, Red River	1.9	2.1	2.6	3.4	5.8	81.0
County-Other, Smith*	0.8	0.9	1.0	1.1	1.2	1.3
County-Other, Titus	8.5	10.0	12.8	15.9	21.1	34.2
County-Other, Upshur	2.6	2.9	3.2	3.8	4.7	6.3
County-Other, Van Zandt	1.6	1.4	1.2	1.2	1.2	1.1
County-Other, Wood	9.9	10.2	11.0	11.4	12.3	13.6
Manufacturing, Bowie	18.4	31.6	33.8	36.6	39.2	38.6
Manufacturing, Camp	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing, Cass	1.0	1.0	1.0	1.0	1.0	1.0
Manufacturing, Gregg	1.0	1.0	0.9	0.9	0.9	0.8
Manufacturing, Harrison	4.1	4.0	3.8	3.7	3.6	3.4
Manufacturing, Hopkins	1.8	1.8	1.8	1.8	1.9	1.8
Manufacturing, Hunt	1.1	1.4	1.6	1.7	1.9	1.8
Manufacturing, Lamar	1.1	1.1	1.1	1.1	1.1	1.0

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Manufacturing, Marion	1.0	1.0	1.0	1.0	1.0	1.1
Manufacturing, Morris	3.0	2.7	2.7	2.9	2.6	2.5
Manufacturing, Rains	12.0	12.0	12.0	12.0	12.0	12.0
Manufacturing, Red River	1,684.7	1,682.3	1,682.3	1,682.3	1,682.3	1,682.3
Manufacturing, Smith*	1.1	1.1	1.0	1.0	0.9	0.9
Manufacturing, Titus	1.5	1.5	1.5	1.4	1.4	1.4
Manufacturing, Upshur	2.0	1.9	1.8	1.8	1.7	1.7
Manufacturing, Van Zandt	1.2	1.2	1.1	1.1	1.0	1.0
Manufacturing, Wood	1.3	1.3	1.2	1.2	1.1	1.1
Mining, Bowie	1.0	1.0	1.0	1.0	1.0	1.0
Mining, Cass	24.0	24.6	24.9	25.8	26.5	27.2
Mining, Gregg	5.4	5.3	4.3	3.2	2.3	2.2
Mining, Harrison	0.6	0.6	0.5	0.5	0.5	0.5
Mining, Hopkins	130.5	134.0	137.5	142.5	146.5	146.5
Mining, Marion	31.8	32.0	32.0	32.1	32.2	32.2
Mining, Upshur	1.9	1.9	1.7	1.4	1.3	1.3
Mining, Van Zandt	503.8	532.8	568.0	601.0	619.8	650.2
Mining, Wood	1.0	1.0	1.0	1.0	1.0	1.0
Steam-Electric Power, Gregg	2.4	2.4	2.4	2.4	2.4	2.4
Steam-Electric Power, Harrison	1.1	1.1	1.1	1.1	1.1	1.1
Steam-Electric Power, Hunt	1.0	1.0	1.0	1.0	1.0	1.0

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Steam-Electric Power, Lamar	1.6	1.6	1.6	1.6	1.6	1.6
Steam-Electric Power, Marion	1.0	1.1	1.2	1.4	1.5	1.5
Steam-Electric Power, Morris	16.4	16.4	16.4	16.4	16.4	16.4
Steam-Electric Power, Titus	1.0	1.0	0.9	0.9	0.8	0.8
Livestock, Bowie	1.6	1.8	2.1	2.4	2.6	2.6
Livestock, Camp	4.0	4.0	4.0	4.0	4.0	4.0
Livestock, Cass	4.5	4.5	4.4	4.4	4.4	4.4
Livestock, Delta	1.8	1.8	1.8	1.8	1.8	1.8
Livestock, Franklin	2.5	2.5	2.5	2.5	2.5	2.5
Livestock, Gregg	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Harrison	1.3	1.2	1.2	1.1	1.1	1.1
Livestock, Hopkins	1.0	1.0	1.0	1.1	1.1	1.1
Livestock, Hunt	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Lamar	1.3	1.3	1.3	1.3	1.3	1.3
Livestock, Marion	2.4	2.4	2.4	2.4	2.4	2.4
Livestock, Morris	3.0	3.0	3.0	3.0	3.0	3.0
Livestock, Rains	1.1	1.1	1.1	1.1	1.1	1.1
Livestock, Red River	1.3	1.3	1.3	1.3	1.3	1.3
Livestock, Smith*	1.3	1.3	1.3	1.3	1.3	1.3
Livestock, Titus	3.9	4.0	4.0	4.0	4.1	4.1
Livestock, Upshur	1.8	1.8	1.8	1.8	1.8	1.8

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DRAFT Region D Water User Group (WUG) Management Supply Factor

	WUG Management Supply Factor					
WUG Name	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Livestock, Van Zandt	1.0	1.0	1.0	1.0	1.0	1.0
Livestock, Wood	2.6	2.6	2.6	2.6	2.6	2.6
Irrigation, Bowie	1.1	1.1	1.1	1.1	1.1	1.1
Irrigation, Camp	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Delta	1.7	1.7	1.7	1.7	1.7	1.7
Irrigation, Franklin	2.2	2.2	2.2	2.2	2.2	2.2
Irrigation, Gregg	5.7	5.7	5.7	5.7	5.7	5.7
Irrigation, Harrison	1.1	1.1	1.1	1.1	1.0	1.0
Irrigation, Hopkins	0.0	0.1	0.1	0.1	0.1	0.1
Irrigation, Hunt	1.1	1.1	1.1	1.1	1.1	1.1
Irrigation, Lamar	0.6	0.6	0.6	0.6	0.6	0.6
Irrigation, Marion	63.0	63.0	63.0	63.0	63.0	63.0
Irrigation, Morris	6.9	6.9	6.9	6.9	6.9	6.9
Irrigation, Rains	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Red River	0.7	0.7	0.7	0.7	0.7	0.7
Irrigation, Smith*	1.6	1.6	1.6	1.6	1.6	1.6
Irrigation, Titus	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Upshur	5.0	5.0	5.0	5.0	5.0	5.0
Irrigation, Van Zandt	1.0	1.0	1.0	1.0	1.0	1.0
Irrigation, Wood	2.6	2.6	2.6	2.6	2.6	2.6

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DRAFT Region D Recommended Water Management Strategy (WMS) Supply Associated with a New or Amended Inter-Basin Transfer (IBT) Permit

IBT WMS supply is the portion of the total WMS benefitting WUGs that will require a new or amended IBT permit that is not considered exempt under the Texas Water Code § 11.085.

The planning region selected produces no results for this report.

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DRAFT Region D Water User Groups (WUGs) Recommended Water Management Strategy (WMS) Supply Associated with a New or Amended Inter-Basin Transfer (IBT) Permit and Total Recommended Conservation WMS Supply

IBT WMS supply is the portion of the total WMS benefitting the WUG basin split listed that will require a new or amended IBT permit that is not considered exempt under the Texas Water Code§ 11.085. Total conservation supply represents all conservation WMS volumes recommended within the WUG's region-basin geographic split.

Benefitting WUG Name | Basin	WMS Source Origin Basin | WMS Name	WMS Supply (acre-feet per year)					
		2030	2040	2050	2060	2070	2080
Ables Springs SUD | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	0	0	0	0
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	0	0
	Total Recommended IBT WMS supply	**0**	**0**	**0**	**0**	**0**	**0**
	Total Recommended Conservation	**0**	**1**	**1**	**1**	**1**	**1**
B H P WSC | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	68	107	125	125
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	42	42
	Total Recommended IBT WMS supply	**0**	**0**	**68**	**107**	**167**	**167**
	Total Recommended Conservation	**0**	**0**	**0**	**0**	**0**	**0**
Caddo Basin SUD | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	217	349	421	421
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	142	142
	Total Recommended IBT WMS supply	**0**	**0**	**217**	**349**	**563**	**563**
	Total Recommended Conservation	**0**	**0**	**0**	**0**	**0**	**0**
Cash SUD | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	255	303	262	262
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	89	89
	Total Recommended IBT WMS supply	**0**	**0**	**255**	**303**	**351**	**351**
	Total Recommended Conservation	**0**	**0**	**0**	**0**	**0**	**0**
Josephine | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	0	0	0	0
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	0	0
	Total Recommended IBT WMS supply	**0**	**0**	**0**	**0**	**0**	**0**
	Total Recommended Conservation	**0**	**1**	**1**	**1**	**3**	**4**
Mabank | Trinity Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	0	0	0	0

DRAFT Region D Water User Groups (WUGs) Recommended Water Management Strategy (WMS) Supply Associated with a New or Amended Inter-Basin Transfer (IBT) Permit and Total Recommended Conservation WMS Supply

Benefitting WUG Name | Basin	WMS Source Origin Basin | WMS Name	WMS Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Mabank | Trinity Basin	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	0	0
	Total Recommended IBT WMS supply	**0**	**0**	**0**	**0**	**0**	**0**
	Total Recommended Conservation	**3**	**8**	**10**	**12**	**13**	**14**
Poetry WSC | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	55	87	102	102
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	34	34
	Total Recommended IBT WMS supply	**0**	**0**	**55**	**87**	**136**	**136**
	Total Recommended Conservation	**0**	**0**	**0**	**0**	**0**	**0**
Royse City | Sabine Basin	Sulphur Basin | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	0	0	0	0	0	0
	Sulphur Basin | Wright Patman Reallocation for NTMWD AND TRWD	0	0	0	0	0	0
	Total Recommended IBT WMS supply	**0**	**0**	**0**	**0**	**0**	**0**
	Total Recommended Conservation	**28**	**81**	**101**	**110**	**128**	**137**

DRAFT Region D Sponsored Recommended Water Management Strategy (WMS) Supplies Unallocated to Water User Groups (WUG)

Strategy supplies created through the WMS that have not been assigned to a WUG will be allocated to the entity responsible for the water through an ‘unassigned water volumes’ entity. Only strategy supplies associated with an 'unassigned water volume' entity are shown in this report, and may not represent all strategy supplies associated with the listed WMS.

The planning region selected produces no results for this report.

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Appendix C5-17 Region D 2026 - North Easat Texas Regional Water Planning Group

Summary of WMS Users by WMS Type

WMS Type	2030	2040	2050	2060	2070	2080
Groundwater wells and other	34,655	35,020	35,443	36,067	36,345	36,501
Indirect reuse	7,468	7,617	8,237	8,802	9,330	9,330
Industrial conservation	543	1,080	1,110	1,160	1,216	1,286
Municipal conservation	2,299	4,749	7,470	10,309	13,393	14,441
Other surface water	64,813	91,565	98,765	107,501	117,234	118,881
Total Strategy Supplies	109,778	140,031	151,025	163,839	177,518	180,439

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Region D 2026 - North Easat Texas Regional Water Planning Group
Summary of WMS Users by Source Type

WMS Source Type	2030	2040	2050	2060	2070	2080
Availability Increase	7,468	7,617	8,237	8,802	9,330	9,330
Demand Reduction	2,842	5,829	8,580	11,469	14,609	15,727
Existing Availability	80,525	107,030	113,961	122,671	131,037	132,754
Existing Surplus	13,523	14,197	14,794	15,178	16,683	16,697
Supply Reduction by WUG	3,846	3,724	3,745	4,014	4,154	4,226
Supply Reduction by WWP Customers	1,574	1,634	1,708	1,705	1,705	1,705
Total Strategy Supplies	109,778	140,031	151,025	163,839	177,518	180,439

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DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Major Water Providers are entities of particular significance to a region's water supply as defined by the Regional Water Planning Group (RWPG), and may be a Water User Group (WUG) entity, Wholesale Water Provider (WWP) entity , or both (WUG/WWP). Retail denotes WUG projected demands and existing water supplies used by the WUG. Wholesale denotes a WWP or WUG/WWP selling water to another entity.

Bi County WSC - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	1,201	1,202	1,204	1,209	1,214	1,219
Projected Wholesale Contract Demands	5	5	5	5	5	5
Total Projected Wholesale Contract and Retail Demands	**1,206**	**1,207**	**1,209**	**1,214**	**1,219**	**1,224**
Groundwater Sales to Retail Customers	1,824	1,824	1,824	1,824	1,824	1,824
Groundwater Sales to Wholesale Customers	5	5	5	5	5	5
Total Wholesale and Retail Sales to Customers	**1,829**	**1,829**	**1,829**	**1,829**	**1,829**	**1,829**

Bright Star Salem SUD - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	708	765	806	878	951	1,025
Projected Wholesale Contract Demands	90	90	90	90	90	90
Total Projected Wholesale Contract and Retail Demands	**798**	**855**	**896**	**968**	**1,041**	**1,115**
Groundwater Sales to Retail Customers	687	687	687	687	687	687
Surface Water Sales to Retail Customers	752	744	736	728	719	711
Groundwater Sales to Wholesale Customers	90	90	90	90	90	90
Total Wholesale and Retail Sales to Customers	**1,529**	**1,521**	**1,513**	**1,505**	**1,496**	**1,488**

Cash SUD - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	2,967	3,423	3,918	4,339	4,539	4,940
Projected Wholesale Contract Demands	965	975	974	958	933	895
Total Projected Wholesale Contract and Retail Demands	**3,932**	**4,398**	**4,892**	**5,297**	**5,472**	**5,835**
Reuse Sales to Retail Customers	374	330	288	261	248	241
Surface Water Sales to Retail Customers	2,902	3,602	4,303	4,498	3,778	3,729
Reuse Sales to Wholesale Customers	1	1	1	1	1	1
Surface Water Sales to Wholesale Customers	599	627	644	644	634	611
Total Wholesale and Retail Sales to Customers	**3,876**	**4,560**	**5,236**	**5,404**	**4,661**	**4,582**

Cherokee Water Company - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Projected Wholesale Contract Demands	18,000	18,000	18,000	18,000	18,000	18,094
Total Projected Wholesale Contract and Retail Demands	**18,000**	**18,000**	**18,000**	**18,000**	**18,000**	**18,094**
Surface Water Sales to Wholesale Customers	18,000	18,000	18,000	18,000	18,000	18,094
Total Wholesale and Retail Sales to Customers	**18,000**	**18,000**	**18,000**	**18,000**	**18,000**	**18,094**

Commerce - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	1,590	1,537	1,497	1,436	1,375	1,314
Projected Wholesale Contract Demands	808	808	808	808	808	808
Total Projected Wholesale Contract and Retail Demands	**2,398**	**2,345**	**2,305**	**2,244**	**2,183**	**2,122**
Groundwater Sales to Retail Customers	244	244	244	244	244	244
Surface Water Sales to Retail Customers	1,886	1,886	1,886	1,886	1,886	1,886
Groundwater Sales to Wholesale Customers	78	78	78	78	78	78
Surface Water Sales to Wholesale Customers	214	214	214	214	214	214
Total Wholesale and Retail Sales to Customers	**2,422**	**2,422**	**2,422**	**2,422**	**2,422**	**2,422**

Cooper - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	464	461	458	452	446	440
Projected Wholesale Contract Demands	284	291	295	301	306	309
Total Projected Wholesale Contract and Retail Demands	**748**	**752**	**753**	**753**	**752**	**749**
Surface Water Sales to Retail Customers	464	461	458	452	446	440
Surface Water Sales to Wholesale Customers	284	291	295	301	306	309
Total Wholesale and Retail Sales to Customers	**748**	**752**	**753**	**753**	**752**	**749**

Emory - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	732	745	766	772	777	781
Projected Wholesale Contract Demands	965	961	960	960	961	961
Total Projected Wholesale Contract and Retail Demands	**1,697**	**1,706**	**1,726**	**1,732**	**1,738**	**1,742**
Surface Water Sales to Retail Customers	2,521	2,495	2,467	2,438	2,409	2,380
Surface Water Sales to Wholesale Customers	438	435	434	435	436	436
Total Wholesale and Retail Sales to Customers	**2,959**	**2,930**	**2,901**	**2,873**	**2,845**	**2,816**

Franklin County WD - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Projected Wholesale Contract Demands	9,500	9,500	9,500	9,500	9,500	9,500
Total Projected Wholesale Contract and Retail Demands	**9,500**	**9,500**	**9,500**	**9,500**	**9,500**	**9,500**
Surface Water Sales to Wholesale Customers	8,036	7,684	7,332	6,979	6,628	6,276
Total Wholesale and Retail Sales to Customers	**8,036**	**7,684**	**7,332**	**6,979**	**6,628**	**6,276**

Gladewater - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	1,376	1,384	1,376	1,355	1,334	1,312
Projected Wholesale Contract Demands	289	289	289	289	289	189
Total Projected Wholesale Contract and Retail Demands	**1,665**	**1,673**	**1,665**	**1,644**	**1,623**	**1,501**
Surface Water Sales to Retail Customers	1,579	1,579	1,579	1,579	1,579	1,371
Surface Water Sales to Wholesale Customers	289	289	289	289	289	189
Total Wholesale and Retail Sales to Customers	**1,868**	**1,868**	**1,868**	**1,868**	**1,868**	**1,560**

Golden WSC - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	393	414	431	452	474	495
Total Projected Wholesale Contract and Retail Demands	**393**	**414**	**431**	**452**	**474**	**495**
Groundwater Sales to Retail Customers	643	643	643	643	643	643
Total Wholesale and Retail Sales to Customers	**643**	**643**	**643**	**643**	**643**	**643**

Grand Saline - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	466	473	481	481	482	483
Projected Wholesale Contract Demands	15	15	15	15	14	14
Total Projected Wholesale Contract and Retail Demands	**481**	**488**	**496**	**496**	**496**	**497**
Groundwater Sales to Retail Customers	345	345	359	364	362	374
Groundwater Sales to Wholesale Customers	15	15	15	15	14	14
Total Wholesale and Retail Sales to Customers	**360**	**360**	**374**	**379**	**376**	**388**

Greenville - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	19,410	21,807	23,203	24,371	25,554	26,751
Projected Wholesale Contract Demands	4,234	4,402	4,583	4,756	4,875	5,061
Total Projected Wholesale Contract and Retail Demands	**23,644**	**26,209**	**27,786**	**29,127**	**30,429**	**31,812**
Surface Water Sales to Retail Customers	6,581	6,339	6,065	5,802	5,508	5,455

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Surface Water Sales to Wholesale Customers	2,504	2,746	3,020	3,283	3,577	3,630
Total Wholesale and Retail Sales to Customers	**9,085**	**9,085**	**9,085**	**9,085**	**9,085**	**9,085**

Hughes Springs - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	378	360	341	326	311	296
Projected Wholesale Contract Demands	92	92	92	92	92	92
Total Projected Wholesale Contract and Retail Demands	**470**	**452**	**433**	**418**	**403**	**388**
Surface Water Sales to Retail Customers	562	562	562	562	562	562
Surface Water Sales to Wholesale Customers	92	92	92	92	92	92
Total Wholesale and Retail Sales to Customers	**654**	**654**	**654**	**654**	**654**	**654**

Kilgore - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	4,275	4,262	4,190	4,081	3,973	3,864
Projected Wholesale Contract Demands	928	987	1,079	1,188	1,313	1,313
Total Projected Wholesale Contract and Retail Demands	**5,203**	**5,249**	**5,269**	**5,269**	**5,286**	**5,177**
Groundwater Sales to Retail Customers	1,495	1,495	1,495	1,495	1,495	1,495
Surface Water Sales to Retail Customers	5,091	4,967	4,809	4,634	4,443	4,377
Surface Water Sales to Wholesale Customers	928	987	1,079	1,188	1,313	1,313
Total Wholesale and Retail Sales to Customers	**7,514**	**7,449**	**7,383**	**7,317**	**7,251**	**7,185**

Lamar County WSD - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	2,906	2,903	2,889	2,876	2,862	2,849
Projected Wholesale Contract Demands	2,900	3,008	3,100	3,222	3,317	3,317
Total Projected Wholesale Contract and Retail Demands	**5,806**	**5,911**	**5,989**	**6,098**	**6,179**	**6,166**
Surface Water Sales to Retail Customers	8,796	8,715	8,655	8,597	8,512	8,512
Surface Water Sales to Wholesale Customers	2,761	2,869	2,961	3,083	3,178	3,178
Total Wholesale and Retail Sales to Customers	**11,557**	**11,584**	**11,616**	**11,680**	**11,690**	**11,690**

Longview - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	23,556	23,914	24,207	24,345	24,480	24,607
Projected Wholesale Contract Demands	26,765	26,767	26,767	26,767	26,767	26,767
Total Projected Wholesale Contract and Retail Demands	**50,321**	**50,681**	**50,974**	**51,112**	**51,247**	**51,374**

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Surface Water Sales to Retail Customers	52,243	52,276	52,308	52,343	52,378	52,333
Reuse Sales to Wholesale Customers	6,161	6,161	6,161	6,161	6,161	6,161
Surface Water Sales to Wholesale Customers	13,619	13,619	13,619	13,619	13,619	13,619
Total Wholesale and Retail Sales to Customers	**72,023**	**72,056**	**72,088**	**72,123**	**72,158**	**72,113**

Marshall - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	4,656	4,544	4,536	4,278	4,028	3,785
Projected Wholesale Contract Demands	2,423	2,423	2,423	2,423	2,423	2,423
Total Projected Wholesale Contract and Retail Demands	**7,079**	**6,967**	**6,959**	**6,701**	**6,451**	**6,208**
Surface Water Sales to Retail Customers	13,817	13,817	13,817	13,817	13,817	13,817
Surface Water Sales to Wholesale Customers	2,423	2,423	2,423	2,423	2,423	2,423
Total Wholesale and Retail Sales to Customers	**16,240**	**16,240**	**16,240**	**16,240**	**16,240**	**16,240**

Mount Pleasant - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	4,049	4,145	4,209	4,261	4,319	4,382
Projected Wholesale Contract Demands	6,270	6,607	6,848	7,051	7,364	7,563
Total Projected Wholesale Contract and Retail Demands	**10,319**	**10,752**	**11,057**	**11,312**	**11,683**	**11,945**
Surface Water Sales to Retail Customers	16,994	16,549	16,200	15,889	15,468	15,161
Surface Water Sales to Wholesale Customers	6,270	6,607	6,848	7,051	7,364	7,563
Total Wholesale and Retail Sales to Customers	**23,264**	**23,156**	**23,048**	**22,940**	**22,832**	**22,724**

Northeast Texas MWD - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Wholesale Contract Demands	163,657	162,937	162,217	161,497	160,777	160,057
Total Projected Wholesale Contract and Retail Demands	**163,657**	**162,937**	**162,217**	**161,497**	**160,777**	**160,057**
Surface Water Sales to Wholesale Customers	132,835	132,054	131,263	130,484	129,701	128,911
Total Wholesale and Retail Sales to Customers	**132,835**	**132,054**	**131,263**	**130,484**	**129,701**	**128,911**

Paris - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	3,698	3,687	3,671	3,653	3,636	3,618
Projected Wholesale Contract Demands	27,743	27,983	28,190	28,586	28,789	28,789
Total Projected Wholesale Contract and Retail Demands	**31,441**	**31,670**	**31,861**	**32,239**	**32,425**	**32,407**
Surface Water Sales to Retail Customers	4,093	3,853	3,671	3,653	3,636	3,618

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Surface Water Sales to Wholesale Customers	27,743	27,983	28,165	28,183	28,200	28,218
Total Wholesale and Retail Sales to Customers	**31,836**	**31,836**	**31,836**	**31,836**	**31,836**	**31,836**

Point - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	229	233	239	240	241	241
Projected Wholesale Contract Demands	12	12	12	12	12	12
Total Projected Wholesale Contract and Retail Demands	**241**	**245**	**251**	**252**	**253**	**253**
Surface Water Sales to Retail Customers	402	397	394	390	386	383
Surface Water Sales to Wholesale Customers	12	12	12	12	12	12
Total Wholesale and Retail Sales to Customers	**414**	**409**	**406**	**402**	**398**	**395**

Riverbend Water Resources District - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	380	375	371	365	359	353
Projected Wholesale Contract Demands	168,650	195,227	202,102	210,716	219,293	237,146
Total Projected Wholesale Contract and Retail Demands	**169,030**	**195,602**	**202,473**	**211,081**	**219,652**	**237,499**
Surface Water Sales to Retail Customers	0	0	0	0	0	0
Surface Water Sales to Wholesale Customers	122,612	122,602	122,595	122,590	122,586	122,585
Total Wholesale and Retail Sales to Customers	**122,612**	**122,602**	**122,595**	**122,590**	**122,586**	**122,585**

Sabine River Authority - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Wholesale Contract Demands	576,776	577,003	577,239	579,895	584,432	589,138
Total Projected Wholesale Contract and Retail Demands	**576,776**	**577,003**	**577,239**	**579,895**	**584,432**	**589,138**
Surface Water Sales to Wholesale Customers	547,040	543,895	540,766	540,051	541,220	542,558
Total Wholesale and Retail Sales to Customers	**547,040**	**543,895**	**540,766**	**540,051**	**541,220**	**542,558**

Sulphur River MWD - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Wholesale Contract Demands	14,810	14,483	14,157	13,830	13,503	13,176
Total Projected Wholesale Contract and Retail Demands	**14,810**	**14,483**	**14,157**	**13,830**	**13,503**	**13,176**
Surface Water Sales to Wholesale Customers	13,738	13,411	13,085	12,758	12,431	12,104
Total Wholesale and Retail Sales to Customers	**13,738**	**13,411**	**13,085**	**12,758**	**12,431**	**12,104**

Sulphur Springs - WUG/WWP	**Water Volumes (acre-feet per year)**

DRAFT Region D Major Water Provider (MWP) Existing Sales and Transfers

Data Description	2030	2040	2050	2060	2070	2080
Projected Retail WUG Demands	3,440	3,497	3,590	3,646	3,701	3,757
Projected Wholesale Contract Demands	5,373	5,670	5,727	6,067	6,342	6,380
Total Projected Wholesale Contract and Retail Demands	**8,813**	**9,167**	**9,317**	**9,713**	**10,043**	**10,137**
Surface Water Sales to Retail Customers	3,440	3,497	3,590	3,646	3,701	3,757
Surface Water Sales to Wholesale Customers	5,241	5,524	5,568	5,894	6,153	6,166
Total Wholesale and Retail Sales to Customers	**8,681**	**9,021**	**9,158**	**9,540**	**9,854**	**9,923**

Texarkana - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	6,769	6,702	6,649	6,554	6,459	6,362
Projected Wholesale Contract Demands	180,000	180,000	180,000	180,000	180,000	180,000
Total Projected Wholesale Contract and Retail Demands	**186,769**	**186,702**	**186,649**	**186,554**	**186,459**	**186,362**
Surface Water Sales to Retail Customers	0	0	0	0	0	0
Surface Water Sales to Wholesale Customers	122,612	122,602	122,595	122,590	122,586	122,585
Total Wholesale and Retail Sales to Customers	**122,612**	**122,602**	**122,595**	**122,590**	**122,586**	**122,585**

Titus County FWD 1 - WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Wholesale Contract Demands	40,000	40,000	40,000	40,000	40,000	40,000
Total Projected Wholesale Contract and Retail Demands	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**
Surface Water Sales to Wholesale Customers	26,200	25,660	25,120	24,580	24,040	23,500
Total Wholesale and Retail Sales to Customers	**26,200**	**25,660**	**25,120**	**24,580**	**24,040**	**23,500**

Tri SUD - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	2,224	2,439	2,583	2,741	2,882	3,005
Total Projected Wholesale Contract and Retail Demands	**2,224**	**2,439**	**2,583**	**2,741**	**2,882**	**3,005**
Surface Water Sales to Retail Customers	2,224	2,439	2,583	2,741	2,882	3,005
Total Wholesale and Retail Sales to Customers	**2,224**	**2,439**	**2,583**	**2,741**	**2,882**	**3,005**

White Oak - WUG/WWP	**Water Volumes (acre-feet per year)**					
Data Description	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Projected Retail WUG Demands	2,656	2,678	2,659	2,616	2,572	2,529
Projected Wholesale Contract Demands	90	90	90	90	90	90
Total Projected Wholesale Contract and Retail Demands	**2,746**	**2,768**	**2,749**	**2,706**	**2,662**	**2,619**

DRAFT Region D Major Water Provider (MWP)
Existing Sales and Transfers

Surface Water Sales to Retail Customers	2,590	2,590	2,590	2,590	2,590	2,590
Surface Water Sales to Wholesale Customers	90	90	90	90	90	90
Total Wholesale and Retail Sales to Customers	**2,680**	**2,680**	**2,680**	**2,680**	**2,680**	**2,680**

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

MWPs are entities of significance to a region's water supply as defined by the Regional Water Planning Group (RWPG) and may be a Water User Group (WUG) entity, Wholesale Water Provider (WWP) entity, or both (WUG/WWP).'MWP Retail Customers' denotes recommended WMS supply used by the WUG. 'Transfers Related to Wholesale Customers' denotes a WWP or WUG/WWP selling or transferring recommended WMS supply to another entity. Supply associated with the MWP's wholesale transfers will only display if it is listed as the main seller in the State Water Planning database, even if multiple sellers are involved with the sale of water to WUGs. Unallocated water volumes represent MWP recommended WMS supply not currently allocated to a customer of the MWP. 'Total MWP Related WMS Supply' will display if the MWP's WMS is related to more than one WMS supply type (retail, wholesale, and/or unallocated). Associated WMS Projects are listed when the MWP is one of the project's sponsors.

Bi County WSC | No Recommended WMS Supply Related TO MWP

Bright Star Salem SUD | No Recommended WMS Supply Related TO MWP

Cash SUD | Advanced Water Conservation (Cash SUD)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	0	1	1	0	0	0

Cash SUD | Conservation - Cash SUD

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	0	1	2	3	5	7

Cash SUD | Conservation, Water Loss Control - Cash SUD

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	1	1	0	0	0	0

WMS Related MWP Sponsored Projects	Project Description
Conservation, Water Loss Control - Cash SUD	Transmission water loss mitigation

Cash SUD | Increase Existing Contract (Cash SUD)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	416	568	642	471	337	337

WMS Related MWP Sponsored Projects	Project Description
Cash WSC - Additional Delivery Infrastructure from NTMWD	

Cash SUD | Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

MWP Retail Customers	0	0	274	325	281	281

Cash SUD | NTMWD - Additional Lavon Watershed Reuse						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	0	0	20	50	65	65

Cash SUD | NTMWD - Additional Measures to Access Full Lavon Yield						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	252	314	213	249	177	177
WMS Related MWP Sponsored Projects	**Project Description**					
Cash WSC - Additional Delivery Infrastructure from NTMWD						

Cash SUD | NTMWD - Expanded Wetland Reuse						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	17	44	40	61	64	64

Cash SUD | NTMWD - Interim Upper Sabine Basin						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	0	0	0	0	0	0

Cash SUD | NTMWD - Lake of The Pines						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	0	0	0	0	0	0

Cash SUD | NTMWD - Sabine Creek Reuse						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	0	0	0	0	0	0

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

Cash SUD | NTMWD - Texoma Blending

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	0	94	156	185	192	192

Cash SUD | Wright Patman Reallocation for NTMWD AND TRWD

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	0	0	0	0	95	95

Cherokee Water Company | No Recommended WMS Supply Related TO MWP

Commerce | No Recommended WMS Supply Related TO MWP

Cooper | No Recommended WMS Supply Related TO MWP

Emory | No Recommended WMS Supply Related TO MWP

Franklin County WD | No Recommended WMS Supply Related TO MWP

Gladewater | No Recommended WMS Supply Related TO MWP

Golden WSC | No Recommended WMS Supply Related TO MWP

Grand Saline | No Recommended WMS Supply Related TO MWP

Greenville | Greenville Conservation and WTP

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	15,325	17,775	20,496	23,335	26,419	27,467
Total MWP Related WMS Supply	15,325	17,775	20,496	23,335	26,419	27,467

WMS Related MWP Sponsored Projects	Project Description
New WTP Greenville	Surface water intake modification; Transmission pipeline; Pump station; New conventional WTP

Hughes Springs | Increase Existing Contract (Holly Springs, Cypress)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	80	80	80	80	80	80

Kilgore | Kilgore - Municipal Conservation

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	10	19	21	25	28	32

Kilgore | Sabine River Authority Strategy - Wood County GW

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	483	483	483	483	483	483

Lamar County WSD | Increase Existing Contract (County-Other Lamar)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	204	212	224	234	244	244

Lamar County WSD | Lamar Livestock Pipeline and Contract with Lamar Co WSD

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	617	617	617	617	617	617

Longview | Sabine River Authority Strategy - Wood County GW

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	483	483	483	483	483	483

Marshall | No Recommended WMS Supply Related TO MWP

Mount Pleasant | Increase Existing Contract (Manufacturing Titus from Mt Pleasant Surplus)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	1,003	880	890	1,149	1,279	1,279

Northeast Texas MWD | Increase Existing Contract (Harleton, Cypress)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

Transfers Related to Wholesale Customers	74	91	127	173	230	230

Paris | Pat Mayse Raw Water Pipeline (Irrigation Lamar)						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Transfers Related to Wholesale Customers	1,468	1,468	1,468	1,468	1,468	1,468

Point | No Recommended WMS Supply Related TO MWP

Riverbend Water Resources District | Riverbend Strategy						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
MWP Retail Customers	380	375	371	365	359	353
Transfers Related to Wholesale Customers	45,230	71,361	77,856	85,929	94,004	95,623
Total MWP Related WMS Supply	45,610	71,736	78,227	86,294	94,363	95,976
WMS Related MWP Sponsored Projects	**Project Description**					
Riverbend WMS Interim to Ultimate Storage Conversion	Raise conservation pool					
Riverbend WMS New Raw Water Intake 120 MGD 2030	New surface water intake					
Riverbend WMS New Raw Water Pipeline 32 MGD 2050						
Riverbend WMS New WTP 25 MGD 2030						
Riverbend WMS Pump Station Expansion 18 MGD 2050						
Riverbend WMS Pump Station Expansion 30 MGD 2060						
Riverbend WMS Pump Station Expansion 6 MGD 2040						
Riverbend WMS Raw Water Pipeline 72 MGD 2030						
Riverbend WMS Raw Water Pump Station 66 MGD 2030						
Riverbend WMS Water Right Amendment						
Riverbend WMS WTP Expansion 10 MGD 2050						
Riverbend WMS WTP Expansion 5 MGD 2040						

Riverbend Water Resources District | Riverbend Strategy Cass County						
Data Description	**Water Volumes (acre-feet per year)**					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Transfers Related to Wholesale Customers	1,119	1,179	1,253	1,250	1,250	1,250

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

WMS Related MWP Sponsored Projects	Project Description
Riverbend Strategy Cass New WTP and Transmission Line	

Sabine River Authority | Center - Pipeline from Toledo Bend Reservoir						
	Water Volumes (acre-feet per year)					
Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	0	0	2,242	2,242	2,242	2,242

Sabine River Authority | East Texas Transfer						
	Water Volumes (acre-feet per year)					
Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	0	0	250,000	250,000	250,000	250,000
WMS Related MWP Sponsored Projects	Project Description					
East Texas Transfer	Transmission pipeline; Pump station					

Sabine River Authority | Increase Contract - MacBee SUD to SRA						
	Water Volumes (acre-feet per year)					
Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	0	0	0	0	996	996

Sabine River Authority | LNVA - Purchase From Sabine River Authority (Toledo Bend)						
	Water Volumes (acre-feet per year)					
Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	0	0	200,000	200,000	200,000	200,000
WMS Related MWP Sponsored Projects	Project Description					
LNVA - Purchase from Sabine River Authority (Toledo Bend)	New or amended bed and banks permit; New surface water intake; Transmission pipeline; Pump station; Storage tank/balancing reservoir; Amended water right non-exempt IBT					

Sabine River Authority | Sabine River Authority Strategy - Wood County GW						
	Water Volumes (acre-feet per year)					
Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	966	966	966	966	966	966
WMS Related MWP Sponsored Projects	Project Description					
Sabine River Authority Wood County Well Field and Pipeline	New conventional well; New or amended bed and banks permit; Transmission pipeline; Pump station; Storage tank/balancing reservoir					

Sabine River Authority | SHEL-SHW-Purchase from Center	
	Water Volumes (acre-feet per year)

DRAFT Region D Major Water Provider (MWP) Water Management Strategy (WMS) Summary

Data Description	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	61	68	77	87	97	105

Sulphur River MWD | No Recommended WMS Supply Related TO MWP

Sulphur Springs | Increase Existing Contract (Brinker WSC, Sulphur)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	97	122	130	143	157	171

Sulphur Springs | Increase Existing Contract (Martin Springs)

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Transfers Related to Wholesale Customers	0	0	0	0	29	29

Texarkana | Riverbend Strategy

Data Description	Water Volumes (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
MWP Retail Customers	6,769	6,702	6,649	6,554	6,459	6,362

Titus County FWD 1 | No Recommended WMS Supply Related TO MWP

Tri SUD | No Recommended WMS Supply Related TO MWP

White Oak | No Recommended WMS Supply Related TO MWP

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DRAFT Region D Water User Group (WUG) Unmet Needs

WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The unmet needs shown in the WUG Unmet Needs report are calculated by first deducting the WUG split's projected demand from the sum of its total existing water supply volume and all associated recommended water management strategy water volumes. If the WUG split has a greater future supply volume than projected demand in any given decade, this amount is considered a surplus volume. In order to display only unmet needs associated with the WUG split, these surplus volumes are updated to a zero and the unmet needs water volumes are shown as absolute values.

	WUG Unmet Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Camp County WUG Total	**46**	**48**	**50**	**52**	**54**	**56**
Camp County / Cypress Basin WUG Total	**46**	**48**	**50**	**52**	**54**	**56**
Sharon WSC	4	4	4	4	4	4
Manufacturing	42	44	46	48	50	52
Gregg County WUG Total	**158**	**219**	**260**	**277**	**314**	**380**
Gregg County / Cypress Basin WUG Total	**52**	**52**	**52**	**51**	**51**	**50**
East Mountain Water System	52	52	52	51	50	49
Mining	0	0	0	0	1	1
Gregg County / Sabine Basin WUG Total	**106**	**167**	**208**	**226**	**263**	**330**
East Mountain Water System	40	41	41	40	39	39
White Oak	66	88	69	26	0	0
Manufacturing	0	38	98	160	224	291
Harrison County WUG Total	**1,369**	**1,389**	**1,432**	**1,512**	**1,585**	**1,675**
Harrison County / Cypress Basin WUG Total	**114**	**100**	**94**	**80**	**80**	**90**
Scottsville	13	7	10	3	13	23
Mining	101	93	84	77	67	67
Harrison County / Sabine Basin WUG Total	**1,255**	**1,289**	**1,338**	**1,432**	**1,505**	**1,585**
Scottsville	55	43	45	35	61	85
Mining	1,050	1,090	1,132	1,225	1,266	1,316
Irrigation	150	156	161	172	178	184
Hopkins County WUG Total	**4,173**	**4,103**	**3,854**	**3,849**	**3,895**	**3,931**
Hopkins County / Cypress Basin WUG Total	**8**	**8**	**8**	**8**	**8**	**8**
Irrigation	8	8	8	8	8	8
Hopkins County / Sabine Basin WUG Total	**304**	**304**	**304**	**304**	**322**	**329**
Cash SUD*	0	0	0	0	18	25
Livestock	198	198	198	198	198	198

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Unmet Needs

	WUG Unmet Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hopkins County / Sabine Basin WUG Total	**304**	**304**	**304**	**304**	**322**	**329**
Irrigation	106	106	106	106	106	106
Hopkins County / Sulphur Basin WUG Total	**3,861**	**3,791**	**3,542**	**3,537**	**3,565**	**3,594**
North Hopkins WSC	231	271	297	325	354	383
Irrigation	3,630	3,520	3,245	3,212	3,211	3,211
Hunt County WUG Total	**414**	**758**	**1,022**	**1,159**	**1,247**	**1,583**
Hunt County / Sabine Basin WUG Total	**280**	**581**	**797**	**877**	**899**	**1,160**
Ables Springs SUD*	3	8	15	19	23	26
B H P WSC	0	31	40	0	0	6
Caddo Basin SUD*	147	274	290	184	0	37
Hickory Creek SUD*	90	125	170	220	276	343
Josephine*	3	6	13	18	20	23
MacBee SUD*	0	0	0	0	0	1
Poetry WSC*	11	25	0	0	0	0
Royse City*	26	112	269	436	580	724
Hunt County / Sulphur Basin WUG Total	**75**	**101**	**129**	**164**	**204**	**249**
Hickory Creek SUD*	75	101	129	164	204	249
Hunt County / Trinity Basin WUG Total	**59**	**76**	**96**	**118**	**144**	**174**
Hickory Creek SUD*	59	76	96	118	144	174
Lamar County WUG Total	**4,388**	**4,608**	**4,775**	**4,775**	**4,775**	**4,775**
Lamar County / Red Basin WUG Total	**3,154**	**3,244**	**3,310**	**3,310**	**3,310**	**3,310**
Bois D Arc MUD*	0	0	1	1	1	1
Paris	411	501	566	566	566	566
Irrigation	2,743	2,743	2,743	2,743	2,743	2,743
Lamar County / Sulphur Basin WUG Total	**1,234**	**1,364**	**1,465**	**1,465**	**1,465**	**1,465**
Paris	662	801	902	902	902	902
County-Other	9	0	0	0	0	0
Livestock	83	83	83	83	83	83
Irrigation	480	480	480	480	480	480

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Unmet Needs

	WUG Unmet Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Morris County WUG Total	**16**	**15**	**15**	**15**	**15**	**15**
Morris County / Cypress Basin WUG Total	**6**	**5**	**5**	**5**	**5**	**5**
Western Cass WSC	6	5	5	5	5	5
Morris County / Sulphur Basin WUG Total	**10**	**10**	**10**	**10**	**10**	**10**
Western Cass WSC	10	10	10	10	10	10
Rains County WUG Total	**3**	**15**	**31**	**55**	**153**	**205**
Rains County / Sabine Basin WUG Total	**3**	**15**	**31**	**55**	**153**	**205**
Cash SUD*	0	0	0	0	77	107
Golden WSC	0	0	0	3	3	3
South Rains SUD	0	12	28	49	70	92
Irrigation	3	3	3	3	3	3
Red River County WUG Total	**1,366**	**1,353**	**1,336**	**1,324**	**1,311**	**1,298**
Red River County / Red Basin WUG Total	**299**	**293**	**286**	**281**	**276**	**270**
410 WSC	87	81	74	69	64	58
Irrigation	212	212	212	212	212	212
Red River County / Sulphur Basin WUG Total	**1,067**	**1,060**	**1,050**	**1,043**	**1,035**	**1,028**
410 WSC	48	41	32	25	17	10
Irrigation	1,019	1,019	1,018	1,018	1,018	1,018
Smith County WUG Total	**11**	**149**	**264**	**357**	**516**	**776**
Smith County / Sabine Basin WUG Total	**11**	**149**	**264**	**357**	**516**	**776**
Lindale Rural WSC*	0	119	214	294	375	456
Pine Ridge WSC	0	0	0	0	0	11
Southern Utilities*	0	0	0	0	68	223
Winona	11	30	43	55	66	77
Manufacturing*	0	0	7	8	7	9
Titus County WUG Total	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**
Titus County / Cypress Basin WUG Total	**0**	**1,198**	**2,458**	**3,143**	**4,433**	**5,693**
Steam Electric Power	0	1,198	2,458	3,143	4,433	5,693
Upshur County WUG Total	**227**	**231**	**231**	**229**	**226**	**225**
Upshur County / Sabine Basin WUG Total	**227**	**231**	**231**	**229**	**226**	**225**
East Mountain Water System	175	177	176	172	167	163

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Unmet Needs

	WUG Unmet Needs (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Upshur County / Sabine Basin WUG Total	**227**	**231**	**231**	**229**	**226**	**225**
Manufacturing	52	54	55	57	59	62
Van Zandt County WUG Total	**161**	**223**	**291**	**382**	**484**	**594**
Van Zandt County / Neches Basin WUG Total	**25**	**68**	**116**	**168**	**219**	**259**
Ben Wheeler WSC*	0	36	83	134	186	230
Little Hope Moore WSC	4	6	9	11	14	15
R P M WSC*	21	26	24	23	19	14
Van Zandt County / Sabine Basin WUG Total	**130**	**146**	**161**	**190**	**239**	**267**
Ables Springs SUD*	1	1	2	2	2	2
Fruitvale WSC	0	3	18	43	76	95
Golden WSC	0	0	0	3	6	10
Grand Saline	121	128	122	117	120	109
Little Hope Moore WSC	8	14	19	25	30	33
Pine Ridge WSC	0	0	0	0	5	18
Van Zandt County / Trinity Basin WUG Total	**6**	**9**	**14**	**24**	**26**	**68**
Mabank*	6	9	14	19	26	32
MacBee SUD*	0	0	0	5	0	36
Wood County WUG Total	**167**	**162**	**160**	**141**	**269**	**472**
Wood County / Sabine Basin WUG Total	**167**	**162**	**160**	**141**	**269**	**472**
Golden WSC	0	0	0	0	13	53
Liberty Utilities Silverleaf Water*	0	0	0	0	28	59
New Hope SUD	167	162	160	141	122	105
Ramey WSC	0	0	0	0	106	255
Region D Unmet Needs Total	**12,499**	**14,471**	**16,179**	**17,270**	**19,277**	**21,678**

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

Region D 2026 - North Easat Texas Regional Water Planning Group
WUG Unmet Needs Summary

Use Type	2030	2040	2050	2060	2070	2080
Irrigation	8,351	8,247	7,976	7,954	7,959	7,965
Livestock	281	281	281	281	281	281
Manufacturing	94	136	199	265	333	405
Mining	1,151	1,183	1,216	1,302	1,334	1,384
Municipal	2,647	3,666	4,542	5,002	5,788	6,882
Steam Electric Power	0	1,198	2,458	3,143	4,433	5,693
Total Unmet Need	**12,524**	**14,711**	**16,672**	**17,947**	**20,128**	**22,610**

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Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
439 WSC	155	140	140	140	140	140
Abilene	165	146	140	140	140	140
Acton MUD	167	148	140	140	140	140
Albany	187	161	133	106	79	80
Alvarado	120	120	120	120	120	120
Anson	134	134	134	134	134	134
Armstrong WSC	140	140	140	140	140	140
Aspermont	298	265	232	198	166	140
Axtell WSC	140	140	140	140	140	140
Baird	176	157	140	140	140	140
Bartlett	112	94	88	88	88	87
Bell County WCI	306	271	238	204	170	140
Bell County WCI	158	140	140	140	140	140
Bell County WCI	134	129	129	129	129	129
Bell Milam Falls	121	115	115	114	114	114
Bellmead	115	115	115	115	115	115
Belton	140	140	140	140	140	140
Benjamin	248	223	198	164	139	143
Bethany SUD	122	122	122	122	122	122
Bethesda WSC	169	150	140	140	140	140
Birome WSC	133	132	132	132	132	132
Bistone Municip	376	335	293	250	210	168
Block House MU	126	125	125	125	125	125
Bold Springs WS	130	130	130	130	130	130
Brandon Irene V	224	199	174	149	140	140
Breckenridge	145	140	140	140	140	140
Bremond	164	146	140	140	139	139
Brenham	207	184	161	140	140	140
Bruceville Eddy	221	196	172	147	140	140
Brushy Creek MI	167	148	140	140	140	140
Bryan	152	140	140	140	140	140
Burleson	139	138	138	138	138	138
Cade Lakes WSC	103	79	57	38	36	38
Caldwell	176	157	140	140	140	140
Callahan County	74	73	73	73	73	73
Calvert	211	188	165	140	140	140
Cameron	195	174	152	140	140	140
Cedar Park	172	153	140	140	140	140
Cego-Durango V	140	140	140	140	140	140
Central Bosque '	146	140	141	141	139	140
Central Texas Cc	255	227	199	170	141	141
Central Washing	107	107	106	106	107	107
Chalk Bluff WSC	140	140	140	140	140	140
Chappell Hill WS	177	158	139	140	141	140
Chatt WSC	127	121	121	121	122	121
Childress Creek '	144	121	98	78	78	77

Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
Cisco	153	140	140	140	140	140
Cleburne	173	154	140	140	140	140
Clifton	181	161	140	140	140	140
Clyde	91	91	91	91	91	91
College Station	159	140	140	140	140	140
Comanche	94	94	94	94	94	94
Coolidge	157	140	139	139	139	139
Copperas Cove	115	114	114	114	114	114
Corix Utilities Te	160	154	154	154	155	155
Coryell City Wat	147	140	140	140	140	140
County-Other, B	140	140	140	140	140	140
County-Other, B	120	120	120	120	120	120
County-Other, B	125	125	125	125	125	125
County-Other, B	99	99	99	99	99	99
County-Other, C	67	66	66	66	66	66
County-Other, C	90	90	90	90	90	90
County-Other, C	101	101	101	101	101	101
County-Other, E	67	66	66	66	66	66
County-Other, E	100	99	99	99	99	99
County-Other, F	86	86	86	86	85	86
County-Other, F	99	98	98	98	98	98
County-Other, G	122	122	122	122	122	122
County-Other, H	107	107	107	107	107	107
County-Other, H	71	71	71	71	71	71
County-Other, H	95	94	94	94	94	94
County-Other, H	90	89	89	89	89	89
County-Other, Jo	91	91	91	91	91	91
County-Other, Jo	108	107	107	107	107	107
County-Other, K	104	103	103	103	103	103
County-Other, K	88	87	87	87	87	87
County-Other, L	115	115	115	115	115	115
County-Other, L	87	86	86	86	86	86
County-Other, L	81	80	80	80	80	80
County-Other, M	110	110	110	110	110	110
County-Other, M	106	105	105	105	105	105
County-Other, N	99	98	98	98	98	98
County-Other, P	79	78	78	78	78	78
County-Other, R	97	97	97	97	97	97
County-Other, S	85	84	84	84	84	84
County-Other, S	105	105	105	105	105	105
County-Other, S	91	90	90	90	90	90
County-Other, S	102	102	102	102	102	102
County-Other, T	97	96	96	96	96	96
County-Other, T	81	81	81	81	81	81
County-Other, W	111	111	111	111	111	111
County-Other, W	136	136	136	136	136	136

Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
County-Other, Y	105	104	104	104	104	104
Crawford	191	170	148	140	140	140
Cross Country W	160	140	140	140	140	140
Cross Plains	189	168	148	140	140	140
De Leon	94	94	94	94	94	94
Deanville WSC	158	140	140	140	140	140
Dog Ridge WSC	121	106	106	106	106	106
Double Diamond	921	818	716	614	512	409
Dublin	100	100	100	100	100	100
East Bell WSC	140	140	140	140	140	140
East Crawford W	273	243	213	182	152	140
Eastland	140	140	140	140	140	140
Elm Creek WSC	139	138	138	138	138	138
EOL WSC	109	108	108	108	108	108
Eula WSC	39	39	39	39	39	39
Fern Bluff MUD	175	155	140	140	140	140
Files Valley WSC	161	140	140	140	140	140
Flat WSC	232	206	180	155	141	140
Florence	131	131	131	131	131	131
Fort Belknap WS	83	82	82	82	82	82
Fort Gates WSC	168	150	140	140	140	140
Fort Griffin SUD	154	140	141	139	140	139
Fort Hood	194	172	151	140	140	140
Franklin	128	128	128	128	128	128
Gatesville	183	159	134	110	102	102
Georgetown	169	168	168	160	150	140
Gholson WSC	123	122	122	122	122	122
Giddings	169	150	140	140	140	140
Glen Rose	179	159	140	140	140	140
Godley	111	111	111	111	111	111
Gordon	184	162	139	116	92	118
Gorman	104	104	104	104	104	104
Graham	272	242	211	181	151	140
Granbury	158	140	140	140	140	140
Grandview	140	140	140	140	140	140
Granger	131	120	120	120	120	120
Groesbeck	149	139	139	139	138	139
H & H WSC	121	120	120	120	120	120
Hamby WSC	111	110	110	110	110	110
Hamilton	118	98	98	97	98	98
Hamlin	168	150	139	140	140	140
Harker Heights	160	140	140	140	140	140
Haskell	157	140	140	140	140	140
Hawley WSC	104	104	104	104	104	104
Hearne	140	140	140	140	140	140
Hewitt	158	140	140	140	140	140

Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
Hico	128	127	127	127	127	127
Highland Park W	239	212	184	159	142	139
Hilco United Ser	168	150	140	140	140	140
Hill County WSC	127	126	126	126	126	126
Hillsboro	190	169	148	140	140	140
Hilltop WSC	138	137	137	137	137	137
Hog Creek WSC	868	771	673	578	483	387
Holland	100	100	100	100	100	100
Hubbard	127	127	127	127	127	127
Hutto	103	102	102	102	102	102
Itasca	105	105	105	105	105	105
Jarrell-Schwertn	113	113	113	113	113	113
Jayton	161	140	140	139	140	141
Johnson County	119	118	118	118	118	118
Jonah Water SU	169	150	140	140	140	140
Keene	128	128	128	128	128	128
Kempner WSC	130	112	112	112	112	112
Killeen	121	120	120	120	120	120
Knox City	153	129	107	90	92	91
Lacy Lakeview	120	120	120	120	120	120
Lake Palo Pinto /	107	107	107	107	107	107
Lampasas	146	136	136	136	136	136
Lawn	158	142	138	137	138	140
Leander	124	124	124	124	124	124
Lee County WSC	125	124	124	124	124	124
Leroy Tours Ger	111	110	110	110	110	110
Levi WSC	214	191	167	140	140	140
Lexington	159	140	140	140	140	140
Liberty Hill	98	98	98	98	98	98
Lipan	139	138	138	138	138	138
Little Elm Valley	135	121	121	121	121	121
Lorena	116	102	102	102	102	102
Marlin	240	214	187	160	140	140
Mart	210	186	163	140	140	141
McGregor	214	190	167	140	140	140
McLennan Coun	155	140	140	140	140	140
Meridian	140	140	140	140	140	140
Merkel	112	112	112	112	112	112
Mexia	104	104	104	104	104	104
Milano WSC	150	140	140	140	140	140
Mineral Wells	118	97	97	97	97	97
Moffat WSC	127	118	118	117	118	117
Moody	93	93	93	93	93	93
Morgans Point F	130	130	130	130	130	130
Mountain WSC	140	140	140	140	140	140
Multi County W!	88	88	88	88	88	88

Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
Munday	162	144	140	140	140	140
Mustang Valley	194	172	151	140	140	140
Navasota	158	139	133	133	133	133
Noack WSC	171	151	140	139	139	140
North Bosque W	251	223	195	167	140	140
North Milam WS	157	140	141	141	141	140
North Rural WSC	95	95	95	95	95	95
Oglesby	69	69	69	69	69	69
Palo Pinto WSC	122	121	121	121	121	121
Paloma Lake MU	139	139	139	139	139	139
Paloma Lake MU	139	139	139	139	139	139
Parker WSC	140	140	140	140	140	140
Pendleton WSC	152	140	140	140	140	140
Possum Kingdor	347	306	270	231	192	154
Post Oak SUD	186	164	144	141	141	139
Potosi WSC	134	134	134	134	134	134
Prairie Hill WSC	165	146	140	139	140	140
Ranger	149	140	140	140	140	140
Riesel	99	98	99	99	98	98
Rio Vista	143	127	140	140	140	140
Rising Star	153	140	140	140	140	141
Robertson Coun	138	137	137	137	137	137
Robinson	180	160	140	140	140	140
Roby	185	167	146	140	141	140
Rockdale	178	158	140	140	140	140
Rogers	110	103	103	103	103	103
Roscoe	166	149	140	140	140	140
Rosebud	81	81	80	81	81	80
Ross WSC	135	135	135	135	135	135
Rotan	149	140	140	140	140	140
Round Rock	139	139	139	139	139	139
S U N WSC	92	92	92	92	92	92
Salado WSC	266	237	207	178	148	140
Salem Elm Ridge	158	140	140	140	140	140
Santo SUD	120	120	120	120	120	120
SLC WSC	90	89	89	89	89	89
Smith Bend WSC	128	127	127	127	127	127
Snook	286	254	223	191	159	139
Somervell Count	216	192	168	144	140	140
Somerville	168	150	141	140	140	140
Sonterra MUD	105	105	105	105	105	105
Southwest Milar	171	152	140	140	140	140
Sportsmans Wor	802	719	621	538	449	364
Spring Valley WS	140	140	140	140	140	140
Staff WSC	139	138	138	138	138	138
Stamford	133	109	86	63	63	64

Region D 2026 - North Easat Texas Regional Water Planning Group
GPCD Goals for Municipal Water User Groups

WUG Name	2030	2040	2050	2060	2070	2080
Steamboat Mou	119	118	118	118	118	118
Stephens Regior	160	140	140	140	140	140
Stephenville	131	131	131	131	131	131
Strawn	150	130	109	104	105	104
Sturdivant Progr	93	92	92	92	92	92
Sweetwater	138	138	138	138	138	138
Taylor	106	105	105	105	105	105
TDCJ Luther Uni	222	198	173	148	140	140
TDCJ W Pack Un	221	196	172	147	140	140
Temple	204	182	159	140	140	140
Texas A&M Univ	429	382	334	286	239	191
Texas State Tech	1,624	1,443	1,264	1,082	902	723
The Bitter Creek	70	69	69	68	69	69
The Grove WSC	135	134	134	134	134	134
Thorndale	133	133	133	133	133	133
Throckmorton	194	173	150	142	139	140
Tolar	140	140	140	140	140	140
Tri County SUD	101	101	101	101	101	101
Troy	115	114	114	114	114	114
Twin Creek WSC	202	178	156	139	140	140
Tye	138	137	137	137	137	137
Valley Mills	162	140	140	140	139	141
Venus	151	140	140	140	140	140
View Caps WSC	140	140	140	140	140	140
Vista Oaks MUD	139	139	139	139	139	139
Waco	200	178	155	140	140	140
Walsh Ranch MU	139	139	139	139	139	139
Wellborn SUD	169	150	140	140	140	140
West	149	140	140	140	140	140
West Bell Count	149	140	140	140	140	140
West Brazos WS	140	140	140	140	140	140
Westbound WSC	68	68	68	68	68	68
White Rock Wat	96	96	96	96	96	96
Whitney	155	140	140	140	140	140
Wickson Creek S	135	134	134	134	134	134
Williamson Cour	139	139	139	139	139	139
Williamson Cour	139	139	139	139	139	139
Williamson Cour	166	147	140	140	140	140
Williamson Trav	136	136	136	136	136	136
Windsor Water	139	140	140	141	141	140
Woodrow Oscec	158	140	140	140	140	140
Woodway	316	281	246	211	176	140

APPENDIX C6

IMPACTS OF THE REGIONAL WATER PLAN

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APPENDIX C6

TABLE OF CONTENTS

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Region D 2026 - North East Texas Regional Water Plan
Summary of Evaluation of Recommended Water Management Strategies

County	Entity	Strategy	Quantity (Ac-Ft/Yr)	Start Decade	Reliability	Cost ($/Ac-Ft)	Impacts of Strategy on:					Key Water Quality Parameters	Political Feasibility
							Environmental Factors	Env. Factors	Agricultural Resources/ Rural Areas	Agricultural Resources/ Rural Areas	Other Natural Resources		
			#		*(1-5)	$	(Acres)	**(1-5)	(Acres)	**(1-5)	**(1-5)	**(1-5)	**(1-5)
Bowie	Burns Redbank WSC	Riverbend Strategy	349	2030	1	$483	N/A	1	N/A	1	1	1	1
Bowie	Central Bowie County WSC	Riverbend Strategy	122	2030	1	$482	N/A	1	N/A	1	1	1	1
Bowie	De Kalb	Riverbend Strategy	48	2030	1	$242	N/A	1	N/A	1	1	1	1
Bowie	Hooks	Riverbend Strategy	317	2030	1	$242	N/A	1	N/A	1	1	1	1
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)	1,102	2030	1	$902	17	1	17	2	1	1	2
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Nacatoch, Red)	1,882	2030	1	$1,296	7	1	2	1	1	1	1
Bowie	Macedonia Eylau MUD 1	Riverbend Strategy	710	2030	1	$483	N/A	1	N/A	1	1	1	1
Bowie	Manufacturing, Bowie	Riverbend Strategy	100,742	2030	1	$482	N/A	1	N/A	1	1	1	1
Bowie	Manufacturing, Bowie	Advanced Water Conservation (Manufacturing Bowie)	204	2030	1	$0	N/A	1	N/A	1	1	1	1
Bowie	Maud	Riverbend Strategy	164	2030	1	$242	N/A	1	N/A	1	1	1	1
Bowie	Nash	Riverbend Strategy	314	2030	1	$242	N/A	1	N/A	1	1	1	1
Bowie	New Boston	Riverbend Strategy	428	2030	1	$243	N/A	1	N/A	1	1	1	1
Bowie	Redwater	Riverbend Strategy	337	2030	1	$243	N/A	1	N/A	1	1	1	1
Bowie	Riverbend Water Resources Dis	Riverbend Strategy	211	2030	1	$1,390	46	1	0	1	1	1	1
Bowie	Texarkana	Riverbend Strategy	840	2030	1	$243	N/A	1	N/A	1	1	1	1
Bowie	Wake Village	Riverbend Strategy	649	2030	1	$242	N/A	1	N/A	1	1	1	1
Camp	Livestock, Camp	Drill New Wells (Livestock, Camp, Queen City, Cypress)	594	2030	1	$123	1	1	1	1	1	1	1
Cass	Atlanta	Riverbend Strategy Cass County	1,208	2030	1	$242	N/A	1	N/A	1	1	1	1
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Cypress)	323	2030	1	$514	1	1	0	1	1	1	1
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Sulphur)	216	2030	1	$528	1	1	0	1	1	1	1
Cass	County-Other, Cass	Riverbend Strategy Cass County	44	2030	1	$483	N/A	1	N/A	1	1	1	1
Cass	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	50	2030	1	$1,629	N/A	1	N/A	1	1	1	1
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Cypress)	968	2030	1	$111	1	1	1	1	1	1	1
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Sulphur)	280	2030	1	$111	1	1	1	1	1	1	1
Cass	Riverbend Water Resources Dis	New 2.5 MGD Package WTP and Transmission Line	1,493	2030	1	$1,812	18	1	1	1	1	1	1
Delta	Livestock, Delta	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	250	2030	1	$1,134	1	1	1	1	1	1	1
Delta	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	192	2030	1	$1,927	1	1	1	1	1	1	1
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	805	2030	1	$111	1	1	1	1	1	1	1
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	37	2030	1	$111	1	1	1	1	1	1	1
Gregg	Kilgore	Sabine River Authority Strategy - Wood County GW	734	2030	1	$12,492	57	2	0	1	1	1	3
Gregg	Longview	Sabine River Authority Strategy - Wood County GW	934	2030	1	$12,492	57	2	0	1	1	1	3
Gregg	Mining, Gregg	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)	27	2030	1	$370	1	1	1	1	1	1	1
Gregg	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	31	2030	1	$574	1	1	1	1	1	1	1

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County	Entity	Strategy	Quantity (Ac-Ft/Yr)	Start Decade	Reliability	Cost ($/Ac-Ft)	Impacts of Strategy on: Environmental Factors	Env. Factors	Agricultural Resources/ Rural Areas	Agricultural Resources/ Rural Areas	Other Natural Resources	Key Water Quality Parameters	Political Feasibility
			#		*(1-5)	$	(Acres)	**(1-5)	(Acres)	**(1-5)	**(1-5)	**(1-5)	**(1-5)
Harrison	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	174	2030	1	$652	N/A	1	N/A	1	1	1	1
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City, Cypress)	484	2030	1	$120	1	1	1	1	1	1	1
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City , Sabine)	41	2030	1	$118	1	1	1	1	1	1	1
Harrison	Leigh WSC	Drill New Wells (Leigh, Queen City, Cypress)	133	2040	1	$981	1	1	0	1	1	1	1
Harrison	Longview	Sabine River Authority Strategy - Wood County GW	934	2030	1	$12,492	57	2	0	1	1	1	3
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Cypress)	332	2030	1	$117	1	1	0	1	1	1	1
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Sabine)	369	2060	1	$126	1	1	0	1	1	1	1
Harrison	North Harrison WSC	Drill New Wells (North Harrison, Queen City, Cypress)	54	2030	1	$130	1	1	0	1	1	1	1
Harrison	Scottsville	Drill New Wells (Scottsville, Queen City, Cypress)	53	2030	1	$716	1	1	0	1	1	1	1
Harrison	Waskom	Drill New Wells (Waskom, Queen City, Cypress)	324	2030	1	$602	1	1	0	1	1	1	1
Hopkins	Brinker WSC	Increase Existing Contract (Brinker WSC, Sulphur)	83	2050	1	$1,176	N/A	1	N/A	1	1	1	1
Hopkins	Cumby	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	81	2030	1	$2,690	2	1	0	1	1	1	1
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine)	423	2040	1	$3,198	5	1	5	1	1	1	1
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)	43	2030	1	$759	15	1	12	2	1	1	1
Hopkins	Livestock, Hopkins	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	13	2030	1	$995	18	1	6	1	1	1	1
Hopkins	Martin Springs WSC	Increase Existing Contract (Martin Springs)	27	2070	1	$1,176	N/A	1	N/A	1	1	1	1
Hopkins	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, S	67	2030	1	$2,363	2	1	0	1	1	1	1
Hopkins	Mining, Hopkins	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur)	2	2030	1	$901	10	1	0	1	1	1	1
Hunt	Caddo Basin SUD	Advanced Water Conservation (Caddo Basin SUD)	15	2030	1	$770	N/A	1	N/A	1	1	1	1
Hunt	Cash SUD	Advanced Water Conservation (Cash SUD)	1	2030	1	$770	N/A	1	N/A	1	1	1	1
Hunt	Cash SUD	Increase Existing Contract (Cash SUD)	642	2030	1	$2,198	N/A	1	N/A	1	1	1	1
Hunt	Celeste	Drill New Wells (Celeste, Woodbine, Trinity)	35	2030	1	$2,288	1	1	1	1	1	1	1
Hunt	Greenville	Advanced Water Conservation (Greenville)	13,572	2030	1	$684	N/A	1	N/A	1	1	1	1
Hunt	Greenville	Greenville Water Loss Reduction	869	2030	1	$0	N/A	1	N/A	1	1	1	1
Hunt	Greenville	New WTP Greenville	12,571	2030	1	$2,887	8	1	1	1	1	1	1
Hunt	Greenville	Voluntary Reallocation of Hunt Manufacturing Surplus (Greer	455	2030	1	$237	N/A	1	N/A	1	1	1	1
Hunt	Irrigation, Hunt	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	151	2070	1	$1,396	34	1	1	1	1	1	1
Hunt	Livestock, Hunt	Drill New Well (Livestock, Hunt, Trinity, Sabine)	0	2060	1	$0	N/A	1	N/A	1	1	1	1
Hunt	MacBee SUD	Increase Contract - MacBee SUD to SRA	19	2070	1	$1,500	N/A	1	N/A	1	1	1	1
Hunt	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	8	2030	1	$1,927	28	1	14	1	1	1	1
Hunt	Poetry WSC	Advanced Water Conservation (Poetry WSC)	7	2030	1	$770	N/A	1	N/A	1	1	1	1
Hunt	Texas A&M University Commerd	Texas A&M University - Commerce - Drill New Wells (Hunt, Na	276	2030	1	$1,771	8	1	1	1	1	1	1
Lamar	County-Other, Lamar	Increase Existing Contract (County-Other Lamar)	131	2030	1	$1,629	N/A	1	N/A	1	1	1	1
Lamar	Irrigation, Lamar	Pat Mayse Raw Water Pipeline (Irrigation Lamar)	1,140	2030	1	$897	50	1	8	1	1	1	1
Lamar	Livestock, Lamar	Lamar Livestock Pipeline and Contract with Lamar Co WSD	617	2030	1	$3,626	50	1	6	1	1	1	1

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County	Entity	Strategy	Quantity (Ac-Ft/Yr)	Start Decade	Reliability	Cost ($/Ac-Ft)	Impacts of Strategy on:					Key Water Quality Parameters	Political Feasibility
							Environmental Factors	Env. Factors	Agricultural Resources/ Rural Areas	Agricultural Resources/ Rural Areas	Other Natural Resources		
			#		*(1-5)	$	(Acres)	**(1-5)	(Acres)	**(1-5)	**(1-5)	**(1-5)	**(1-5)
Marion	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	174	2030	1	$652	N/A	1	N/A	1	1	1	1
Marion	Mining, Marion	Drill New Wells (Mining Marion, Queen City, Cypress)	645	2030	1	$121	1	0	1	1	1	1	1
Morris	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	50	2030	1	$0	N/A	1	N/A	1	1	1	1
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Cypress)	3	2030	1	$121	1	1	1	1	1	1	1
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Sulphur)	2	2030	1	$97	1	1	1	1	1	1	1
Rains	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, S	67	2030	1	$2,363	1	1	1	1	1	1	1
Red River	Clarksville	Drill New Wells with RO Treatment (Clarksville, Blossom)	388	2020	1	$4,312	25	2	1	1	1	3	3
Red River	Irrigation, Red River	Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur) Existing Availability	1,451	2020	1	$831	1	1	1	1	1	1	1
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Blossom, Red)	11	2020	1	$3,636	1	1	1	1	1	1	1
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Trinity Aquifer, Sulphur)	65	2020	1	$1,207	5	1	1	1	1	1	1
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	538	2040	1	$429	1	1	0	1	1	1	1
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	538	2040	1	$429	1	1	0	1	1	1	1
Smith	East Texas MUD	Drill New Wells (Smith County MUD 1, Queen City, Sabine)	648	2030	1	$537	7	1	2	1	1	1	1
Smith	Lindale	Drill New Wells (Lindale, Carrizo, Neches)	1,932	2040	1	$370	18	1	6	1	1	1	1
Smith	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	0	2030	1	$0	1	1	0	1	1	1	1
Smith	Star Mountain WSC	Drill New Wells (Star Mountain, Queen City, Sabine)	216	2030	1	$611	1	1	0	1	1	1	1
Smith	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	31	2060	1	$574	1	1	0	1	1	1	1
Smith	Winona	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	108	2050	1	$611	1	1	0	1	1	1	1
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Cypress)	560	2030	1	$1,437	1	1	0	1	1	1	1
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)	459	2030	1	$796	1	1	0	1	1	1	1
Titus	Manufacturing, Titus	Advanced Water Conservation (Manufacturing Titus, Cypress	415	2030	1	$0	N/A	1	N/A	1	1	1	1
Titus	Manufacturing, Titus	Increase Existing Contract (Manufacturing Titus from Mt Plea	1,279	2030	1	$782	N/A	1	N/A	1	1	1	1
Upshur	Big Sandy	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	85	2030	1	$0	1	1	0	1	1	1	1
Upshur	Gilmer	Drill New Wells (Gilmer, Carrizo, Cypress)	110	2030	1	$319	1	1	0	1	1	1	1
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Cypress)	161	2030	1	$106	1	1	0	1	1	1	1
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Sabine)	161	2030	1	$106	1	1	0	1	1	1	1
Upshur	Manufacturing, Upshur	Drill New Wells (Manufacturing Upshur, Queen City, Cypress	161	2030	1	$106	1	1	0	1	1	1	1
Van Zandt	Canton	Canton Reuse	255	2070	1	$8,125	81	2	46	3	1	1	2
Van Zandt	Canton	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	145	2080	1	$1,400	1	1	0	1	1	1	1
Van Zandt	Edom WSC	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	60	2030	1	$2,931	3	1	1	1	1	1	1
Van Zandt	Little Hope Moore WSC	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, N	17	2030	1	$2,588	1	1	0	1	1	1	1

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County	Entity	Strategy	Quantity (Ac-Ft/Yr)	Start Decade	Reliability	Cost ($/Ac-Ft)	Impacts of Strategy on: Environmental Factors	Env. Factors	Agricultural Resources/ Rural Areas	Agricultural Resources/ Rural Areas	Other Natural Resources	Key Water Quality Parameters	Political Feasibility
			#		*(1-5)	$	(Acres)	**(1-5)	(Acres)	**(1-5)	**(1-5)	**(1-5)	**(1-5)
Van Zandt	Livestock, Van Zandt	Drill New Wells (Livestock Van Zandt, Queen City, Neches)	90	2030	1	$1,479	1	1	1	1	1	1	1
Van Zandt	MacBee SUD	Increase Contract - MacBee SUD to SRA	19	2030	1	$1,500	N/A	1	N/A	1	1	1	1
Van Zandt	Manufacturing, Van Zandt	Advanced Water Conservation (Manufacturing Van Zandt)	75	2030	1	$0	N/A	1	N/A	1	1	1	1
Van Zandt	Manufacturing, Van Zandt	Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Tr	386	2030	1	$1,549	1	1	1	1	1	1	1
Van Zandt	Myrtle Springs WSC	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-Wil	102	2030	1	$1,524	1	1	1	1	1	1	1
Van Zandt	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	217	2040	1	$981	12	1	4	1	1	1	1
Wood	Livestock, Wood	Drill New Wells (Livestock, Wood, Queen City, Sabine)	1,129	2030	1	$111	1	1	1	1	1	1	1
Wood	Manufacturing, Wood	Advanced Conservation - Manufacturing Wood Co	349	2030	1	$0	1	1	1	1	1	1	1
Wood	Manufacturing, Wood	Drill New Wells (Manufacturing, Wood, Queen City, Sabine)	1,991	2030	1	$78	N/A	1	N/A	1	1	1	1
Wood	Mining, Wood	Drill New Wells (Mining, Wood, Queen City Sabine)	38	2030	1	$0	1	1	0	1	1	1	1

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County	Entity	Strategy	Total Acres Impacted	Environmental Factors									
				Total Acres Impacted	Wetland Acres	Wetland Acres	Envir Water Needs	Habitat	Threat and Endangered Species	Cultural Resources	Bays & Estuaries	Envir Water Quality	Overall Environmental Impacts
			(Acres)	(1-5)	(Acres)	(1-5)	(1-5)	(1-5)	#	(1-5)	(1-5)	(1-5)	(1-5)
Bowie	Burns Redbank WSC	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Central Bowie County WSC	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	De Kalb	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Hooks	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Carrizo-Wilcox, Sulphur)	17	2	0	1	1	1	14	1	N/A	1	1
Bowie	Irrigation, Bowie	Drill New Wells (Irrigation Bowie, Nacatoch, Red)	7	1	0	1	1	1	14	1	N/A	1	1
Bowie	Macedonia Eylau MUD 1	Riverbend Strategy	N/A	1	0	1	1	1	14	1	N/A	1	1
Bowie	Manufacturing, Bowie	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Manufacturing, Bowie	Advanced Water Conservation (Manufacturing Bowie)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Maud	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Nash	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	New Boston	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Redwater	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Riverbend Water Resources District	Riverbend Strategy	46	3	2	1	1	2	14	2	N/A	1	1
Bowie	Texarkana	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Bowie	Wake Village	Riverbend Strategy	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Camp	Livestock, Camp	Drill New Wells (Livestock, Camp, Queen City, Cypress)	1	1	0	1	1	1	11	1	N/A	1	1
Cass	Atlanta	Riverbend Strategy Cass County	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Cypress)	1	1	0	1	1	1	14	1	N/A	1	1
Cass	County-Other, Cass	Drill New Wells (County Other, Cass, Carrizo, Sulphur)	1	1	0	1	1	1	14	1	N/A	1	1
Cass	County-Other, Cass	Riverbend Strategy Cass County	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Cass	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Cypress)	1	1	0	1	1	1	14	1	N/A	1	1
Cass	Livestock, Cass	Drill New Wells (Livestock, Cass, Queen City, Sulphur)	1	1	0	1	1	1	14	1	N/A	1	1
Cass	Riverbend Water Resources District	New 2.5 MGD Package WTP and Transmission Line	18	2	2	1	1	2	14	2	N/A	1	1
Delta	Livestock, Delta	Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	1	1	0	1	1	1	9	1	N/A	1	1
Delta	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	1	1	0	1	1	1	9	1	N/A	1	1
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	1	1	0	1	1	1	13	1	N/A	1	1
Franklin	Livestock, Franklin	Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	1	1	0	1	1	1	13	1	N/A	1	1
Gregg	Kilgore	Sabine River Authority Strategy - Wood County GW	57	4	0	2	1	2	18	1	N/A	1	2
Gregg	Longview	Sabine River Authority Strategy - Wood County GW	57	4	0	2	1	2	18	1	N/A	1	2
Gregg	Mining, Gregg	Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)	1	1	0	1	1	1	18	1	N/A	1	1
Gregg	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	1	1	0	1	1	1	18	1	N/A	1	1
Harrison	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	N/A	1	N/A	1	1	1	23	1	N/A	1	1
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Irrigation, Harrison	Drill New Wells (Irrigation Harrison, Queen City , Sabine)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Leigh WSC	Drill New Wells (Leigh, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Longview	Sabine River Authority Strategy - Wood County GW	57	4	0	2	1	2	23	1	N/A	1	2
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Mining, Harrison	Drill New Wells (Mining Harrison, Queen City, Sabine)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	North Harrison WSC	Drill New Wells (North Harrison, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Scottsville	Drill New Wells (Scottsville, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Harrison	Waskom	Drill New Wells (Waskom, Queen City, Cypress)	1	1	0	1	1	1	23	1	N/A	1	1
Hopkins	Brinker WSC	Increase Existing Contract (Brinker WSC, Sulphur)	N/A	1	N/A	1	1	1	11	1	N/A	1	1
Hopkins	Cumby	Drill New Wells (Cumby, Nacatoch, Hopkins, Sabine)	2	1	0	1	1	1	11	1	N/A	1	1

County	Entity	Strategy	Total Acres Impacted	Environmental Factors									
				Total Acres Impacted	Wetland Acres	Wetland Acres	Envir Water Needs	Habitat	Threat and Endangered Species	Cultural Resources	Bays & Estuaries	Envir Water Quality	Overall Environmental Impacts
			(Acres)	(1-5)	(Acres)	(1-5)	(1-5)	(1-5)	#	(1-5)	(1-5)	(1-5)	(1-5)
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine	5	1	0	1	1	1	11	1	N/A	1	1
Hopkins	Irrigation, Hopkins	Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphu	15	2	0	1	1	1	11	1	N/A	1	1
Hopkins	Livestock, Hopkins	Drill New Wells (Livestock, Hopkins, Carrizo, Sulphur)	18	2	0	1	1	1	11	1	N/A	1	1
Hopkins	Martin Springs WSC	Increase Existing Contract (Martin Springs)	N/A	1	N/A	1	1	1	11	1	N/A	1	1
Hopkins	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilco	2	1	0	1	1	1	11	1	N/A	1	1
Hopkins	Mining, Hopkins	Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphu	10	1	0	1	1	1	11	1	N/A	1	1
Hunt	Caddo Basin SUD	Advanced Water Conservation (Caddo Basin SUD)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Cash SUD	Advanced Water Conservation (Cash SUD)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Cash SUD	Increase Existing Contract (Cash SUD)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Celeste	Drill New Wells (Celeste, Woodbine, Trinity)	4	1	0	1	1	1	14	1	N/A	1	1
Hunt	Greenville	Advanced Water Conservation (Greenville)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Greenville	Greenville Water Loss Reduction	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Greenville	New WTP Greenville	8	1	0	1	1	2	14	2	N/A	1	1
Hunt	Greenville	Voluntary Reallocation of Hunt Manufacturing Surplus (Gre	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Irrigation, Hunt	Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	5	1	0	1	1	1	14	1	N/A	1	1
Hunt	Livestock, Hunt	Drill New Well (Livestock, Hunt, Trinity, Sabine)	1	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	MacBee SUD	Increase Contract - MacBee SUD to SRA	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	North Hunt SUD	Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine)	5	1	0	1	1	1	14	1	N/A	1	1
Hunt	Poetry WSC	Advanced Water Conservation (Poetry WSC)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Hunt	Texas A&M University Commerce	Texas A&M University - Commerce - Drill New Wells (Hunt,	5	1	0	1	1	1	14	1	N/A	1	1
Lamar	County-Other, Lamar	Increase Existing Contract (County-Other Lamar)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Lamar	Irrigation, Lamar	Pat Mayse Raw Water Pipeline (Irrigation Lamar)	50	3	0	1	1	2	14	2	N/A	1	1
Lamar	Livestock, Lamar	Lamar Livestock Pipeline and Contract with Lamar Co WSD	50	3	0	1	1	2	14	2	N/A	1	1
Marion	Harleton WSC	Increase Existing Contract (Harleton, Cypress)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
Marion	Mining, Marion	Drill New Wells (Mining Marion, Queen City, Cypress)	1	1	0	1	1	1	15	1	N/A	1	0
Morris	Holly Springs WSC	Increase Existing Contract (Holly Springs, Cypress)	N/A	1	N/A	1	1	1	12	1	N/A	1	1
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Cypress)	1	1	0	1	1	1	12	1	N/A	1	1
Morris	Livestock, Morris	Drill New Wells (Livestock, Morris, Queen City, Sulphur)	1	1	0	1	1	1	12	1	N/A	1	1
Rains	Miller Grove WSC	Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilco	1	1	0	1	1	1	0	1	N/A	1	1
Red River	Clarksville	Drill New Wells with RO Treatment (Clarksville, Blossom)	25	3	1	1	1	1	14	1	N/A	1	2
Red River	Irrigation, Red River	Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur) Existing Availability	1	1	0	1	1	1	14	1	N/A	1	1
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Blossom, Red)	1	1	0	1	1	1	14	1	N/A	1	1
Red River	Livestock, Red River	Drill New Wells (Livestock, Red River, Trinity Aquifer, Sulph	5	1	0	1	1	1	14	1	N/A	1	1
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	Crystal Systems Texas	Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	East Texas MUD	Drill New Wells (Smith County MUD 1, Queen City, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	Lindale	Drill New Wells (Lindale, Carrizo, Neches)	18	2	0	1	1	1	16	1	N/A	1	1
Smith	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	Star Mountain WSC	Drill New Wells (Star Mountain, Queen City, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	Starrville-Friendship WSC	Drill New Wells (Starrville Friendship, Carrizo, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Smith	Winona	Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Cypress)	1	1	0	1	1	1	12	1	N/A	1	1
Titus	Livestock, Titus	Drill New Wells (Livestock, Titus, Carrizo, Sulphur)	1	1	0	1	1	1	12	1	N/A	1	1
Titus	Manufacturing, Titus	Advanced Water Conservation (Manufacturing Titus, Cypre	N/A	1	N/A	1	1	1	12	1	N/A	1	1

County	Entity	Strategy		Environmental Factors									
			Total Acres Impacted	Total Acres Impacted	Wetland Acres	Wetland Acres	Envir Water Needs	Habitat	Threat and Endangered Species	Cultural Resources	Bays & Estuaries	Envir Water Quality	Overall Environmental Impacts
			(Acres)	(1-5)	(Acres)	(1-5)	(1-5)	(1-5)	#	(1-5)	(1-5)	(1-5)	(1-5)
Titus	Manufacturing, Titus	Increase Existing Contract (Manufacturing Titus from Mt Pl	N/A	1	N/A	1	1	1	12	1	N/A	1	1
Upshur	Big Sandy	Drill New Well (Big Sandy, Carrizo, Sabine, Upshur)	1	1	0	1	1	1	16	1	N/A	1	1
Upshur	Gilmer	Drill New Wells (Gilmer, Carrizo, Cypress)	1	1	0	1	1	1	16	1	N/A	1	1
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Cypress)	1	1	0	1	1	1	16	1	N/A	1	1
Upshur	Livestock, Upshur	Drill New Wells (Livestock, Upshur, Queen City, Sabine)	1	1	0	1	1	1	16	1	N/A	1	1
Upshur	Manufacturing, Upshur	Drill New Wells (Manufacturing Upshur, Queen City, Cypre	1	1	0	1	1	1	16	1	N/A	1	1
Van Zandt	Canton	Canton Reuse	81	4	2	1	1	1	0	1	N/A	1	2
Van Zandt	Canton	Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	1	1	0	1	1	1	17	1	N/A	1	1
Van Zandt	Edom WSC	Drill New Wells (Edom WSC, Van Zandt, Carrizo, Neches)	3	1	0	1	1	1	17	1	N/A	1	1
Van Zandt	Little Hope Moore WSC	Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo	1	1	0	1	1	1	17	1	N/A	1	1
Van Zandt	Livestock, Van Zandt	Drill New Wells (Livestock Van Zandt, Queen City, Neches)	1	1	0	1	1	1	17	1	N/A	1	1
Van Zandt	MacBee SUD	Increase Contract - MacBee SUD to SRA	N/A	1	N/A	1	1	1	17	1	N/A	1	1
Van Zandt	Manufacturing, Van Zandt	Advanced Water Conservation (Manufacturing Van Zandt)	N/A	1	N/A	1	1	1	17	1	N/A	1	1
Van Zandt	Manufacturing, Van Zandt	Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox,	N/A	1	N/A	1	1	1	17	1	N/A	1	1
Van Zandt	Myrtle Springs WSC	Myrtle Springs WSC - Drill New Wells (Van Zandt, Carrizo-W	1	1	0	1	1	1	17	1	N/A	1	1
Van Zandt	R P M WSC	Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches)	12	2	0	1	1	1	17	1	N/A	1	1
Wood	Livestock, Wood	Drill New Wells (Livestock, Wood, Queen City, Sabine)	1	1	0	1	1	1	17	1	N/A	1	1
Wood	Manufacturing, Wood	Advanced Conservation - Manufacturing Wood Co	N/A	1	N/A	1	1	1	18	1	N/A	1	1
Wood	Manufacturing, Wood	Drill New Wells (Manufacturing, Wood, Queen City, Sabine	1	1	0	1	1	1	17	1	N/A	1	1
Wood	Mining, Wood	Drill New Wells (Mining, Wood, Queen City Sabine)	1	1	0	1	1	1	18	1	N/A	1	1

Region D 2026 - North East Texas Regional Water Plan
Summary of Evaluation of Alternative Water Management Strategies

County	Entity	Strategy	Quantity (Ac-Ft/Yr)	Start Decade	Reliability	Cost ($/Ac-Ft)	Impacts of Strategy on: Environmental Factors	Environmental Factors	Agricultural Resources/ Rural Areas	Agricultural Resources/ Rural Areas	Other Natural Resources	Key Water Quality Parameters	Political Feasibility
			#		*(1-5)	$	(acres)	**(1-5)	(acres)	**(1-5)	**(1-5)	**(1-5)	**(1-5)
CASS	MANUFACTURING CASS	VOLUNTARY REALLOCATION (QUEEN CITY)	251	2030	1	$0	0	1	0	1	1	1	1
CASS	QUEEN CITY	NEW CONTRACT	251	2030	1	$482	0	1	0	1	1	1	1
HOPKINS	BRINKER WSC	Drill New Wells (Carrizo-Wilcox, Sulphur)	83	2050	1	$2,108	4	1	1	1	1	1	1
RED RIVER	CLARKSVILLE	Pat Mayse Pipeline Treated Water (Contract w/ Lamar WSD)	303	2020	1	$5,010	93	2	29	3	1	1	3
RED RIVER	CLARKSVILLE	Dimple Reservoir	303	2020	1	$7,970	1,891	5	1,734	5	1	1	5
RED RIVER	CLARKSVILLE	Wright Patman Pipeline (Riverbend WRD)	388	2020	1	$3,865	70	1	0	1	1	1	3
VAN ZANDT	CANTON	Grand Saline Reservoir	1,810	2020	1	$3,087	1,935	5	1,748	5	1	1	3

County	Entity	Strategy	Environmental Factors										
			Total Acres Impacted	Total Acres Impacted	Wetland Acres	Wetland Acres	Envir Water Needs	Habitat	Threatened and Endangered Species	Cultural Resources	Bays & Estuaries	Envir Water Quality	Overall Environmental Impacts
			(Acres)	(1-5)	(Acres)	(1-5)	(1-5)	(1-5)	#	(1-5)	(1-5)	(1-5)	(1-5)
CASS	MANUFACTURING CASS	VOLUNTARY REALLOCATION (QUEEN CITY)	N/A	1	N/A	1	1	1	14	1	N/A	1	1
CASS	QUEEN CITY	NEW CONTRACT	N/A	1	N/A	1	1	1	14	1	N/A	1	1
HOPKINS	BRINKER WSC	Drill New Wells (Carrizo-Wilcox, Sulphur)	4	1	N/A	1	1	1	11	1	N/A	1	1
RED RIVER	CLARKSVILLE	Pat Mayse Pipeline Treated Water (Contract w/ Lamar WSD)	93	4	3	1	1	1	14	1	N/A	1	2
RED RIVER	CLARKSVILLE	Dimple Reservoir	1,891	5	381	5	1	1	14	1	N/A	1	5
RED RIVER	CLARKSVILLE	Wright Patman Pipeline (Riverbend WRD)	70	4	1	1	1	2	14	2	N/A	1	2
VAN ZANDT	CANTON	Grand Saline Reservoir	1,935	5	303	5	1	1	17	1	N/A	1	5

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APPENDIX C7

DROUGHT RESPONSE INFORMATION, ACTIVITIES, AND RECOMMENDATIONS

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APPENDIX C7

TABLE OF CONTENTS

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Appendix C7-1 - TCEQ Listed Drought Affected Entities

The TCEQ provides a listing of all public water systems that had reported restrictions in place on their date of notification. This list is reflective of public water systems that have self-reported their water use restrictions since January 1, 2025, as reported on TCEQ's website at https://www.tceq.texas.gov/drinkingwater/trot/droughtw.html.

7.2MODEL DROUGHT CONTINGENCY PLAN – WHOLESALE WATER PROVIDERS

General Information

Introduction

Drought is a very real natural disaster that occurs in Texas, even in the verdant bottomlands, green pastures, and piney woods of northeast Texas. As recently as 2008, drought strained water systems in the northeast Texas region. In addition to natural drought, there are also water supply emergencies that occur from time to time in which water supply becomes contaminated. A good example of this is the MTBE spill into Lake Tawakoni in May 2000, which contaminated supply for several Hunt County water systems for multiple days.

In an effort to better respond to drought conditions than we've been able to in the past, the North East Texas Regional Water Planning Group (NETRWPG) has prepared this document, with the idea that if water providers study their water supply system before a drought or emergency occurs, then they will be better prepared to respond. In preparing this document, several references were used, including Chapters 288 and 363 of the Texas Administrative Code, the Texas Commission on Environmental Quality's (TCEQ) 'Handbook for Drought Contingency Planning for Retail Public Water Suppliers,' Texas Water Code § 11.1272, and the TCEQ and TWDB websites. All of these resources are available to you if you need further information or clarification. You may also contact the TCEQ at 512-239-4691 with questions or for information. Example wording for your plan will be found throughout in bold italics.

According to the requirements set forth in the amended Chapter 288, Subchapter C of the Texas Administrative Code, retail public water suppliers providing water service to 3,300 or more connections must submit revisions to existing drought contingency plans to the executive director not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption. If you are a retail supplier, but serve less than 3,300 connections, you are still required to develop and implement a plan, but you do not need to submit the plan unless specifically requested by TCEQ. If you provide retail supply in addition to wholesale supply, you will also need to develop a retail drought contingency plan. Please see the Northeast Texas Region's guidance for retail drought contingency plans.

The ___________________(water provider) understands that water conservation is a viable strategy for protecting water resources both now and in the future, and that adequate planning for times of drought or emergency is a necessary part of conservation. The purpose of this plan is to prepare for the possibility of a drought or emergency situation where water is in short supply. This plan will help to ensure that ________________________(water supplier) and its wholesale customers use water wisely and efficiently during periods of drought.

Though not specifically required by rule, it is helpful to the reader if you summarize your water supply and distribution systems in the introduction. This will familiarize users of the Plan with your system, and help them to make sense of the actions that you intend to take. In addition, discussing your water system here will assist those who update the plan in five years, because they will know exactly what the system looked like when the plan was created.

The ______________(water supplier) utilizes groundwater /surface water from _______________(source). Supply is secured by a (water right, water supply contract, etc.) through the year _____. Our customers include ___________________________, and their current contracted amounts are ______. Our storage and distribution systems consist of ____.

Coordination with the North East Texas Regional Water Planning Group

The drought contingency plan must document coordination with the regional water planning groups for the service area of the wholesale public water supplier to ensure consistency with the appropriate approved regional water plans. – 30 TAC Chapter 288

A copy of this adopted plan will be submitted to the NETRWPG via its administrator, Mr. Walt Sears, Northeast Texas Municipal Water District, P. O. Box 955, Hughes Springs, Texas 75656. Proof of submittal is attached hereto as Figure ___.

Informing the Public/Requesting Input

According to 30 TAC Chapter 288, Subchapter B.a.1, "Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input in the preparation of the plan and for informing wholesale customers about the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting."

The ___________________________________(water supplier) gave the public and its wholesale customers an opportunity to provide input into this plan by _____________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included _________________.

Efforts to inform wholesale customers and the public about each stage of the plan, and when stages are implemented or rescinded, will be through _____________________________ (certified letter, newspaper articles, radio announcements, website announcements, etc.).

Authorization/Applicability

The _________________ (mayor, president, city administrator, etc.) is hereby authorized to monitor weather conditions as well as water supply and demand conditions and to implement the Drought Contingency Plan as appropriate.

The ______________________(City Council, Board of Directors, etc.) authorizes the Plan by a ______________(resolution, ordinance), which has been included in this Plan.

Coordination with the Texas Commission on Environmental Quality

According to 30 TAC Chapter 288, Subchapter C, "Wholesale public water suppliers shall submit a drought contingency plan meeting the requirements of Subchapter B of this chapter to the executive director not later than May 1, 2005, after adoption of the drought contingency plan by the governing body of the water supplier. Thereafter, the wholesale public water suppliers shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the governing body of the wholesale public water supplier."

This plan was submitted to the executive director of the Texas Commission of Environmental Quality on ______________________(date).

Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.).

For questions to the TCEQ, see the website at www.tceq.state.tx.us, or call: 512/239-4691.

Coordination with Wholesale Water Supplier

This section only applies if you purchase supply from a wholesale provider. If you have a contract or agreement with a water provider, then complete this section. If you have your own water rights or otherwise own your supply, this section does not apply.

This plan has been created with our water provider, ________________'s drought contingency plan in mind. We have included _________________'s (water provider) requirements within our plan and have created this plan to compliment _____________'s (water provider) plan. _____________(water provider) has been provided a copy of this plan.

Plan Definitions

For the purposes of this Plan, the following definitions, taken from TCEQ guidance, shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by __________________ (name of water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even number address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(e) flushing gutters or permitting water to run or accumulate in any gutter or street;

(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;
(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

RESPONSE TO A DROUGHT EVENT

In this portion of the plan, it will need to be determined whether a water constraint will more likely be caused by a shortage in water supply or by constraints in the storage and distribution system. Associated goals and water management measures should correspond to the type of constraint expected. For example, if insufficient storage is determined to be the most likely cause of water shortage during a drought, then an emergency back-up supply source would not solve the problem; reduced use during peak hours (banning lawn watering, etc.) would more likely solve the problem by giving storage tanks a better opportunity to refill.

The drought contingency plan should be designed for a drought condition at least as severe as the drought of record according to TCEQ rules. Since the drought of record in Texas occurred in the 1950's, few systems will have water use records still available to plan by. Therefore, the NETRWPG suggests using the most recent drought for the State, which occurred in 1996. If your system does not have records for 1996, use the time period in your records when your system was the most strained by dry weather conditions.

The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record. – 30 TAC Chapter 288

The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable. – 30 TAC Chapter 288

A minimum of three drought stages is required in this plan. During each stage, it will need to be determined what will trigger initiation, what the water use reduction target goal is, what water management strategies will be put into place, and, finally, what will terminate the stage. Keep in mind that a supplier who is also a customer of its wholesale provider must comply with its provider's Drought Contingency Plan. Do not develop stages or management strategies that are in conflict with your water provider's DCP. Also note that the NETRWPG has developed water management strategies for all providers who are projected to have a water shortage within the planning period (50 years). You should review the latest version of the Regional Water Plan to determine if you have had strategies prepared for you.

Include an opening paragraph in this section that describes what information should be monitored in order to initiate the stages, and a rationale of why you chose the triggering criteria that you chose.

The drought contingency plan must include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code, §11.039. – 30 TAC Chapter 288

Texas Water Code, §11.039 states, "DISTRIBUTION OF WATER DURING SHORTAGE. (a) If a shortage of water in a water supply not covered by a water conservation plan prepared in compliance with Texas Natural Resource Conservation Commission or Texas Water Development Board rules results from drought, accident, or other cause, the water to be distributed shall be divided among all customers pro rata, according to the amount each may be entitled to, so that preference is given to no one and everyone suffers alike. (b) If a shortage of water in a water supply covered by a water conservation plan prepared in compliance with Texas Natural Resource Conservation Commission or Texas Water Development Board rules results from drought, accident, or other cause, the person, association of persons, or corporation owning or controlling the water shall divide the water to be distributed among all customers pro rata, according to: (1) the amount of water to which each customer may be entitled; or (2) the amount of water to which each customer may be entitled, less the amount of water the customer would have saved if the customer had operated its water system in compliance with the water conservation plan.(c) Nothing in Subsection (a) or (b) precludes the person, association of persons, or corporation owning or controlling the water from supplying water to a person who has a prior vested right to the water under the laws of this state.

Stage 1 – Mild Water Shortage

Initiation: The _______________________(name of water supplier) will consider that a mild water shortage exists when___________________________________ (i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by __________*** (entity's water provider) if applicable**.**

Target Goal: When a mild water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to ___________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 1 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage I is rescinded by*** ___________________________ (entity's water provider) if applicable**.**

Water Management Strategies: During Stage 1, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Request voluntary water conservation from all customers
- Recommend that customers initiate Stage 1 of their Drought Contingency Plans
- Reduce operating procedures that use water (i.e. flushing of mains) as appropriate

Stage 2 – Moderate Water Shortage

Initiation: The _______________________(water supplier) will consider that a moderate water shortage exists when__________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by __________ (entity's water provider)*** if applicable.

Target Goal: When a moderate water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to ___________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 2 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage 2 is rescinded by***

__________________________ (entity's water provider) if applicable. ***Upon termination of Stage 2, Stage 1 becomes operative.***

Water Management Strategies: During Stage 2, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Recommend that customers initiate Stage 2 of their Drought Contingency Plans, which should, at a minimum, contain lawn watering restrictions
- Modify reservoir operations if applicable
- Initiate strong public awareness campaign in service area to warn of impending shortages

Stage 3 – Severe Water Shortage

Initiation: The ______________________(water supplier) will consider that a severe water shortage exists when_________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by*** __________ (entity's water provider) if applicable**.**

Target Goal: When a severe water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 3 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage 3 is rescinded by __________________________*** (entity's water provider) if applicable***. Upon termination of Stage 3, Stage 2 becomes operative.***

Water Management Strategies: During Stage 3, we will take the following steps to reduce water use:______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Recommend that customers initiate Stage 3 of their Drought Contingency Plans, which, at a minimum, must include a ban on lawn watering
- Begin pro rata water allocation (Pro rata curtailment of water deliveries to or diversions by wholesale water customers must be considered in a wholesale DCP according to 30 TAC Chapter 288, Subchapter B. Rules for pro rata curtailment are provided in Texas Water Code, §11.039.)
- Implement water rate surcharges (i.e. a set charge for any use above average monthly use)
- Implement price adjustments (i.e. increase the price per 1,000 gallons of water used above the average monthly use)
- Utilize alternate or emergency water sources

Stage 4 – Emergency Water Shortage

This Stage could apply in the instance of a major water line break, a contamination of the water supply source, or other urgent water system conditions. Most likely, this stage would be initiated by decision of the authorized plan implementer (Mayor, President, Manager, etc.)

Initiation: The ______________________(water supplier) will consider that an emergency water shortage exists when__________________________________ (i.e. the water main at the water treatment plant bursts or is otherwise significantly damaged; the reservoir is contaminated by oil spill; etc.,)***, or when requested by __________*** (entity's water provider) if applicable.

Target Goal: When an emergency water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 4 shall be rescinded when ____________________________ (i.e. the main at the water treatment plant is restored and storage tanks have been allowed to refill; analysis of the source water indicates that supply is safe to use; etc.), ***or when Stage 4 is rescinded by ____________________________***(entity's water provider) if applicable.

Water Management Strategies: During Stage 4, we will take the following steps to reduce water use:________________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc. This may require approval by the TCEQ Executive Director)
- Modify reservoir operations
- Strategies listed in Stage 3

PLAN EXECUTION

Public Involvement

This section should discuss the ways in which the supplier will inform its wholesale customers about the initiation and termination of drought stages, as well as management strategies that customers are expected to follow. Public involvement can be in the form of special public hearings, articles and notices in the local newspaper, radio announcements, announcements on local television stations, notices in billing statements, etc.

The ______________________ (water provider) will keep its customers apprised of initiation of the drought contingency plan, and changes in stages, by means of ____________________________.

Enforcement

The _______________ (Mayor, City Manager, President, etc.), or his/her designee, is responsible for monitoring weather conditions and water supplies, and determining when to initiate and terminate stages of the DCP.

The drought contingency plan must include procedures for the enforcement of any mandatory water use restrictions including specification of penalties (e.g., liquidated damages, water rate surcharges, discontinuation of service) for violations of such restrictions. – 30 TAC Chapter 288, Subchapter B.a.10.

The _______________ (governing body) has adopted this plan through ___________ (ordinance, resolution), and has made it an official _________ (city, Corporation, etc.) policy. The _______________ (ordinance, resolution, etc.) is attached hereto as Figure ___.

Provision for responding to wholesale provider restrictions

Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. – 30 TAC Chapter 288

If you have a wholesale provider, then add this section. If you own your own supply, please skip this section.

As stated in each water shortage stage, we intend to comply with all requirements of our wholesale provider's drought contingency plan. This plan is as stringent as our provider's plan, and in some cases may be more so.

Notification of TCEQ on mandatory provisions

A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. – 30 TAC Chapter 288

The Executive Director at TCEQ shall be notified with 5 business days if any mandatory provisions of this plan are implemented. The Executive Director can be reached at 512-239-3900.

Variance procedures

The drought contingency plan must include procedures for granting variances to the plan. – 30 TAC Chapter 288

The _____________ (authorized representative) may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the customer requesting such variance and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.

(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Customers requesting an exemption from the provisions of this Plan shall file a petition for variance with the ______________ (water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _________ (authorized representative), and shall include the following:

(a) Name and address of the petitioner(s).
(b) Purpose of water use.
(c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
(d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(e) Description of the relief requested.
(f) Period of time for which the variance is sought.
(g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(h) Other pertinent information.

Variances granted by the _______________ (water supplier) shall be subject to the following conditions, unless waived or modified:

(a) Variances granted shall include a timetable for compliance.
(b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

5-year updates

The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan. – 30 TAC Chapter 288

This plan shall be re-evaluated and updated every five years based on updated information; especially the latest adopted NETRWPG Regional Water Plan.

7.2 MODEL DROUGHT CONTINGENCY PLAN –GROUNDWATER USER

Plan Definitions

For the purposes of this Plan**,** the following definitions, taken from TCEQ guidance, are provided for reference:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(j) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
(k) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(l) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(m) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(n) flushing gutters or permitting water to run or accumulate in any gutter or street;
(o) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;
(p) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
(q) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(r) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

RESPONSE TO A DROUGHT EVENT

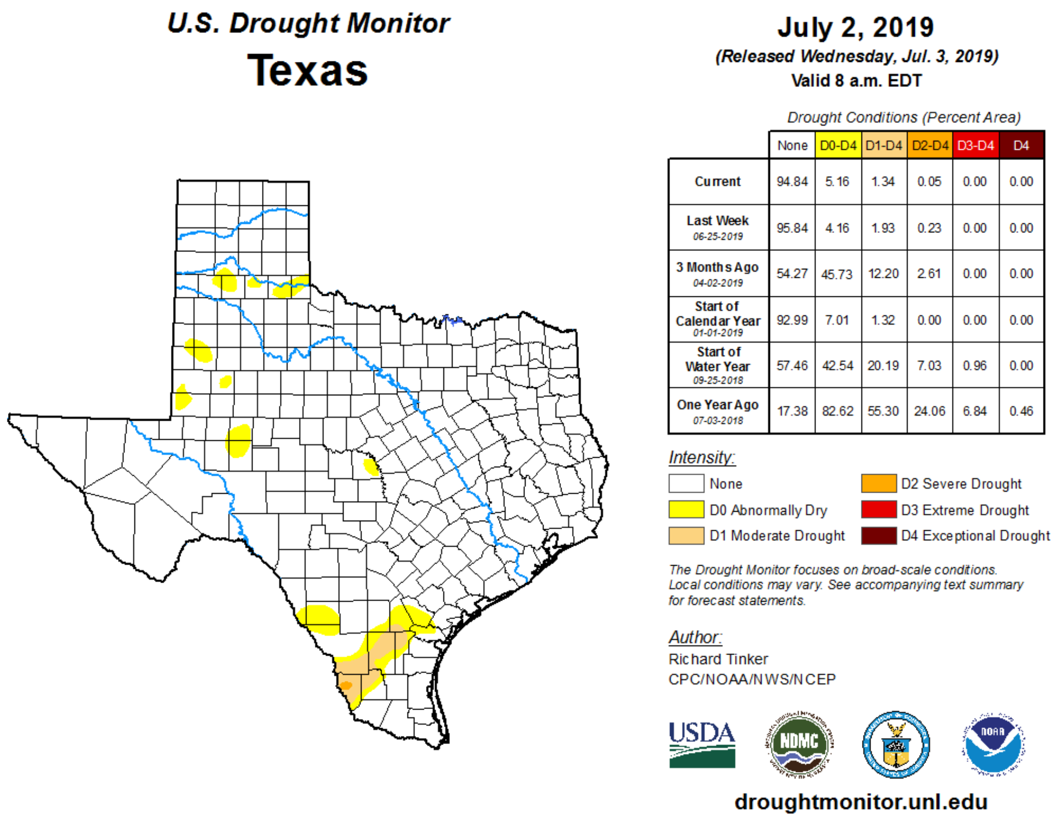
The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record. – 30 TAC Chapter 288

The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable. – 30 TAC Chapter 288

This model DCP is intended to follow the regional recommendations for groundwater users. This recommendation is to monitor drought intensity using the U.S. Drought Monitor website. Drought intensity is updated weekly with a map of Texas shaded with the applicable drought condition.

Category	Description	Possible Impacts	Palmer Drought Index	USGS Weekly Streamflow (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2

Go to https://droughtmonitor.unl.edu/Maps/MapArchive.aspx
Select “current” “state” and “Texas” from the drop-down menus.



Once the specific drought intensity is determined using the map, the groundwater user is encouraged to voluntarily follow the drought responses recommended by the nearest public water supplier(s) to the groundwater user.

<u>Stage 1 – Mild Water Shortage</u>

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive.

- Request voluntary water conservation from all customers

<u>Stage 2 – Moderate Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D1 - moderate drought.

Termination: Stage 2 shall be rescinded when the local weekly drought category is D0 - abnormally dry.

Water Management Strategies: During Stage 2, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage.

- Lawn watering restrictions

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D2 - severe drought.

Termination: Stage 3 shall be rescinded when the local weekly drought category is D1 – moderate drought.

Water Management Strategies: During Stage 3, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- A ban on lawn watering and all other non-essential water use
- Utilize alternate or emergency water sources

<u>Stage 4 – Emergency Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D3 - extreme drought.

Termination: Stage 4 shall be rescinded when the local weekly drought category is D2 – severe drought.

Water Management Strategies: During Stage 4, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive.

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc.
- Strategies listed in Stage 3

1.1 MODEL DROUGHT CONTINGENCY PLAN – MUNICPAL USER

General Information

Introduction

Drought is a very real natural disaster that occurs in Texas, even in the verdant bottomlands, green pastures, and piney woods of northeast Texas. As recently as 2011, drought strained water systems in the northeast Texas region. In addition to natural drought, there are also water supply emergencies that occur from time to time in which water supply becomes contaminated. A good example of this is the MTBE spill into Lake Tawakoni in May 2000, which contaminated supply for several Hunt County water systems for multiple days.

In an effort to better respond to drought conditions than we've been able to in the past, the North East Texas Regional Water Planning Group (NETRWPG) has prepared this document, with the idea that if water providers study their water supply system before a drought or emergency occurs, then they will be better prepared to respond. In preparing this document, several references were used, including Chapters 288 and 363 of the Texas Administrative Code, the Texas Commission on Environmental Quality's (TCEQ) 'Handbook for Drought Contingency Planning for Retail Public Water Suppliers,' Texas Water Code § 11.1272, and the TCEQ and TWDB websites. All of these resources are available to you if you need further information or clarification. You may also contact the TCEQ at 512-239-4691 with questions or for information. Example wording for your plan will be found throughout in bold italics.

According to the requirements set forth in the amended Chapter 288, Subchapter C of the Texas Administrative Code, retail public water suppliers providing water service to 3,300 or more connections must submit revisions to existing drought contingency plans to the executive director not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption. If you are a retail supplier, but serve less than 3,300 connections, you are still required to develop and implement a plan, but you do not need to submit the plan unless specifically requested by TCEQ. If you provide retail supply in addition to wholesale supply, you will also need to develop a retail drought contingency plan. Please see the Northeast Texas Region's guidance for retail drought contingency plans.

The ___________________(water provider) understands that water conservation is a viable strategy for protecting water resources both now and in the future, and that adequate planning for times of drought or emergency is a necessary part of conservation. The purpose of this plan is to prepare for the possibility of a drought or emergency situation where water is in short supply. This plan will help to ensure that ________________________(water supplier) and its wholesale customers use water wisely and efficiently during periods of drought.

Though not specifically required by rule, it is helpful to the reader if you summarize your water supply and distribution systems in the introduction. This will familiarize users of the Plan with your system, and help them to make sense of the actions that you intend to take. In addition, discussing your water system here will assist those who update the plan in five years, because they will know exactly what the system looked like when the plan was created.

The ______________(water supplier) utilizes groundwater /surface water from _______________(source). Supply is secured by a (water right, water supply contract, etc.) through the year _____. Our customers include ___________________________, and their current contracted amounts are ______. Our storage and distribution systems consist of ____.

Coordination with the North East Texas Regional Water Planning Group

The drought contingency plan must document coordination with the regional water planning groups for the service area of the wholesale public water supplier to ensure consistency with the appropriate approved regional water plans. – 30 TAC Chapter 288

A copy of this adopted plan will be submitted to the NETRWPG via its administrator, Mr. Walt Sears, Northeast Texas Municipal Water District, P. O. Box 955, Hughes Springs, Texas 75656. Proof of submittal is attached hereto as Figure ___.

Informing the Public/Requesting Input

According to 30 TAC Chapter 288, Subchapter B.a.1, "Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input in the preparation of the plan and for informing wholesale customers about the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting."

The __________________________________(water supplier) gave the public and its wholesale customers an opportunity to provide input into this plan by ____________________________(public notice, public hearing, letter requesting comments, etc.). Public comments included ________________.

Efforts to inform wholesale customers and the public about each stage of the plan, and when stages are implemented or rescinded, will be through ___________________________ (certified letter, newspaper articles, radio announcements, website announcements, etc.).

Authorization/Applicability

The ________________ (mayor, president, city administrator, etc.) is hereby authorized to monitor weather conditions as well as water supply and demand conditions and to implement the Drought Contingency Plan as appropriate.

The ______________________(City Council, Board of Directors, etc.) authorizes the Plan by a _______________(resolution, ordinance), which has been included in this Plan.

Coordination with the Texas Commission on Environmental Quality

According to 30 TAC Chapter 288, Subchapter C, "Wholesale public water suppliers shall submit a drought contingency plan meeting the requirements of Subchapter B of this chapter to the executive director not later than May 1, 2005, after adoption of the drought contingency plan by the governing body of the water supplier. Thereafter, the wholesale public water suppliers shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the governing body of the wholesale public water supplier."

This plan was submitted to the executive director of the Texas Commission of Environmental Quality on ______________________(date).

Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.).

For questions to the TCEQ, see the website at www.tceq.state.tx.us, or call: 512/239-4691.

Coordination with Wholesale Water Supplier

This section only applies if you purchase supply from a wholesale provider. If you have a contract or agreement with a water provider, then complete this section. If you have your own water rights or otherwise own your supply, this section does not apply.

This plan has been created with our water provider, ________________'s drought contingency plan in mind. We have included __________________'s (water provider) requirements within our plan and have created this plan to compliment _____________'s (water provider) plan. ______________(water provider) has been provided a copy of this plan.

Plan Definitions

For the purposes of this Plan**,** the following definitions, taken from TCEQ guidance, shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by __________________ (name of water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even number address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(e) flushing gutters or permitting water to run or accumulate in any gutter or street;

(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;
(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

RESPONSE TO A DROUGHT EVENT

In this portion of the plan, it will need to be determined whether a water constraint will more likely be caused by a shortage in water supply or by constraints in the storage and distribution system. Associated goals and water management measures should correspond to the type of constraint expected. For example, if insufficient storage is determined to be the most likely cause of water shortage during a drought, then an emergency back-up supply source would not solve the problem; reduced use during peak hours (banning lawn watering, etc.) would more likely solve the problem by giving storage tanks a better opportunity to refill.

The drought contingency plan should be designed for a drought condition at least as severe as the drought of record according to TCEQ rules. Since the drought of record in Texas occurred in the 1950's, few systems will have water use records still available to plan by. Therefore, the NETRWPG suggests using the most recent drought for the State, which occurred in 2011. If your system does not have records for 2011, use the time period in your records when your system was the most strained by dry weather conditions.

The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record. – 30 TAC Chapter 288

The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable. – 30 TAC Chapter 288

A minimum of three drought stages is required in this plan. During each stage, it will need to be determined what will trigger initiation, what the water use reduction target goal is, what water management strategies will be put into place, and, finally, what will terminate the stage. Keep in mind that a supplier who is also a customer of its wholesale provider must comply with its provider's Drought Contingency Plan. Do not develop stages or management strategies that are in conflict with your water provider's DCP. Also note that the NETRWPG has developed water management strategies for all providers who are projected to have a water shortage within the planning period (50 years). You should review the latest version of the Regional Water Plan to determine if you have had strategies prepared for you.

Include an opening paragraph in this section that describes what information should be monitored in order to initiate the stages, and a rationale of why you chose the triggering criteria that you chose.

The drought contingency plan must include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code, §11.039. – 30 TAC Chapter 288

Texas Water Code, §11.039 states, "DISTRIBUTION OF WATER DURING SHORTAGE. (a) If a shortage of water in a water supply not covered by a water conservation plan prepared in compliance with Texas Natural Resource Conservation Commission or Texas Water Development Board rules results from drought, accident, or other cause, the water to be distributed shall be divided among all customers pro rata, according to the amount each may be entitled to, so that preference is given to no one and everyone suffers alike. (b) If a shortage of water in a water supply covered by a water conservation plan prepared in compliance with Texas Natural Resource Conservation Commission or Texas Water Development Board rules results from drought, accident, or other cause, the person, association of persons, or corporation owning or controlling the water shall divide the water to be distributed among all customers pro rata, according to: (1) the amount of water to which each customer may be entitled; or (2) the amount of water to which each customer may be entitled, less the amount of water the customer would have saved if the customer had operated its water system in compliance with the water conservation plan.(c) Nothing in Subsection (a) or (b) precludes the person, association of persons, or corporation owning or controlling the water from supplying water to a person who has a prior vested right to the water under the laws of this state.

Stage 1 – Mild Water Shortage

Initiation: The _______________________(name of water supplier) will consider that a mild water shortage exists when___________________________________ (i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by __________*** (entity's water provider) if applicable**.**

Target Goal: When a mild water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to ___________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 1 shall be rescinded when ___________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage I is rescinded by ___________________________*** (entity's water provider) if applicable**.**

Water Management Strategies: During Stage 1, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Request voluntary water conservation from all customers
- Recommend that customers initiate Stage 1 of their Drought Contingency Plans
- Reduce operating procedures that use water (i.e. flushing of mains) as appropriate

Stage 2 – Moderate Water Shortage

Initiation: The _______________________(water supplier) will consider that a moderate water shortage exists when___________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by __________ (entity's water provider)*** if applicable.

Target Goal: When a moderate water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to ___________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 2 shall be rescinded when ____________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage 2 is rescinded by***

___________________________ (entity's water provider) if applicable. ***Upon termination of Stage 2, Stage 1 becomes operative.***

Water Management Strategies: During Stage 2, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Recommend that customers initiate Stage 2 of their Drought Contingency Plans, which should, at a minimum, contain lawn watering restrictions
- Modify reservoir operations if applicable
- Initiate strong public awareness campaign in service area to warn of impending shortages

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The _______________________(water supplier) will consider that a severe water shortage exists when___________________________________(i.e. water levels in the reservoir reach_____; average daily water use reaches ___% of capacity for three consecutive days; water level in elevated storage tank is at or below ____ for more than 12 hours, etc.)***, or when requested by __________*** (entity's water provider) if applicable***.***

Target Goal: When a severe water shortage exists, the _____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to ____________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 3 shall be rescinded when _____________________________ (i.e. water levels in the reservoir rise above ___ for 7 consecutive days; average daily water use falls below ___% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.)***, or when Stage 3 is rescinded by ___________________________*** (entity's water provider) if applicable***. Upon termination of Stage 3, Stage 2 becomes operative.***

Water Management Strategies: During Stage 3, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Recommend that customers initiate Stage 3 of their Drought Contingency Plans, which, at a minimum, must include a ban on lawn watering
- Begin pro rata water allocation (Pro rata curtailment of water deliveries to or diversions by wholesale water customers must be considered in a wholesale DCP according to 30 TAC Chapter 288, Subchapter B. Rules for pro rata curtailment are provided in Texas Water Code, §11.039.)
- Implement water rate surcharges (i.e. a set charge for any use above average monthly use)
- Implement price adjustments (i.e. increase the price per 1,000 gallons of water used above the average monthly use)
- Utilize alternate or emergency water sources

<u>Stage 4 – Emergency Water Shortage</u>

This Stage could apply in the instance of a major water line break, a contamination of the water supply source, or other urgent water system conditions. Most likely, this stage would be initiated by decision of the authorized plan implementer (Mayor, President, Manager, etc.)

Initiation: The ______________________(water supplier) will consider that an emergency water shortage exists when__________________________________ (i.e. the water main at the water treatment plant bursts or is otherwise significantly damaged; the reservoir is contaminated by oil spill; etc.,)***, or when requested by __________*** (entity's water provider) if applicable.

Target Goal: When an emergency water shortage exists, the ____________________(water supplier) will implement water management strategies in an attempt to reduce daily water use to __________________________ (i.e. 2 MGD; ___% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

Termination: Stage 4 shall be rescinded when ___________________________ (i.e. the main at the water treatment plant is restored and storage tanks have been allowed to refill; analysis of the source water indicates that supply is safe to use; etc.), ***or when Stage 4 is rescinded by ___________________________***(entity's water provider) if applicable.

Water Management Strategies: During Stage 4, we will take the following steps to reduce water use:_______________.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following: (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and (B) utilization of alternative water sources with the prior approval of the executive director as appropriate, e.g. interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.). – 30 TAC Chapter 288

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc. This may require approval by the TCEQ Executive Director)
- Modify reservoir operations
- Strategies listed in Stage 3

PLAN EXECUTION

Public Involvement

This section should discuss the ways in which the supplier will inform its wholesale customers about the initiation and termination of drought stages, as well as management strategies that customers are expected to follow. Public involvement can be in the form of special public hearings, articles and notices in the local newspaper, radio announcements, announcements on local television stations, notices in billing statements, etc.

The ______________________ (water provider) will keep its customers apprised of initiation of the drought contingency plan, and changes in stages, by means of ____________________________.

Enforcement

The _______________ (Mayor, City Manager, President, etc.), or his/her designee, is responsible for monitoring weather conditions and water supplies, and determining when to initiate and terminate stages of the DCP.

The drought contingency plan must include procedures for the enforcement of any mandatory water use restrictions including specification of penalties (e.g., liquidated damages, water rate surcharges, discontinuation of service) for violations of such restrictions. – 30 TAC Chapter 288, Subchapter B.a.10.

The _______________ (governing body) has adopted this plan through ___________ (ordinance, resolution), and has made it an official _________ (city, Corporation, etc.) policy. The _______________ (ordinance, resolution, etc.) is attached hereto as Figure ___.

Provision for responding to wholesale provider restrictions

Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. – 30 TAC Chapter 288

If you have a wholesale provider, then add this section. If you own your own supply, please skip this section.

As stated in each water shortage stage, we intend to comply with all requirements of our wholesale provider's drought contingency plan. This plan is as stringent as our provider's plan, and in some cases may be more so.

Notification of TCEQ on mandatory provisions

A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. – 30 TAC Chapter 288

The Executive Director at TCEQ shall be notified with 5 business days if any mandatory provisions of this plan are implemented. The Executive Director can be reached at 512-239-3900.

Variance procedures

The drought contingency plan must include procedures for granting variances to the plan. – 30 TAC Chapter 288

The _____________ (authorized representative) may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the customer requesting such variance and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.

(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Customers requesting an exemption from the provisions of this Plan shall file a petition for variance with the ______________ (water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _________ (authorized representative), and shall include the following:

(a) Name and address of the petitioner(s).
(b) Purpose of water use.
(c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
(d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(e) Description of the relief requested.
(f) Period of time for which the variance is sought.
(g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(h) Other pertinent information.

Variances granted by the _______________ (water supplier) shall be subject to the following conditions, unless waived or modified:

(a) Variances granted shall include a timetable for compliance.
(b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

5-year updates

The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan. – 30 TAC Chapter 288

This plan shall be re-evaluated and updated every five years based on updated information; especially the latest adopted NETRWPG Regional Water Plan.

1.2 MODEL DROUGHT CONTINGENCY PLAN – INDUSTRIAL USER (MANUFACTURING AND STEAM ELECTRIC POWER)

RESPONSE TO A DROUGHT EVENT

The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record. – 30 TAC Chapter 288

The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable. – 30 TAC Chapter 288

This model DCP is intended to follow the regional recommendations for industrial users, which includes manufacturing and steam electric power. This recommendation is to monitor drought intensity using the U.S. Drought Monitor website. Drought intensity is updated weekly with a map of Texas shaded with the applicable drought condition.

Category	Description	Possible Impacts	Palmer Drought Index	USGS Weekly Streamflow (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2

Go to https://droughtmonitor.unl.edu/Maps/MapArchive.aspx
Select “current” “state” and “Texas” from the drop-down menus.

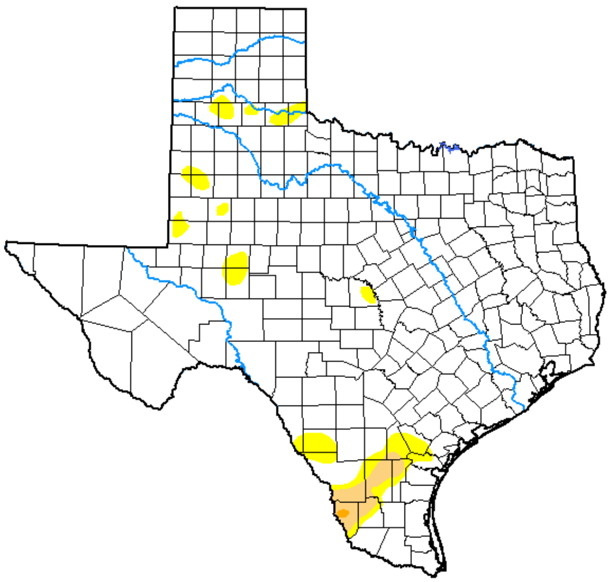
U.S. Drought Monitor

Texas

July 2, 2019

(Released Wednesday, Jul. 3, 2019)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.84	5.16	1.34	0.05	0.00	0.00
Last Week 06-25-2019	95.84	4.16	1.93	0.23	0.00	0.00
3 Months Ago 04-02-2019	54.27	45.73	12.20	2.61	0.00	0.00
Start of Calendar Year 01-01-2019	92.99	7.01	1.32	0.00	0.00	0.00
Start of Water Year 09-25-2018	57.46	42.54	20.19	7.03	0.96	0.00
One Year Ago 07-03-2018	17.38	82.62	55.30	24.06	6.84	0.46

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker

CPC/NOAA/NWS/NCEP

droughtmonitor.unl.edu

Once the specific drought intensity is determined using the map, the industrial user is encouraged to voluntarily follow the drought responses recommended by the nearest public water supplier(s) or this plan.

Stage 1 – Mild Water Shortage

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive.

- Request voluntary water conservation from all customers

Stage 2 – Moderate Water Shortage

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D1 - moderate drought.

Termination: Stage 2 shall be rescinded when the local weekly drought category is D0 - abnormally dry.

Water Management Strategies: During Stage 2, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage.

- Request ten percent water conservation

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D2 - severe drought.

Termination: Stage 3 shall be rescinded when the local weekly drought category is D1 – moderate drought.

Water Management Strategies: During Stage 3, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Request twenty percent water conservation
- Utilize alternate or emergency water sources

<u>Stage 4 – Emergency Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D3 - extreme drought.

Termination: Stage 4 shall be rescinded when the local weekly drought category is D2 – severe drought.

Water Management Strategies: During Stage 4, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive.

- Request thirty percent water conservation
- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc.

The following worksheet content is from TCEQ industrial conservation plan guidance, and is included For guidance.

WATER USE AND CONSERVATION PRACTICES

Water Use in Industrial Processes

Production Use	*% Groundwater*	*% Surface Water*	*% Saline Water*	*% Treated Water*	*Water Use (in acre-ft)*
Cooling, condensing, & refrigeration	______	______	______	______	______
Processing, washing, transport	______	______	______	______	______
Boiler feed	______	______	______	______	______
Incorporated into product	______	______	______	______	______
Other	______	______	______	______	______

Facility Use	*% Groundwater*	*% Surface Water*	*% Saline Water*	*% Treated Water*	*Water Use (in acre-ft)*
Cooling tower(s)	______	______	______	______	______
Pond(s)	______	______	______	______	______
Once through	______	______	______	______	______
Sanitary & drinking water	______	______	______	______	______
Irrigation & dust control	______	______	______	______	______

1. Was fresh water recirculated at this facility? ☐ Yes ☐ No

2. Provide a detailed description of how the water will be utilized in the industrial process.

3. Estimate the quantity of water consumed in production processes and is therefore unavailable for reuse, discharge, or other means of disposal.

4. Monthly water consumption for previous year (in acre-feet).

Month	*Diversion Amount*	*% of Water Returned (If Any)*	*Monthly Consumption*
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Totals			

5. Projected monthly water consumption for next year (in acre-feet).

Month	*Diversion Amount*	*% of Water Returned (If Any)*	*Monthly Consumption*
January			
February			
March			
April			
May			
June			

July			
August			
September			
October			
November			
December			
Totals			

Specific and Quantified Conservation Goal

Water conservation goals for the industrial sector are generally established either for (1) the amount of water recycled, (2) the amount of water reused, or (3) the amount of water not lost or consumed, and therefore is available for return flow.

6. Water conservation goal (water use efficiency measure)

   Type of goal(s):
   - % reused water
   - % of water not consumed and therefore returned
   - Other (specify)

7. Provide specific, quantified 5-year and 10-year targets for water savings and the basis for development of such goals for this water use/facility.

   Quantified 5-year and 10-year targets for water savings:

   a. 5-year goal:

   b. 10-year goal:

8. Describe the device(s) and/or method(s) used to measure and account for the amount of water diverted from the supply source, and verify the accuracy is within plus or minus 5%.

9. Provide a description of the leak-detection and repair, and water-loss accounting measures used.

10. Describe the application of state-of-the-art equipment and/or process modifications used to improve water use efficiency.

11. Describe any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan:

1.2 MODEL DROUGHT CONTINGENCY PLAN – INDUSTRIAL USER (MANUFACTURING AND STEAM ELECTRIC POWER)

RESPONSE TO A DROUGHT EVENT

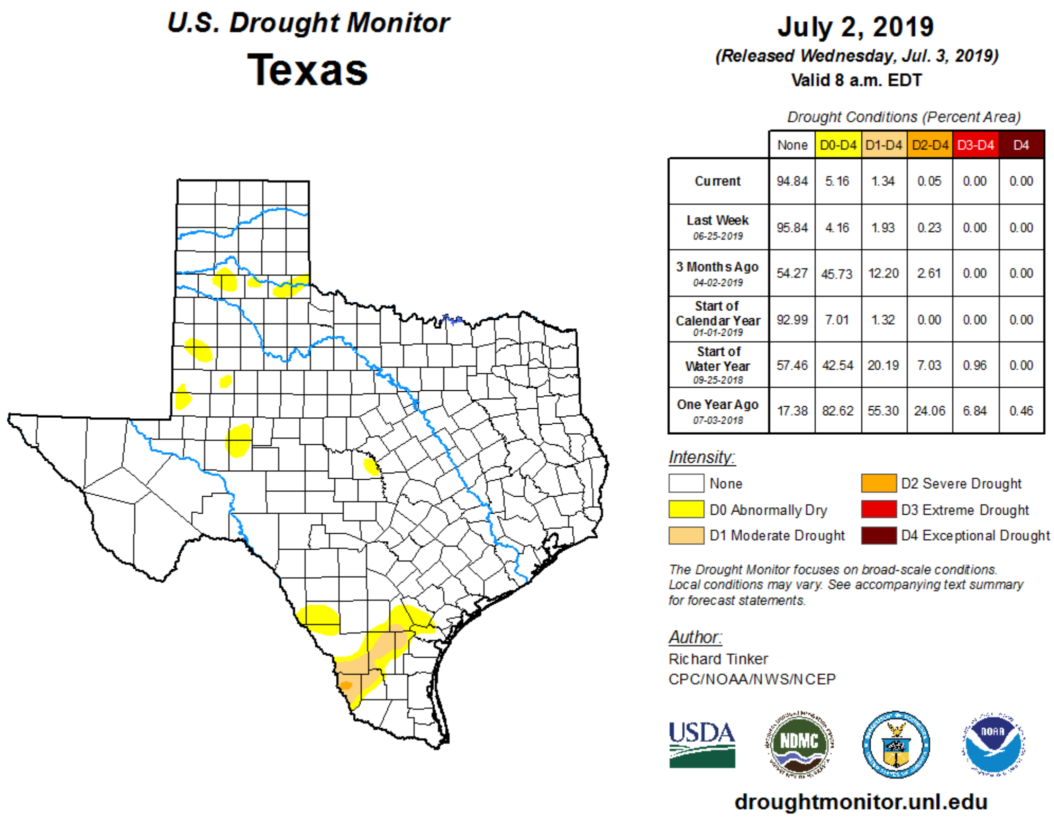
The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record. – 30 TAC Chapter 288

The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable. – 30 TAC Chapter 288

This model DCP is intended to follow the regional recommendations for industrial users, which includes manufacturing and steam electric power. This recommendation is to monitor drought intensity using the U.S. Drought Monitor website. Drought intensity is updated weekly with a map of Texas shaded with the applicable drought condition.

Category	Description	Possible Impacts	Palmer Drought Index	USGS Weekly Streamflow (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2

Go to https://droughtmonitor.unl.edu/Maps/MapArchive.aspx
Select "current" "state" and "Texas" from the drop-down menus.



Once the specific drought intensity is determined using the map, the industrial user is encouraged to voluntarily follow the drought responses recommended by the nearest public water supplier(s) or this plan.

<u>Stage 1 – Mild Water Shortage</u>

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Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D1 - moderate drought.

Termination: Stage 2 shall be rescinded when the local weekly drought category is D0 - abnormally dry.

Water Management Strategies: During Stage 2, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage.

- Request ten percent water conservation

<u>Stage 3 – Severe Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D2 - severe drought.

Termination: Stage 3 shall be rescinded when the local weekly drought category is D1 – moderate drought.

Water Management Strategies: During Stage 3, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Request twenty percent water conservation
- Utilize alternate or emergency water sources

<u>Stage 4 – Emergency Water Shortage</u>

Initiation: The groundwater user will consider that a moderate water shortage exists when the local drought stage shown on the weekly Texas map is category D3 - extreme drought.

Termination: Stage 4 shall be rescinded when the local weekly drought category is D2 – severe drought.

Water Management Strategies: During Stage 4, we will follow the drought restrictions of local public water supplier(s).

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive.

- Request thirty percent water conservation
- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc.

The following worksheet content is from TCEQ industrial conservation plan guidance, and is included For guidance.

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Production Use	*% Groundwater*	*% Surface Water*	*% Saline Water*	*% Treated Water*	*Water Use (in acre-ft)*
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Boiler feed					
Incorporated into product					
Other					

Facility Use	*% Groundwater*	*% Surface Water*	*% Saline Water*	*% Treated Water*	*Water Use (in acre-ft)*
Cooling tower(s)					
Pond(s)					
Once through					
Sanitary & drinking water					
Irrigation & dust control					

1. Was fresh water recirculated at this facility? ☐ Yes ☐ No

2. Provide a detailed description of how the water will be utilized in the industrial process.

3. Estimate the quantity of water consumed in production processes and is therefore unavailable for reuse, discharge, or other means of disposal.

4. Monthly water consumption for previous year (in acre-feet).

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February			
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June			
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August			
September			
October			
November			
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Totals			

5. Projected monthly water consumption for next year (in acre-feet).

Month	*Diversion Amount*	*% of Water Returned (If Any)*	*Monthly Consumption*
January			
February			
March			
April			
May			
June			

July	__________	__________	__________
August	__________	__________	__________
September	__________	__________	__________
October	__________	__________	__________
November	__________	__________	__________
December	__________	__________	__________
Totals	__________	__________	__________

Specific and Quantified Conservation Goal

Water conservation goals for the industrial sector are generally established either for (1) the amount of water recycled, (2) the amount of water reused, or (3) the amount of water not lost or consumed, and therefore is available for return flow.

6. Water conservation goal (water use efficiency measure)

   Type of goal(s):

   % reused water

   % of water not consumed and therefore returned

   Other (specify)

7. Provide specific, quantified 5-year and 10-year targets for water savings and the basis for development of such goals for this water use/facility.

   Quantified 5-year and 10-year targets for water savings:

   a. 5-year goal:

   b. 10-year goal:

8. Describe the device(s) and/or method(s) used to measure and account for the amount of water diverted from the supply source, and verify the accuracy is within plus or minus 5%.

9. Provide a description of the leak-detection and repair, and water-loss accounting measures used.

10. Describe the application of state-of-the-art equipment and/or process modifications used to improve water use efficiency.

11. Describe any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan:

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APPENDIX C8

UNIQUE STREAM SEGMENTS, RESERVOIR SITES, AND LEGISLATIVE RECOMMENDATIONS

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APPENDIX C8

The 2011 Regional Water Plan reports of Ecologically Unique Stream Segments are included herein for use in the 2026 Regional Water Plan.

TABLE OF CONTENTS

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Description for Designation of Pecan Bayou as an Ecologically Unique Stream Segment

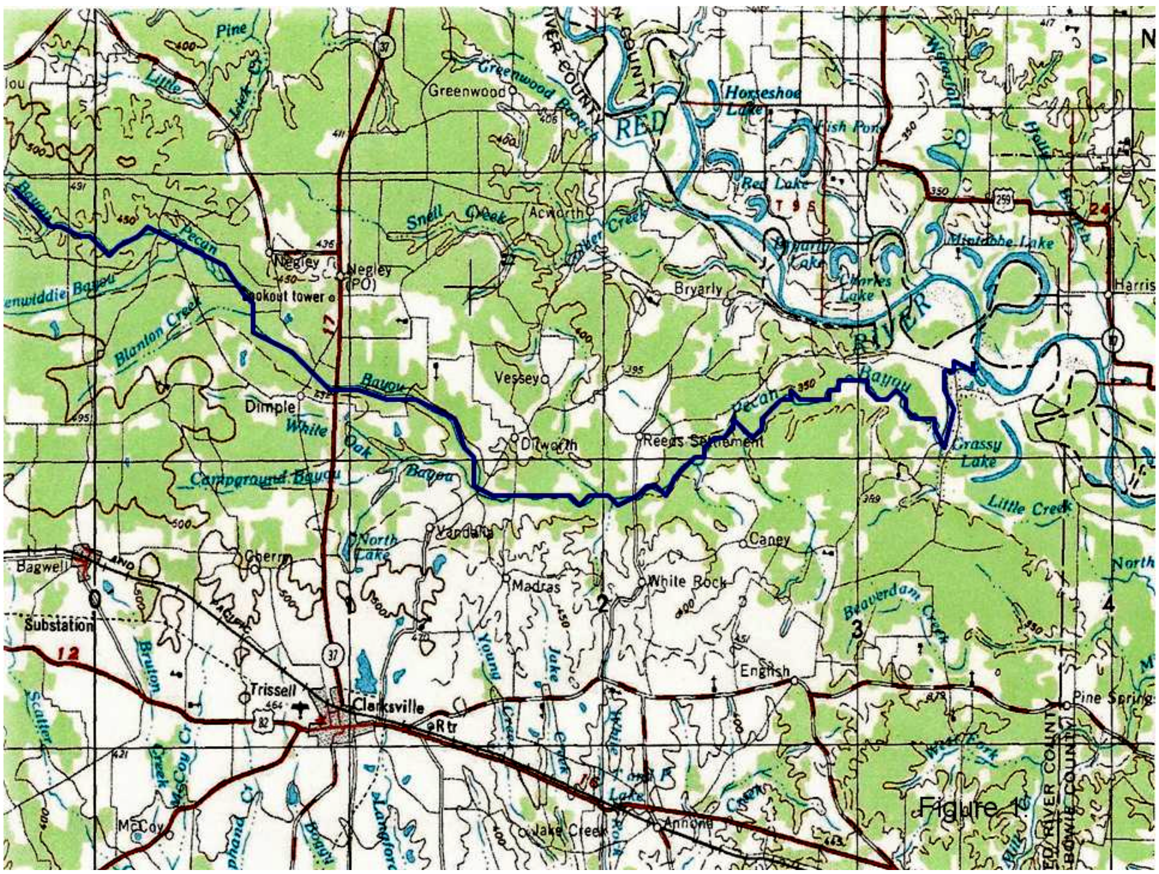
Pecan Bayou originates two miles south of Woodland in northwestern Red River County, flows generally east forty miles to join the Red River approximately one mile west of the Bowie County line (Texas Historical Association, 2009). The site, including bottomland forest, encompasses approximately 613,462 acres (fig.1). It represents one of the largest undammed watersheds in northeast Texas; and supports multiple large examples of mature bottomland hardwood forest, and rare and endangered species (Zwartjes, et al, 2000).

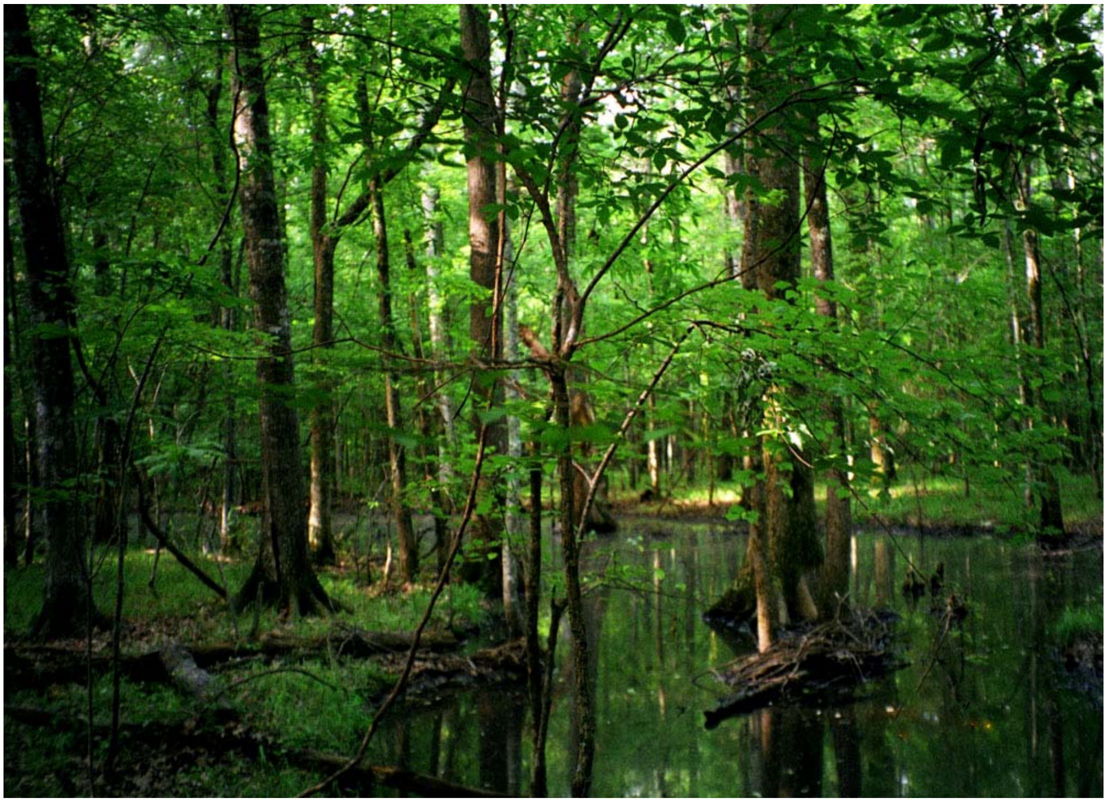
1) **Biological function**: Extensive bottomland hardwood forest supporting multiple occurrences of rare plant life, including:
   - Arkansas meadowrue (*Thalictrum arkansanum* G2QS1) (Sanders, 1994)
   - Southern lady's slipper orchid (*Cypripedium kentuckiense* G3S1) (Sanders, 1994)
   - Old growth Shortleaf Pine-Oak forest (*Pinus echinata-Quercus sp*. G4S4) (Sanders, 1994)
   - Water oak-Willow oak association (*Quercus nigra-Q. phellos* G4S3) (Sanders, 1994)

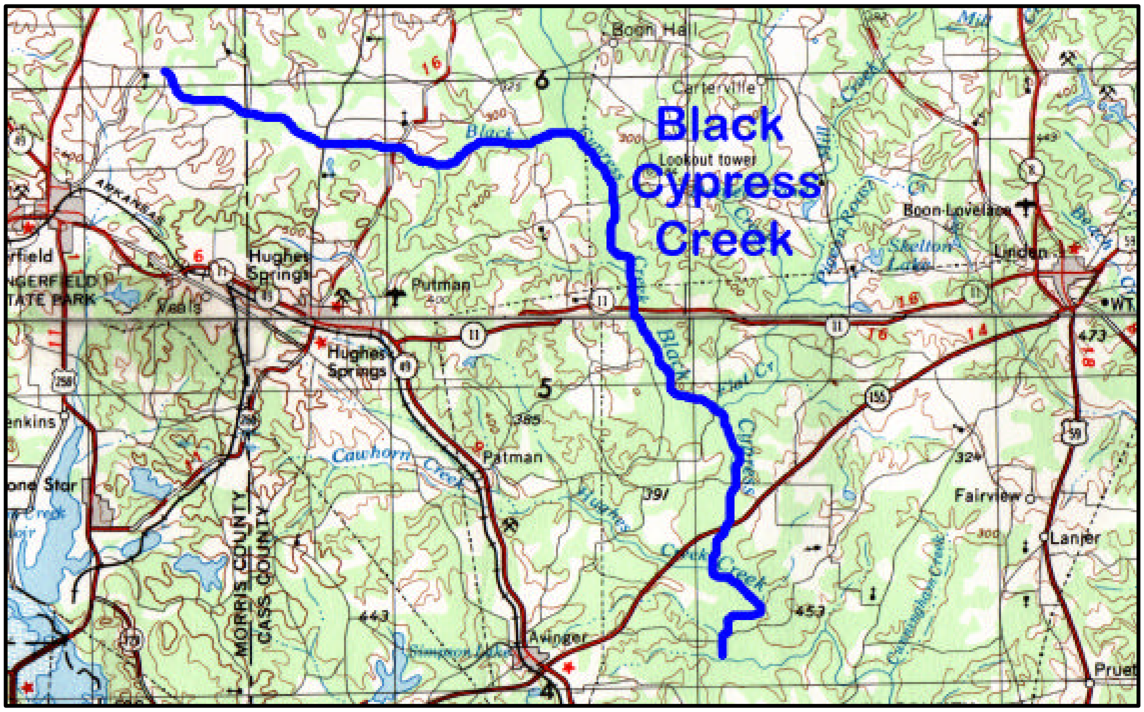
2) **Hydrologic function**: Represents one of the largest undammed watersheds in northeast Texas, natural hydrologic regime is assumed intact. Flood attenuation, flow stabilization and impacts on groundwater recharge have not been quantified.
3) **Riparian conservation areas:** No public conservation areas however significant private conservation area[1].
4) **High water quality/exceptional aquatic life**: Insufficient data
5) **Threatened and endangered species**:
   - American Burying Beetle (*Nicrophorus americanus* G2 Federally listed Endangered) (Godwin, 2005)
   - Black Bear (*Ursus americanus* G5 State Threatened, ssp. *luteolus* Federally listed Threatened) (Garner, personal communication, 2007)
   - Timber Rattlesnake (*Crotalus horridus* G4 State Threatened)

[1]The Nature Conservancy, Texas Chapter, owns 1334 acres within a 6,960-acre site protecting examples of the preceding conservation elements although they are extensive within the watershed. The preserve, Lennox Woods, is located approximately 1.5 miles south of the community of Negley. The land protects an approximate 2.6 mile segment of Pecan Bayou.

Garner, Nathan. 2007. Personal communication regarding black bear presence within the Pecan Bayou area.
Godwin, Will 2005. Internal report to The Nature Conservancy
Handbook of Texas Online, s.v. ",” http://www.tshaonline.org/handbook/online/articles/PP/rhp4.html
Sanders. R.W. 1994. Vegetational Survey: Lennox Woods Preserve, Red River County, Texas. Unpublished report prepared for The Nature Conservancy of Texas. Botanical Research Institute of Texas. Ft. Worth, Texas
Zwartjes, Michelle, Eidson, James and Kristen Terpening, 2000. Conservation Plan for the Pecan Bayou Megasite. Report to The Nature Conservancy, Texas Chapter.







Adapted from USGS Tyler, Texas. Original Scale 1: 250,000.

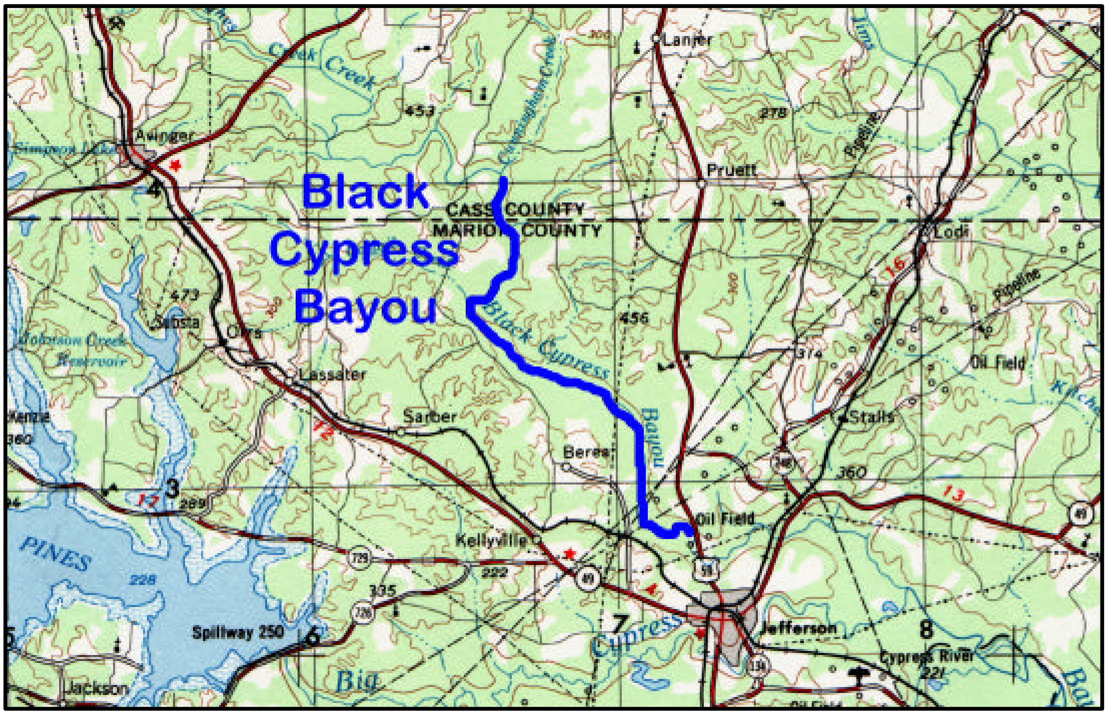
Figure 6. Map Location of Black Cypress Creek

Figure 7. Black Cypress Creek east of CR 1617

Black Cypress Creek

Black Cypress Creek begins northeast of Daingerfield in eastern Morris County and flows southeasterly about 20 miles where it becomes Black Cypress Bayou east of Avinger in southern Cass County. It has a very favorable hydrologic regime, as there are no reservoirs upstream, thus the creek floods frequently and has numerous tributaries and sloughs. The stream channel meanders extensively over a substrate that is comprised predominately of clay and decaying organic matter (Bayer et al., 1992). The lower portion of the creek is within a 12,800-acre area identified by the USFWS as containing priority bottomland hardwood. This area is very diverse with a mix of high quality water oak, willow oak, overcup oak, and red oak mixed with sweetgum, black gum, river birch, ironwood, and mayhaw, as well as several significant cypress stands (USFWS, 1985). This habitat has high species value to white-tail deer, American alligators, furbearers, squirrels, waterfowl, turkeys, raptors, colonial waterbirds, and other migratory birds (USFWS, 1985). Abundant vegetation also provides instream cover in the form of woody debris and overhanging vegetation that helps the creek support a diverse assemblage of fish and benthic macroinvertebrates. Fish species collected from Black Cypress Creek in August of 1989 include several shiner species, pugnose minnow, bullhead minnow, tadpole madtom, pirate perch, western mosquitofish, flier, largemouth bass, several darter species (slough, cypress, redfin, dusky), and several sunfish species (Bayer et al., 1992). The candidate segment is from the confluence with Black Cypress Bayou east of Avinger in South Cass County upstream to its headwaters located four miles northeast of Daingerfield in eastern Morris County.

(1) Biological Function- priority bottomland hardwood habitat displays significant overall habitat value (USFWS, 1985).
(2) Hydrologic Function- bottomland hardwood forest and associated wetlands perform valuable hydrologic function relating to water quality.
(3) Riparian Conservation Area- none identified.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- designated as a South Central Plains Ecoregion Stream by the TPWD River Studies Program due to diversity of benthic macroinvertebrates and fish (Bayer et al., 1992; Linam et al., in review).
(5) Threatened or Endangered Species/Unique Communities- none identified.



Adapted from USGS Tyler, Texas. Original Scale 1: 250,000.

Figure 8. Map Location of Black Cypress Bayou

Figure 9. Black Cypress Bayou south of CC Bridge Road

Black Cypress Bayou

Black Cypress Bayou begins at the confluence with Black Cypress Creek east of Avinger in southern Cass County and flows southeasterly about 20 miles where it empties into Big Cypress Bayou in Marion County. The upper reach of the bayou is within the same 12,800-acre area of priority bottomland hardwoods as Black Cypress Creek, thus it supports the same diverse mix of oak, sweetgum, black gum, river birch, ironwood, mayhaw, and cypress. Also like Black Cypress Creek, the bayou has high species value to white-tail deer, waterfowl, furbearers, American alligators, squirrels, turkeys, raptors, colonial waterbirds, and other migratory birds (USFWS, 1985). This section of the bayou, like much of the Big Cypress Bayou Basin, is within the target recovery area set by the TPWD for the state threatened paddlefish (Pitman, 1992). The candidate segment is from the confluence with Big Cypress Bayou in south central Marion County upstream to the confluence with Black Cypress Creek east of Avinger in south Cass County.

(1) Biological Function- priority bottomland hardwood forest displays significant overall habitat value (USFWS, 1985).
(2) Hydrologic Function- bottomland forest and associated wetlands provide valuable hydrologic function relating to water quality.
(3) Riparian Conservation Area- none identified.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- insufficient data to evaluate criteria.
(5) Threatened or Endangered Species/Unique Communities- significant due to presence of state threatened paddlefish (TPWD, 1998b).

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Memorandum

To: Jim Eidson

From: John Dugdale

Date: December 28, 2009

Subject: Legal Aspects of Recommendations by Regional Water Planning Groups to Designate Texas Stream Segment Designations as Having Unique Ecological Values and of Potentially-Associated Impacts of Such Designation

You have posed several questions regarding the impact of a Regional Water Planning Group's recommendation, ultimately to the Texas Water Development Board, to designate, in an adopted regional water plan, river and stream segments as having unique ecological values.

Background:

The statutory authority for the Texas Legislature to designate a river or stream segment of unique ecological value is Texas Water Code, Sections 16.051(e) and (f)[1] (emphasis added - full

[1] Sec. 16.051. STATE WATER PLAN: DROUGHT, CONSERVATION, DEVELOPMENT, AND MANAGEMENT; EFFECT OF PLAN. (a) Not later than January 5, 2002, and before the end of each successive five-year period after that date, the board shall prepare, develop, formulate, and adopt a comprehensive state water plan that incorporates the regional water plans approved under Section 16.053. The state water plan shall provide for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions, in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare; further economic development; and protect the agricultural and natural resources of the entire state.
(b) The state water plan, as formally adopted by the board, shall be a guide to state water policy. The commission shall take the plan into consideration in matters coming before it.
(c) The board by rule shall define and designate river basins and watersheds.
(d) The board, in coordination with the commission, the Department of Agriculture, and the Parks and Wildlife Department, shall adopt by rule guidance principles for the state water plan which reflect the public interest of the entire state. When adopting guidance principles, due consideration shall be given to the construction and improvement of surface water resources and the application of principles that result in voluntary redistribution of water resources. The board shall review and update the guidance principles, with input from the commission, the Department of Agriculture, and the Parks and Wildlife Department, as necessary but at least every five years to coincide with the five-year cycle for adoption of a new water plan as described in Subsection (a).
(e) On adoption the board shall deliver the state water plan to the governor, the lieutenant governor, and the speaker of the house of representatives and present the plan for review to the appropriate legislative committees. The plan shall include legislative recommendations that the board believes are needed and desirable to facilitate more voluntary water transfers. The plan shall identify river and stream segments of unique ecological value and sites of unique value for the construction of reservoirs that the board recommends for protection under this section.
(f) The legislature may designate a river or stream segment of unique ecological value. This designation solely means that a state agency or political subdivision of the state may not finance the actual construction of a reservoir in a specific river or stream segment designated by the legislature under this subsection.

text of Section 16.051 included in Footnote 1 for context). The Legislature has delegated the authority for the designation of such stream segments to Regional Water Planning Groups; the regulations that define how a Regional Water Planning Group is to make such a recommendation to the Texas Water Development Board are found at 31 TAC § 357.8, Ecologically Unique River and Stream Segments[2] (emphasis added).

(g) The legislature may designate a site of unique value for the construction of a reservoir. A state agency or political subdivision of the state may not obtain a fee title or an easement that would significantly prevent the construction of a reservoir on a site designated by the legislature under this subsection.

(g-1) Notwithstanding any other provisions of law, a site is considered to be a designated site of unique value for the construction of a reservoir if the site is recommended for designation in the 2007 state water plan adopted by the board and in effect on May 1, 2007. The designation of a unique reservoir site under this subsection terminates on September 1, 2015, unless there is an affirmative vote by a proposed project sponsor to make expenditures necessary in order to construct or file applications for permits required in connection with the construction of the reservoir under federal or state law.

(h) The board, the commission, or the Parks and Wildlife Department or a political subdivision affected by an action taken in violation of Subsection (f) or (g) may bring a cause of action to remedy or prevent the violation. A cause of action brought under this subsection must be filed in a district court in Travis County or in the county in which the action is proposed or occurring.

(i) For purposes of this section, the acquisition of fee title or an easement by a political subdivision for the purpose of providing retail public utility service to property in the reservoir site or allowing an owner of property in the reservoir site to improve or develop the property may not be considered a significant impairment that prevents the construction of a reservoir site under Subsection (g). A fee title or easement acquired under this subsection may not be considered the basis for preventing the future acquisition of land needed to construct a reservoir on a designated site.

[2] 31 TAC § 357.8(a): Regional Water Planning Groups may include in adopted regional water plans recommendations for all or parts of river and stream segments of unique ecological value located within the regional water planning area by preparing a recommendation package consisting of a physical description giving the location of the stream segment, maps, and photographs of the stream segment and a site characterization of the stream segment documented by supporting literature and data. The recommendation package shall address each of the criteria for designation of river and stream segments of ecological value found in subsection (b) of this section. <u>The regional water planning group shall forward the recommendation package to the Texas Parks and Wildlife Department and allow the Texas Parks and Wildlife Department 30 days for its written evaluation of the recommendation</u>. The adopted regional water plan shall include, if available, Texas Parks and Wildlife Department's written evaluation of each river and stream segment recommended as a river or stream segment of unique ecological value.

(b) A regional water planning group may recommend a river or stream segment as being of unique ecological value based upon the following criteria:

(1) biological function--stream segments which display significant overall habitat value including both quantity and quality considering the degree of biodiversity, age, and uniqueness observed and including terrestrial, wetland, aquatic, or estuarine habitats;

(2) hydrologic function--stream segments which are fringed by habitats that perform valuable hydrologic functions relating to water quality, flood attenuation, flow stabilization, or groundwater recharge and discharge;

(3) riparian conservation areas--stream segments which are fringed by significant areas in public ownership including state and federal refuges, wildlife management areas, preserves, parks, mitigation areas, or other areas held by governmental organizations for conservation purposes, or stream segments which are fringed by other areas managed for conservation purposes under a governmentally approved conservation plan;

(4) high water quality/exceptional aquatic life/high aesthetic value--stream segments and spring resources that are significant due to unique or critical habitats and exceptional aquatic life uses dependent on or associated with high water quality; or

The three questions your posed are:

1. What impact may the mere designation as an ecologically unique stream segment pursuant to TX Water Code § 16.051(f) have on the riparian rights of a landowner whose property is adjacent to a stream segment designated as such by the Legislature?

2. Could subsequent legislation that, unlike the current scheme, imposes restrictions on the development and usage rights of such a landowner, retroactively impact a pre-existing ecologically unique stream segment designation?

3. Is there a link between the designation of a stream segment an ecologically unique stream segment and value and the potential designation of that stream segment as a Wild and Scenic River pursuant to the Wild and Scenic Rivers Act (the "Act"), 16 U.S.C. § 1271 *et seq*.

Responses:

1. No impact - please note that this response presupposes only that the State Water Board has adopted the designation in the State Water Plan. *See* TX Water Code § 16.051(b):

   TX Water Code § 16.051(f) unambiguously states:

   > The legislature may designate a river or stream segment of unique ecological value. This designation solely means that a state agency or political subdivision of the state may not finance the actual construction of a reservoir in a specific river or stream segment designated by the legislature under this subsection.

   Notwithstanding the response stated *supra*, the legislative history for the companion provision of TX Water Code § 16.051(g), which relates to the designation of a site having unique attributes to the construction of a reservoir, The Bill Analysis of SB 3 indicates that the Legislature considered for the interference with private landowners' property rights in violation of Section 17 of the Texas Constitution:

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(5) threatened or endangered species/unique communities--sites along streams where water development projects would have significant detrimental effects on state or federally listed threatened and endangered species, and sites along streams significant due to the presence of unique, exemplary, or unusually extensive natural communities.
(c) For every river and stream segment that has been designated as a unique river or stream segment by the legislature, during a session that ends not less than one year before the required date of submittal of an adopted regional water plan to the board, or recommended as a unique river or stream segment in the regional water plan, the regional water planning group shall assess the impact of the regional water plan on these segments. The assessment shall be a quantitative analysis of the impact of the plan on the flows important to the river or stream segment, as determined by the regional water planning group, comparing current conditions to conditions with implementation of all recommended water management strategies. The assessment shall also describe the impact of the plan on the unique features cited in the region's recommendation of that segment.

A cause of action could be bought under certain circumstances. Before bringing a cause of action against a state agency or other political subdivision that had taken an action preventing the construction of a reservoir on a designated reservoir site, a political subdivision would have to file a letter of intent to construct a reservoir on the site affected by the action and offer to pay each owner of real property in the reservoir site an encumbrance. An owner of real property could reject the encumbrance The payment would have to be paid annually until the property was either acquired for the reservoir or no longer in the reservoir site. The amount would have to be at least 2.5 times the total ad valorem taxes imposed in the preceding year…

Reservoir designation. CSSB 3 needlessly would cloud the title of landowners within a designated reservoir site, because the threat of a future reservoir negatively would affect their property value. Supporters of reservoir designation point out that many of these reservoirs may never be built. However, the cloud would remain on the title to property in a designated site from the moment the bill [for the reservoir designation] was enacted. It would be unfair to make this designation without providing immediate funds to offset the loss in value that landowners would see. Without such compensation, the state in effect would be taking private property rights without compensation.

2. No:

Pursuant to Article 1, Section 16, of the Texas Constitution, the Texas Legislature may not enact an *ex post facto* or retroactive law.

In addition, pursuant to Article 1, Section 17, of the Texas Constitution, "no person's property shall be taken, damaged, or destroyed for or applied to public use without adequate compensation being made, unless by the consent of such person…"

However, there is no constitutional prohibition against a change in law that could void an existing riparian landuse scheme and impose new restrictions (which new restrictions, of course, could be subject to challenge).

3. Possibly.

Pursuant to Section 2(a)(ii) of the Act, 16 U.S.C. § 1272(a)(ii), a condition precedent for the Secretary of the Interior to designate, through a notice and comment rulemaking, a river or stream as a Wild and Scenic River, the Secretary must receive such a request from the governor of the state or states where the river or stream is located.[3]

[3] In pertinent part, Section 2(a)(ii) of the Act states: [The national and scenic rivers system shall comprise rivers]… that are designated as wild, scenic or recreational rivers by or pursuant to an act of the legislature

> Among the determinations the Department of Interior ("DOI") must make in that process is whether there are sufficient local, state, and federal mechanisms already in place to protect the river or stream in question, and whether the state in question has the ability to implement those mechanisms.
>
> Thus, the designation by the Texas Legislature, pursuant to TX Water Code TX Water Code § 16.051(e), of a river or stream as an ecologically unique stream segment would be a condition precedent for such a river or stream's candidacy for designation as a Wild and Scenic River. That segment's designation by the Texas Legislation would necessarily follow the recommendation of a regional water planning group in a regional water plan to nominate that segment as a unique river or stream segment. *See* 31 TAC § 357.8.

Finally, we had also discussed potential concerns of individual liability exposure of members of regional planning groups for acts conducted in their capacity as a member of such a group.

TX Water Code § 16.053(m) - (o) provide the following:

> (m) A cause of action does not accrue against a regional water planning group, a representative who serves on the regional water planning group, or an employee of a political subdivision that contracts with the regional water planning group under Subsection (l) for an act or omission in the course and scope of the person's work relating to the regional water planning group.
>
> (n) A regional water planning group, a representative who serves on the regional water planning group, or an employee of a political subdivision that contracts with the regional water planning group under Subsection (l) is not liable for damages that may arise from an act or omission in the course and scope of the person's work relating to the regional water planning group.
>
> (o) The attorney general, on request, shall represent a regional water planning group, a representative who serves on the regional water planning group, or an employee of a political subdivision that contracts with the regional water planning group under Subsection (l) in a suit arising from an act or omission relating to the regional water planning group.

Please do not hesitate to call me to discuss this memorandum.

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of the State or States through which they flow, that are to be permanently administered as weld, scenic, or recreational rivers by an agency or political subdivision of the State or States concerned, that are found by the Secretary of the Interior, upon application of the Governor of the State or the Governors of the States concerned, or a person or persons thereunto duly appointed by him or them, to meet the criteria established in this Act and such critical supplementary thereto as he may prescribe, and that are approved by him for inclusion in the system.

cc: David Bezanson, TNC

APPENDIX C9

IMPLEMENTATION AND COMPARISON TO 2021 REGION D PLAN

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APPENDIX C9

TABLE OF CONTENTS

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APPENDIX C9-1

Completed Implementation Survey Information in TWDB format

REGIONAL WATER PLAN WMS/PROJECT DATA						ANTICIPATED/ESTIMATED (OR ACTUAL[1]) IMPLEMENTATION ACTIVITIES AND DATES																	
						SPONSOR AUTHORIZATION	PERMITTING STATUS (as applicable)									PLANNING, DESIGN, AND CONSTRUCTION STATUS						TOTAL FUNDS EXPENDED TO DATE	Other significant activities completed (summary)
							STATE WATER RIGHT STATUS				FEDERAL 404 PERMIT STATUS (if applicable)		DESALINATION PERMIT STATUS		OTHER KEY PERMITS	GEOTECH/DESIGN	LAND ACQUISITION		CONSTRUCTION				
Water Management Strategy/Project Name	Project Sponsor	WMS Project Sponsor Region	Online Decade	Capital Cost	Anticipated Footprint Acreage (acres)	Date(s) that the sponsor took an affirmative vote or other action to make	Anticipated (or actual) TCEQ application filed	Anticipated (or actual) State Water Right Permit Administratively	Anticipated (or actual) Draft State Water Right Permit Issued (date)	Anticipated (or actual) Date Final State Water Right	Anticipated (or actual) application for permit filed (date)	Anticipated (or actual) permit issuance (date)	Anticipated (or actual) diversion permit issued (date)	Anticipated (or actual) Discharge/Disposal Permit Issued (date)	Summary of other permits and status (summary)	Generally describe the types and amount (as %s) of geotechnical/ reconnaissance/ engineering feasibility or other technical, testing, and/or design work etc. performed to date (summary)	Percent Land Acquisition Completed (%)	Anticipated land acquisition completion (date)	Anticipated start of construction (Date)	Percent construction completed (%)	Anticipated construction completion (date)	Rough approximation of the total expenditures, to date, on ALL activities	
Alt Canton Grand Saline Reservoir	Canton	D	2020	$45,373,000	1845	2008	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Long Range Water Supply Master Plan Completed	N/A	N/A	N/A	N/A	N/A	0.1	
Alt Clarksville Treated Pipeline Pat Mayse Water	Clarksville	D	2020	$12,255,000	30	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Drill New Wells (Irrigation Red River, Trinity Aquifer, Sulphur)	Irrigation (Red River)	D	2020	$425,000	9	No action	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline (Irrigation Hopkins)	Irrigation (Hopkins)	D	2020	$13,522,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Alt Wood County Pipeline and Regional Well Field	Municipal county-other (Wood)	D	2020	$232,728,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (B H P, Caddo Basin SUD, Poetry WSC)	B H P WSC; Poetry WSC; Caddo Basin SUD	D	2020	$5,953,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Brinker WSC)	Brinker WSC	D	2050	$3,567,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Cash SUD)	Cash SUD	D	2020	$1,926,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Celeste)	Celeste	D	2020	$5,076,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Cumby)	Cumby	D	2020	$4,809,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Hickory Creek SUD)	Hickory Creek SUD	D	2020	$11,862,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Hopkins Livestock)	Livestock (Hopkins)	D	2020	$8,273,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Alt Wood County Pipeline Tie-in (Hopkins Mining)	Mining (Hopkins)	D	2020	$5,367,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Hunt Co Mining)	Mining (Hunt)	D	2020	$560,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Miller Grove WSC)	Miller Grove WSC	D	2020	$1,587,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (North Hunt SUD)	North Hunt SUD	D	2020	$6,777,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Wolfe City)	Wolfe City	D	2040	$7,124,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Wood Co Livestock)	Livestock (Wood)	D	2020	$2,479,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Alt Wood County Pipeline Tie-in (Wood Co Manufacturing)	Manufacturing (Wood)	D	2020	$2,722,000	10	No action	N/A	N/A	N/A	N/A	Unknown	Uknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Canton Indirect Reuse	Canton	D	2020	$8,381,000	32	Action Taken	2020	2020	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Expended funds and water right application underway	0	Unknown	Unknown	Unknown	Unknown	0	

Contract with Texarkana and Treated Water Pipeline to DeKalb (Clarksville, Sulphur)	Clarksville	D	2020	$11,702,000	70	No action	N/A	N/A	N/A	N/A	Uknown	Uknown	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Dimple Reservoir	Clarksville	D	2020	$38,489,000	2230	No action	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Well (Edom WSC, Van Zandt, Carrizo, Neches, 2020)	Edom WSC	D	2020	$403,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Well (Edom WSC, Van Zandt, Carrizo, Neches, 2050)	Edom WSC	D	2050	$358,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Well (Edom WSC, Van Zandt, Carrizo, Neches, 2070)	Edom WSC	D	2070	$344,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Well (Little Hope Moore WSC, Van Zandt, Carrizo, Neches	Little Hope Moore WSC	D	2050	$371,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Well (Livestock Hunt, Trinity, Sabine)	Livestock (Hunt)	D	2020	$407,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Well (Livestock, Wood, Queen City, Sabine)	Livestock (Wood)	D	2020	$1,210,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Bowie Irrigation, Carrizo-Wilcox, Sulphur)	Irrigation (Bowie)	D	2020	$10,597,000	17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Brinker WSC, Carrizo-Wilcox, Sulphur)	Brinker WSC	D	2050	$1,405,000	3	No action	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Canton, Carrizo-Wilcox, Sabine)	Canton	D	2020	$716,000	2	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Celeste, Woodbine, Trinity, 2020)	Celeste	D	2020	$694,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Celeste, Woodbine, Trinity, 2040)	Celeste	D	2040	$509,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Celeste, Woodbine, Trinity, 2060)	Celeste	D	2060	$509,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Clarksville, Nacatoch, Sulphur)	Clarksville	D	2020	$10,537,000		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (County Other, Cass, Carrizo, Cypress)	Municipal county-other (Cass)	D	2020	$1,973,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (County Other, Cass, Carrizo, Sulphur)	Municipal county-other (Cass)	D	2020	$1,324,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Crystal Systems Inc, Carrizo, Neches)	Crystal Systems Texas	D	2040	$2,531,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Crystal Systems Inc, Carrizo, Sabine)	Crystal Systems Texas	D	2040	$2,531,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Cumby, Hopkins, Nacatoch, Sabine, 2020)	Cumby	D	2020	$480,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Cumby, Hopkins, Nacatoch, Sabine, 2070)	Cumby	D	2070	$480,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Gilmer, Carrizo, Cypress)	Gilmer	D	2040	$801,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Harrison, Queen City, Cypress)	Irrigation (Harrison)	D	2020	$577,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Harrison, Queen City, Sabine)	Irrigation (Harrison)	D	2020	$193,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine, 2040)	Irrigation (Hopkins)	D	2040	$1,030,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sabine, 2060)	Irrigation (Hopkins)	D	2060	$1,802,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Hopkins, Carrizo-Wilcox, Sulphur)	Irrigation (Hopkins)	D	2020	$10,927,000	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation Hunt, Nacatoch, Sabine)	Irrigation (Hunt)	D	2020	$1,249,000	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Irrigation Van Zandt, Queen, Neches)	Irrigation (Van Zandt)	D	2020	$1,683,000		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Irrigation, Red River, Nacatoch, Sulphur)	Irrigation (Red River)	D	2020	$6,551,000	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Leigh, Queen City, Cypress)	Leigh WSC	D	2040	$1,973,000	1	2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Preliminary design completed	100	2023	Jun-25	0	Dec-25	0.1	In Design Phase
Drill New Wells (Lindale, Carrizo, Neches)	Lindale	D	2020	$7,592,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Bowie , Nacatoch, Red)	Livestock (Bowie)	D	2020	$1,630,000	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Hopkins, Hopkins, Carrizo, Sulphur, 2020)	Livestock (Hopkins)	D	2020	$4,961,000	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Hopkins, Hopkins, Carrizo, Sulphur, 2060)	Livestock (Hopkins)	D	2060	$924,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Red River, Blossom, Red)	Livestock (Red River)	D	2020	$425,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Red River, Trinity Aquifer, Sulphur)	Livestock (Red River)	D	2020	$1,436,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Livestock Titus, Carrizo, Cypress, 2020)	Livestock (Titus)	D	2020	$767,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Titus, Carrizo, Cypress, 2030)	Livestock (Titus)	D	2030	$684,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock Titus, Carrizo, Sulphur)	Livestock (Titus)	D	2020	$5,215,000	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Bowie, Carrizo-Wilcox, Sulphur)	Livestock (Bowie)	D	2020	$2,423,000	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Camp, Queen, Cypress)	Livestock (Camp)	D	2020	$4,401,500	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Cass, Queen City, Cypress)	Livestock (Cass)	D	2020	$1,037,000	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Cass, Queen City, Sulphur)	Livestock (Cass)	D	2020	$1,037,000	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Delta, Nacatoch, Sulphur)	Livestock (Delta)	D	2020	$1,929,000	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Livestock, Franklin, Carrizo, Cypress)	Livestock (Franklin)	D	2020	$865,000	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Franklin, Carrizo, Sulphur)	Livestock (Franklin)	D	2020	$1,211,000	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Morris, Queen City, Cypress)	Livestock (Morris)	D	2020	$767,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Morris, Queen City, Sulphur)	Livestock (Morris)	D	2020	$539,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Upshur, Queen City, Cypress)	Livestock (Upshur)	D	2020	$172,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Livestock, Upshur, Queen City, Sabine)	Livestock (Upshur)	D	2020	$172,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Manufacturing Upshur, Queen City, Cypress)	Manufacturing (Upshur)	D	2020	$172,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity, 2020)	Manufacturing (Van Zandt)	D	2020	$1,043,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Manufacturing Van Zandt, Carrizo-Wilcox, Trinity, 2030)	Manufacturing (Van Zandt)	D	2030	$1,355,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Manufacturing, Wood, Queen City, Sabine)	Manufacturing (Wood)	D	2020	$1,210,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur, 2020)	Miller Grove WSC	D	2020	$459,000	1	2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Drilled Test hole and began design in 2024	100	2024	Jun-25	0	Dec-25	0.1	Drlling new well in 2025

Drill New Wells (Miller Grove WSC, Hopkins, Carrizo-Wilcox, Sulphur, 2070)	Miller Grove WSC	D	2070	$459,000	1	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Two well sites have been acquired	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Gregg, Carrizo-Wilcox, Sabine)	Mining (Gregg)	D	2020	$117,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Harrison, Queen City, Cypress)	Mining (Harrison)	D	2020	$384,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Harrison, Queen City, Sabine)	Mining (Harrison)	D	2020	$1,555,000	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2020)	Mining (Hopkins)	D	2020	$1,528,000	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2050)	Mining (Hopkins)	D	2050	$428,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Mining Hopkins, Hopkins, Carrizo, Sulphur, 2060)	Mining (Hopkins)	D	2060	$924,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Hunt, Trinity, Sabine)	Mining (Hunt)	D	2020	$766,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Mining Marion, Queen City, Cypress)	Mining (Marion)	D	2020	$767,000	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Harrison, Queen City, Cypress)	North Harrison WSC	D	2060	$612,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2020)	North Hunt SUD	D	2020	$1,493,000	3	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2030)	North Hunt SUD	D	2030	$1,054,000	2	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2040)	North Hunt SUD	D	2040	$1,054,000	2	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2050)	North Hunt SUD	D	2050	$1,998,000	4	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2060)	North Hunt SUD	D	2060	$2,932,000	6	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (North Hunt SUD, Hunt, Nacatoch, Sabine, 2070)	North Hunt SUD	D	2070	$2,902,000	6	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Loan has been secured	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Panola Bethany, Queen City, Sabine)	Panola-Bethany WSC	D	2030	$2,399,000	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2030)	R P M WSC	D	2030	$895,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2040)	R P M WSC	D	2040	$370,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2050)	R P M WSC	D	2050	$753,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2060)	R P M WSC	D	2060	$784,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (R-P-M WSC, Carrizo-Wilcox, Neches, 2070)	R P M WSC	D	2070	$774,000	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Scottsville, Queen City, Cypress)	Scottsville	D	2020	$1,429,000	3	2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Scottsville Reworked existing wells to meet needs	N/A	N/A	N/A	100	2023	0.3	Scottsville taken over by Leigh WSC
Drill New Wells (Smith County MUD 1, Queen City, Sabine)	Smith County MUD 1	D	2040	$3,948,000	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

Drill New Wells (Star Mountain, Queen City, Sabine)	Star Mountain WSC	D	2020	$1,521,000	2	2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	New well completed 2022	100	Oct-20	Jan-21	100	May-22	0.5	Drilling another well in 2025
Drill New Wells (Starrville Friendship, Carrizo, Sabine)	Starrville-Friendship WSC	D	2060	$761,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Drill New Wells (Waskom, Queen City, Cypress)	Waskom	D	2020	$2,399,000	4	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Testing for additional capacity in progress, working to bring well online.	0	Unknown	Unknown	Unknown	Unknown	0	Storage and transmission constructed.
Drill New Wells (Winona, Carrizo-Wilcox, Sabine)	Winona	D	2050	$761,000	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Increase Existing Contract (Harleton, Cypress)	Harleton WSC	D	2020	$4,928	0	2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Permitting Not Required	Contract Revised 2024	N/A	N/A	Construction Not Required	Construction Not Required	Construction Not Required	N/A	

Increase Existing Contract (Holly Springs, Cypress)	Holly Springs WSC	D	2020	$130,000	0	2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Permitting Not Required	Contract Revised 2024	N/A	N/A	Construction Not Required	Construction Not Required	Construction Not Required	N/A	
New Contract and Pipeline to Lamar Co WSD for Lamar Livestock	Livestock (Lamar)	D	2020	$14,574,000	50	Action Taken	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Strategy partially implemented	0	Unknown	Unknown	Unknown	Unknown	0	
New Contract With Greenville and Pipeline to Celeste	Celeste	D	2070	$3,342,000	34	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
New Contract With Greenville and Pipeline to Wolfe City	Wolfe City	D	2050	$7,124,000	44	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
New WTP Greenville	Greenville	D	2070	$81,786,000	8	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	
Pat Mayse Raw Water Pipeline (Irrigation Lamar, Red)	Irrigation (Lamar)	D	2020	$12,021,000	50	Action Taken	N/A	N/A	N/A	N/A	N/A	Uknown	Uknown	N/A	N/A	Strategy partially implemented	0	Unknown	Unknown	Unknown	Unknown	0	
Riverbend Strategy Cass New WTP and Transmission Line	Riverbend Water Resources District	D	2030	$22,807,000	18	Action Taken	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	

Riverbend WMS Interim to Ultimate Storage Conversion	Riverbend Water Resources District	D	2020	$20,550,000	0	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Riverbend WMS New Raw Water Intake 120 MGD 2030	Riverbend Water Resources District	D	2030	$13,282,000	20	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS New Raw Water Pipeline 32 MGD 2050	Riverbend Water Resources District	D	2050	$61,647,000	40	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS New WTP 25 MGD 2030	Riverbend Water Resources District	D	2030	$127,811,000	40	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS Pump Station Expansion 18 MGD 2050	Riverbend Water Resources District	D	2050	$11,603,000	10	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS Pump Station Expansion 30 MGD 2060	Riverbend Water Resources District	D	2060	$22,130,000	10	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	

Riverbend WMS Pump Station Expansion 6 MGD 2040	Riverbend Water Resources District	D	2040	$4,326,000	5	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS Raw Water Pipeline 72 MGD 2030	Riverbend Water Resources District	D	2030	$36,061,000	40	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Uknown	Uknown	Uknown	0	Uknown	Uknown	
Riverbend WMS Raw Water Pump Station 66 MGD 2030	Riverbend Water Resources District	D	2030	$45,041,000	10	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Riverbend WMS Water Right Amendment	Riverbend Water Resources District	D	2020	$103,000	0	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	N/A	N/A	N/A	N/A	N/A	0	
Riverbend WMS WTP Expansion 10 MGD 2050	Riverbend Water Resources District	D	2050	$33,348,000	10	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Riverbend WMS WTP Expansion 5 MGD 2040	Riverbend Water Resources District	D	2040	$19,745,000	5	2021	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Wood County Pipeline Tie-in (Martin Springs)	Martin Springs WSC	D	2070	$1,574,000	10	No action	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	0	Unknown	Unknown	Unknown	Unknown	0	

WTP Expansion 2030 (Greenville, Sabine)	Greenville	D	2030	$43,955,000	8	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	0	Unknown	Unknown	Unknown	Unknown	0	
Advanced Water Conservation (Caddo Basin SUD)	WUG Reducing Demand: Caddo Basin SUD	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	
Advanced Water Conservation (Cash SUD)	WUG Reducing Demand: Cash SUD	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Advanced Water Conservation (Greenville)	WUG Reducing Demand: Greenville	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	
Advanced Water Conservation (Manufacturing Bowie)	WUG Reducing Demand: Manufacturing, Bowie	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Advanced Water Conservation (Manufacturing Titus, Cypress)	WUG Reducing Demand: Manufacturing, Titus	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	

Advanced Water Conservation (Manufacturing Van Zandt)	WUG Reducing Demand: Manufacturing, Van Zandt	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Advanced Water Conservation (Poetry WSC)	WUG Reducing Demand: Poetry WSC	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	
Conservation - B H P WSC	WUG Reducing Demand: B H P WSC	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation - Caddo Basin SUD	WUG Reducing Demand: Caddo Basin SUD	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation - Cash SUD	WUG Reducing Demand: Cash SUD	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation - Macbee SUD	WUG Reducing Demand: MacBee SUD	D	2060	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation - North Hunt SUD	WUG Reducing Demand: North Hunt SUD	D	2050	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	

Conservation - Poetry WSC	WUG Reducing Demand: Poetry WSC	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation - Wolfe City	WUG Reducing Demand: Wolfe City	D	2070	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Conservation, Irrigation Restrictions – Cash SUD	WUG Reducing Demand: Cash SUD	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Increase Existing Contract (Brinker WSC, Sulphur)	WMS Seller: Sulphur Springs; WMS Supply Recipient: Brinker WSC	D	2050	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Increase Existing Contract (County-Other Lamar)	WMS Seller: Lamar County WSD; WMS Supply Recipient: County-Other, Lamar	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	
Increase Existing Contract (Manufacturing Titus from Mt Pleasant Surplus)	WMS Seller: Mount Pleasant; WMS Supply Recipient: Manufacturing, Titus	D	2030	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	

Increase Existing Contract (Manufacturing Van Zandt from Golden WSC Surplus)	WMS Seller: Golden WSC; WMS Supply Recipient: Manufacturing, Van Zandt	D	2050	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Increase Existing Contract (Manufacturing Van Zandt from Grand Saline Surplus)	WMS Seller: Grand Saline; WMS Supply Recipient: Manufacturing, Van Zandt	D	2070	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Increase Existing Contract (Martin Springs)	WMS Seller: Sulphur Springs; WMS Supply Recipient: Martin Springs WSC	D	2070	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Increase Existing Contract (Steam-Electric Power Titus)	WMS Seller: Northeast Texas MWD; WMS Supply Recipient: Steam-Electric Power, Titus	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	
Increase Existing Contract (Steam-Electric Power Titus)	WMS Seller: Northeast Texas MWD; WMS Supply Recipient: Steam-Electric Power, Titus	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Permitting Not Required	None	Unknown	Unknown	Construction Not Required	Construction Not Required	Construction Not Required	Uknown	

Kilgore - Municipal Conservation	WUG Reducing Demand: Kilgore	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Lindale - Municipal Conservation	WUG Reducing Demand: Lindale	D	2020	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	
Panola-Bethany WSC - Municipal Conservation	WUG Reducing Demand: Panola-Bethany WSC	D	2060	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Uknown	

APPENDIX C10

ADOPTION OF PLAN AND PUBLIC PARTICIPATION

APPENDIX C10

TABLE OF CONTENTS

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March 3, 2025

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